

# Perfect Readings in Russian

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## 1. Introduction<sup>1</sup>

This paper is an extended comment on Schoorlemmer's (1995) theory of tense in Russian, more accurately on her attempt to link aspectual structure with temporal structure. Schoorlemmer (henceforth S.) claims that tense in Russian behaves very differently from English or Dutch tense. In particular, she is forced to assume quite unorthodox temporal modifications, and the temporal behavior of Participial Passives is not clear at all. Our paper wants to restore simplicity to the issue.

We think that S.'s way of looking at the aspectual structure of Russian is basically correct but that her theory of tense runs into conceptual difficulties. These are due to Reichenbach's (1947) tense semantics, which S. applies without modifications to Russian. Our proposal tries to retain S.'s insights while at the same time trying to avoid the said difficulties.

The claims we want to defend may be roughly summarized as follows. Though the Russian verb has no perfect morphology, it has temporal PERFECT readings, viz. the PAST PERFECT and the FUTURE PERFECT. We obtain these by the assumption that the perfective (not perfect!) morphology licenses two different semantic aspects, viz. the relation of including an event or the relation of being after an event. Following recent practice (notably (Klein, 1994)), many linguists call these relations PERFECTIVE and PERFECT respectively. To avoid confusion, we will use Klein's more technical terminology, which will be introduced in (40).

To use a concrete example, consider the following pair of sentences:

- (1) a. *Mary left at eight.*  
b. *At eight, Mary had already left.*

While English makes use of two different morphological forms for the expression of the PAST versus the PAST PERFECT, Russian does it with one morphological form:

- (2) a. *Ma%ca vy%cla v vosem' āasov.*  
*Ma%ca leave-pfv-past at eight o'clock*  
*'Mary left at eight.'*

- b. *V vosem' āasov Ma%ca uĭe vy%ola.*  
 at eight o'clock Ma%ca already **leave-pfv-past**  
 'At eight, Mary **had** already **left**.'

It is important to notice that the verb has perfective (pfv) morphology: for imperfective forms the ambiguity is not so easily available. We will return to that issue later.

The same point can be made for future statements.

- (3) a. *Mary will leave at eight.*  
 b. *At eight, Mary will already have left.*

The two morphological forms of English are translated by one Russian form in the present perfective:

- (4) a. *V vosem' āasov, Ma%ca uedet.*  
 at eight o'clock Ma%ca **leave-pfv-pres**  
 'At eight, Mary **will leave**.'  
 b. *V vosem' āasov, Ma%ca uĭe uedet.*  
 at eight o'clock Ma%ca already **leave-pfv-pres**  
 'At eight, Mary **will** already **have left**.'

So the present perfect morphology may express either the simple FUTURE or the FUTURE PERFECT.

While S. claims that the temporal structure linked with verbs is crucially different in Russian and English, we claim that both languages make use of the same temporal structure at LF. The LF-representations for the examples in (1) and (2) are basically the following ones:

- (5) a. Simple past  
 [<sub>TP</sub> PAST [<sub>AspP</sub> PERFECTIVE [<sub>VP</sub> Mary leave-/Ma%ca vyj-]]]  
 b. Pluperfect  
 [<sub>TP</sub> PAST [<sub>AspP</sub> PERFECT [<sub>VP</sub> Mary leave/Ma%ca vyj-]]]

The difference between English and Russian is due to the morphological spell-out of the meanings involved. English doesn't mark the semantic aspect PERFECTIVE at all. So it has to be assumed as a default value for simple past forms, a standard assumption (see e.g. (Klein, 1994)). English, however, spells out the relation PERFECT using the combination of *have* + perfect participle. Russian has the perfective/imperfective distinction in morphology. Russian, on the other hand, spells out the semantic aspect PERFECTIVE but not PERFECT. In other words: English morphologically marks PERFECT or nothing, and Russian marks PERFECTIVE or nothing.

Following (Schoorlemmer, 1995) and many others, we will assume that there is a feature [ $\pm$ perfective] located in the head of the aspect phrase (AspP). Our claim is that the feature [+perfective] licenses either the relation PERFECTIVE or the relation PERFECT. The former is the unmarked case, therefore the latter needs some “triggers” like the aspectual particle *uĭe* ‘already’ in order to be activated. This view is quite different from S.’s, and as far as we know it is a novel one (or it was when we presented the theory for the first time). These are the essentials of our theory of the temporal perfect, i.e. purely temporal relations. There will be certain variants (notably “Extended Now” readings), which we will address in due course.

The second kind of perfect readings are the resultative ones, i.e. the past participial passive (PPP) of Russian, which is semantically very similar to the adjectival passive of English or the “Zustandspassiv” of German.

- (6) a. *Okno zakryto-PPP Ma%cej dva āasa nazad.*  
 window closed Mary-I two hour-G ago  
 b. *The window is closed (\*by Mary two hours ago).*  
 c. *Das Fenster ist (\*von Maria vor zwei Stunden) geschlossen.*

The Russian sentence means that the window is in the target state of a closing done by Mary two hours ago. As in English and German, the sentence implies that the window is closed at the speech time, but Russian differs in a crucial way from the other two languages. In German and English it is not possible to specify the agent by means of a *by*-phrase. And it is not possible to localize the event by a temporal adverb. We explain the difference by means of a theory of the adjectival passive following (Kratzer, 2000) (with roots in (Kratzer, 1993)). The idea is that the adjectival passive applies to causative verbs, which are relations between an event *e* and a target state *s*.<sup>2</sup> For instance, the VP *close* *y* applies to an event *e* and a state *s* iff *e* causes *s* and *s* is a being closed of *y*, where *y* is the “internal argument” of the VP.

- (7)  $\| \text{close} \| = \lambda y \in D_e. \lambda s \in D_v. \lambda e \in D_v. e \text{ cause } s \ \& \ \text{closed}(y)(s)$ <sup>3</sup>

The adjectival passive is a *stativizer* that existentially closes the event position of the relation expressed by the verb.

- (8) the adjectival passive  
 $\| \text{TARGET} \| = \lambda R \in D_{v(vt)}. \lambda s \in D_v. \exists e \in D_v. R(s)(e)$

The d-structure of the participle *the window closed* can now be represented as:

- (9)  $[_{AP} \text{TARGET} [_{VP} \text{close- the window}]]$  (English, German)

The AP correctly expresses the property of states whose holder is a window that is closed as a TARGET of an event<sup>4</sup>. At s-structure, the internal argument of the VP has to be raised to a case position, of course.

Kratzer's theory of the English and German adjectival passive assumes that the agent is not included in the VP. The agent is introduced by a separate projection, the voice phrase (VoiceP). This correctly explains that the agent cannot be specified by a *by*-phrase in adjectival passives. Russian behaves differently: the participial passive includes the agent and has all the usual properties of eventive passives but is nevertheless stative, as we shall see. We can explain this by assuming that in Russian, the adjectival passive embeds a passivized VoiceP.

- (10) [<sub>AP</sub> TARGET **-ed** [<sub>VoiceP</sub> x AGENT pass [<sub>VP</sub> **close-**  
**the window**]]] (\*English/<sup>OK</sup>Russian)  
[<sub>AP</sub> TARGET **-t** [<sub>VoiceP</sub> x AGENT pass [<sub>VP</sub> **zakry- okno**]]]

The AGENT is the head of the VoiceP. The morpheme expresses the meaning that the 'referential' argument x of that relation is the agent of an event instantiated by the selected VP. For causative verbs, the meaning of the agent relation can be formulated as follows:

- (11) AGENT =  $\lambda R \in D_{v(vt)} \lambda s \in D_v. \lambda e \in D_v. [Agent(e)(x) \ \& \ R(s)(e)]$

We assume a syntactic passive theory of the GB-style<sup>5</sup>. The feature [passive] must achieve two things: it must "absorb" the accusative and block the agent.<sup>6</sup> These are syntactic effects. The passive does not change the argument structure. In particular, the agent x is still available and may serve as a controller.

The reader may check that our representation gives us the correct meaning for the Russian participial passive, namely the state of the window being closed, where that state is produced by an event with an agent x, which is not specified but which may be specified by an instrumental phrase, say *Ma%cej* 'by Ma%ca'. (Anagnostopoulou, this volume) has proposed an analysis of the adjectival passive in Modern Greek along these lines. So Greek and Russian pattern alike with respect to the adjectival passive, and there is a simple morphological parameter that explains the difference: in English and German, the stativizer TARGET selects an agentless VP, whereas in Russian, it selects a passive VoiceP.

S. assumes that the Russian present participial passive is always stative. The traditional literature assumes that the past participial passive has an eventive reading as well. In that case, the participial head would have a second meaning. We will return to that issue in section 5.3.3.

We will see that our theory of the participial passive makes a number of welcome predictions, at the same time deriving all the properties that have been observed for the participial passive.

The organization of the article is as follows. Section 2 discusses S.'s theory of the relations between aspectual and temporal structure in Russian and formulates our criticism. Section 3.1. outlines the architecture of the Tense/Aspect system in Russian. In section 3.2., we will distinguish between semantic ASPECTs in the sense of (Klein, 1994) and Vendler Aktionsarten. Both categories will stand in a systematic relation to morphological aspect, though not in a simple one. Section 3.3. gives a precise definition of telic and atelic verbs and shows how the scope of indefinites determines these semantic properties. We will show the interaction of the semantics with aspectual temporal adverbs. Section 3.4. relates our aspect theory to traditional ones. Section 3.5. contains some speculation about the semantics of habituals; we refute claims that the habituality operator is a binder of the event variable. In section 4 we check our theory of tense and aspect against data. Section 4.1. introduces our PERFECT over Perfective Principle, which says that the perfective licenses the PERFECT aspect, which in turn entails that perfective verbs are temporally ambiguous. Section 4.2 provides data that can only be interpreted as semantic pluperfects, while section 4.3. shows that perfective present forms can have future perfect readings. Section 4.4. shows that we have XN-readings in Russian, and we give reasons of why these are always implemented by means of imperfective verbs. Section 5 presents our analysis of Russian syntactic past passive participles, which combines ideas of Kratzer's and Anagnostopoulou's. The basis for these participles is the existence of Klein's 2-state verbs, i.e. verbs that are relations between an event and a target state. The phrasal participle affix is the operator TARGET, which externalizes the target state. The difference between Russian and English is that TARGET applies to a passivized VoiceP in Russian but to an agentless VP in English; this is the content of the TARGET-parameter (section 5.2.). The theory is tested against interesting data. We show that Schoorlemmer's predictions and intuitions about participial passives can be derived in a principled way.

## **2. The temporal structure of perfectives and participial passives according to Schoorlemmer**

The discussion of S.'s theory is complicated by the fact that she doesn't provide any formal semantics. She applies (Reichenbach, 1947) theory on an intuitive level, so it is not always clear what she has in mind. Nevertheless, we hope that our discussion is a fair restatement of her ideas. We will

show that the complications arising from S.'s theory are due to the attempt to apply Reichenbach's theory to Russian. The crucial defect of Reichenbach's approach is that times are thought of as points, so no inclusion of time intervals is expressible. But it is precisely this that is required to express the temporal structure of Russian perfective morphology correctly. The semantics of Participial Passives requires an entirely different approach, namely the idea of 2-state verbs with an appropriate TARGET operator. Reichenbach has nothing to contribute to this issue.

S. assumes two general principles for linking aspectual and temporal structure in Russian, the Perfective Constraint and the Perfect Effect. The Perfective Principle says that the event time and the reference time of perfective verbs are distinct. The Perfect Effect says that the effects of the verbal event make themselves felt at the reference time; this effect is obligatorily triggered by participial passives. We will argue that the Perfective Constraint is not tenable. The claims concerning the Perfect Effect, on the other hand, are largely correct and will be reconstructed in this paper.

### 2.1. Schoorlemmer's Perfective Constraint

In this section, we will formulate S.'s Perfective Constraint and argue that it is not tenable, although the data motivating it remain valid and important. We think that the shortcomings of the principle are due to the lack of expressive power of (Reichenbach, 1947) theory of tense, which are imported by S.

As is well known, Reichenbach assumes the parameters speech time (S), reference time (R) and event time (E). The simple past is represented as E,R\_S, where “\_” denotes temporal precedence and “,” denotes temporal coincidence. Times are points for Reichenbach; therefore coincidence must mean identity. The pluperfect is represented as E\_R\_S by Reichenbach. Thus, the temporal structures of the English examples in (1) can be symbolized as:

- (12) a. Mary leave(E) & at 8(R) & E,R\_S (simple past)  
 b. Mary leave(E) & at 8(R) & E\_R\_S (pluperfect)

Ignoring the problem of how Reichenbach's tense information is linked to the syntax, we observe that it doesn't matter whether we predicate the temporal adverbial *at 8* of E or R in the first example, because the two are the same. But in the second example, the adverbial must be predicated of R for the reading we are discussing, i.e. the pluperfect.

We face no principal problem so far because we have two morphological forms in English, which somehow are responsible for the difference in

meaning. Next, let us take up the Russian examples given in the previous section. In order to describe the ambiguity observed for the examples in (2) and (4), S. formulates the following principle, which we will call the *Perfective Constraint* for convenience:

- (13) *The Perfective Constraint* (Schoorlemmer, 1995: 245)  
 “Perfective verbs always occur in a temporal configuration where *E* and *R* are distinct.”

The principle faces no problem for the pluperfect reading in (2b), for this can be represented as:

- (14) *V vosem' āasov Ma%ca uĭe vy%da.*  
 at 8(R) & Mary leave(E) & E\_R\_S

But we have a problem with the simple past reading exhibited by (2a). We cannot use Reichenbach's analysis because there the reference time and the event time are the same. In order to save the Perfective Constraint, S. makes the following move (p. 240):

“A sentence with a past perfective verb does not have the interpretation comparable to the interpretation of English sentences in the simple past tense with *E* and *R* coinciding. It refers to an event in the past observed from a past reference point *following* the event.”

So S. would have to represent example (2a) as:

- (15) *Ma%ca vy%da v vosem' āasov.*  
 at 8(E) & Mary leave(E) & E\_R\_S

This representation virtually deprives the notion of reference time of any empirical content. For Reichenbach, the reference time is the time we speak about, and temporal adverbs are the diagnostics par excellence to identify it. The Perfective Principle forces us to say that temporal adverbs specify the reference time in pluperfect readings, whereas in simple past readings, they specify the event time. In English, the adverbs uniformly qualify the reference time in these sentences.

A deeper conceptual problem concerns the ontology of time. Consider the representation of accomplishments, i.e. events that take some time.

- (16) *Vāera ja sxodila v teatr.*  
 ‘Yesterday I went-pfv to the theatre.’

The Perfective Constraint forces us to represent the temporal structure as:

(17) in yesterday(E) & I go to the theatre(E) & E\_R\_S

But what could “I go to the theatre(E)” mean? Going to the theatre is an accomplishment that takes its time. It couldn’t be a point. The natural reaction to that observation is that this is obvious. But once we admit that, we have left Reichenbach’s framework. We have joined interval semantics, and that framework allows for many more relations between times than Reichenbach’s system provides. This has been clear from the beginnings of interval semantics (cf. (Bennett, 1977), (Cresswell, 1979), (Fabricius-Hansen, 1986) and many others). In particular, to interval semantics belongs the notion of temporal inclusion, the central concept for the correct temporal interpretation of perfective morphology, as many researchers believe.<sup>7</sup> The most natural interpretation of statements like (16), namely the following one, is not expressible in Reichenbach’s system:

(18) I go to the theatre(E) &  $E \subseteq R$  & in yesterday(R) & R\_S

Here  $\subseteq$  expresses temporal inclusion. Note that everything is conceptually plausible this time. The relation R\_S is expressed by the past tense, the temporal adverb specifies the reference time and the perfective morphology tells us that the event time is included in the reference time.

S.’s representation of future statements is even more puzzling. Starting from the example

(19) (“*Sa%ca, skoro ty dostane%o’ bumagu! Dolgo*  
 Sasha, soon you will-get-PF paper! Long

*pridetsja tebjä idat’.*”)  
 one-is-forced-PF you wait-for-IMP-INF

“*Sejāas, sejāas, ja dostaju.*”  
 Now, now, I get-IMP

she concludes that present imperfective forms have an immediate future reading S\_E, which generalizes to all present forms. The Perfective Principle tells us that R must be distinct from E. Therefore, the simple future statement (4a) must be represented as:

(20) *V vosem’ āasov, Ma%ca uedet.*  
 at 8(E) & Mary leave(E) & S\_R\_E  
 ‘Mary will leave at eight.’

If we place R after E, we obtain the future perfect reading:

- (21) at 8(R) & Mary leave(E) & S\_E\_R  
 ‘At eight, Mary will have left.’

Again, we observe an asymmetry for the application of the temporal adverb: in simple future statements, ‘at eight’ qualifies the event time E, whereas in future perfect readings, the adverbial specifies the reference time. There is not the slightest intuitive evidence of why this should be so. It is alone the Perfective Constraint that forces these representations upon us. It is not at all clear why the reference time behaves differently in past and present forms. R has to follow E under past, but it can follow or precede E under present. In addition, we could place the reference time together with the speech time or even before the speech time in future statements and still obtain the same truth conditions:

- (22) a. at 8(E) & Mary leave(E) & S,R\_E  
 b. at 8(E) & Mary leave(E) & R\_S\_E

If we don’t want these representations, we have to say what the role played by R is. So far, its status remains a complete mystery. If we accept Reichenbach’s heuristics for the reference time, viz. that it may be specified by (positional) temporal adverbs, it follows that the simple future statement has none of S.’s representations, but rather the following one:

- (23) at 8(R) & Mary leave(E) & S\_E,R

This is the representation assumed by Reichenbach for simple futures, but it violates the Perfective Constraint.

With future statements the point made for accomplishments holds as well. For accomplishments, the event time must be included in the reference time. So the simple future reading of sentence (24a) is most naturally analyzed as (24b):

- (24) a. *Veāerom ja pojdu-pfv v teatr.*  
 ‘This evening I **will go** to the theatre’  
 b. I go to the theatre(E) &  $E \subseteq R$  & on this evening(R) & S\_R

As in (18), we have a clear idea of how this should be linked to the morphosyntax.  $E \subseteq R$  is linked to the perfective morphology and S\_R is the meaning of the future tense, which we have to link to the present morphology. The temporal adverbial is predicated of the reference time.

Our criticism of S.’s representations may be summarized as follows. First, S.’s approach makes the notion of reference time empirically empty;

in particular, the distribution of temporal adverbs seems largely arbitrary. Second, it is not clear how the temporal structure of accomplishments, which cannot be points of time but must be stretches thereof, can be represented. Third, the temporal structure of Russian must be treated entirely differently from that of western European languages without there being any intuitive base for that difference. Fourth, we cannot see how the temporal structures assumed by S. could be linked to the syntax.

We conclude from this discussion that the Perfective Constraint is not tenable. Notably, in the unmarked case the event time and the reference time of perfective verbs are not distinct. The reference time includes the event time.

This is not a knock-down criticism, because S.'s system could perhaps be worked out to meet all these objections. For the time being, our impression is that this has no perspective for success. We think that Reichenbach's theory of temporal structure is simply not powerful enough to do justice to the aspectual facts of natural language. In particular, it lacks the notion of temporal inclusion stemming from interval semantics. S. makes the best of these limited resources, but the aspectual facts remain recalcitrant.

## 2.2. Schoorlemmer's Perfect Effect

The *Perfect Effect* (PE) is the crucial semantic property of Russian past participial passives. S. uses the term PE to refer to two different things. The English present perfect has the PE, and there it expresses the idea that the situation somehow continues at the reference time. How this is to be understood exactly is not said. In Russian, the PE means that the effects of the event expressed by the verb are still valid at the reference time.

Russian participial passives verb forms such as *zakrytyj* 'closed' obligatorily have the PE and in fact denote the target state of an event expressed by the root. With few exceptions, these participles have perfective morphology and can therefore conveniently be labeled as PPP ("participle perfective passive"). S. notes that the Russian PE cannot be fully analyzed in temporal terms. Furthermore, she seems to contrast the PE observed for Russian with that observed for English.

In this section, we will show two things. (a) The English PE has nothing to do with that observed for Russian PPPs. It is confined to the special meaning of the English present perfect. It cannot be analyzed in a Reichenbachian framework but requires interval semantics. (b) English, Dutch and German adjectival passives show the PE effect observed for Russian as well, but the syntax of these constructions is more restricted compared to that of their Russian counterparts. Again this kind of PE cannot be analyzed

in Reichenbachian terms but requires interval semantics.

The PE of the English present perfect is better known as “Extended Now” (cf. (McCoard, 1978), (Dowty, 1979)). Here is an example of S.’s illustrating that meaning (cf. p. 248):

- (25) a. *Mao has always liked to swim.*  
 b. *Mao vsegda ljubil plavan’e.*  
 M. always loved-IMP swimming

S. correctly observes that sentence (25a) implies that Mao is alive, whereas the Russian sentence carries no such implicature. She claims that “in English, PE is a necessary consequence of R and S coinciding (i.e. of perfect temporal structure)” (p. 246). We have to disagree. What has been called the Extended Now meaning in the literature cannot be expressed in Reichenbach’s framework at all. Reichenbach’s perfect temporal structure would lead to the following representation:

- (26) Mao always like to swim(E) & E\_R,S

This, however, means that E is before the speech time. That is, we have what S. calls an “aoristic reading,” i.e. the event time is entirely before the reference time. And of course the notation predicts that E is a point of time, which doesn’t make sense in view of the adverb of quantification ‘always’. An adequate analysis requires interval semantics and in particular the notion of an Extended Now (XN), which we can define with (Dowty, 1979) as:

- (27) XN(I,J) iff J is a final subinterval (or point) of I.

The English sentence (25a) can now approximately be analyzed as:

- (28) Mao always like to swim(E) & XN(E,R) & R,S

This analysis correctly represents the lifetime effect, for the speech time S (=R) is the final point of the state of liking represented here. If Mao likes to swim during the entire period E and R=S is included in E, he must be alive at S. There is no way to represent this state of affairs in Reichenbach’s theory, because the relation XN is neither existent nor definable in that framework.

It is a remarkable fact of Russian that sentence (25b) *can* express the XN-meaning observed for the English sentence (25a). We conclude from this fact that *one* meaning of imperfective past forms of Russian must be associated with the meanings PRESENT + XN. So the Russian past imper-

fective has one particular perfect meaning.

As is well known from the literature, the English present perfect is special. The English pluperfect *can* express XN-readings, but it need not.<sup>8</sup> The more interesting claim of S.'s is that Russian PPPs obligatorily have a more special PE: they express the target state of an event, i.e. the effects of the action are valid at the reference time. This particular PE is possible only for telic VPs (cf. p. 253). As an example, consider:

- (29) *Okno bylo otkryto Ma%cej.*  
 window was **open-PPP** Ma%ca-I  
 'The window was opened by Ma%ca.'  
 '\*Das Fenster war von Maria geöffnet.'

The English translation does not express the content unambiguously, because the auxiliary *was* can express either the eventive passive or the adjectival passive. S.'s idea is, however, that this passive is a stative passive. So the German translation is a much more accurate paraphrase of the sense intended, because the eventive passive is expressed by means of a different auxiliary, viz. *werden*. Note that the German translation is nevertheless not acceptable. Like its English counterpart, the German adjectival passive does not allow the agent to be expressed by means of a *by*-phrase (cf. (Rapp, 1997) for this observation). But in Russian, this is possible. The idea is, of course, that (29) tells us that the window is open at the reference time. That's the reasoning which leads S. to believe that the following text is ungrammatical<sup>9</sup>:

- (30) *Okno bylo otkryto Ma%cej, a srazu posle*  
 window **was** **open-PPP** Ma%ca-I, but immediaty after  
  
*ètogo ono bylo zakryto.* (p. 257)  
 that it **was** **closed**

The sentence is odd for the same reason as the following German sentence:

- (31) *Das Fenster war geöffnet und unmittelbar darauf geschlossen.*  
 'The window was opened, and immediately after that it was closed.'

Note that the English translation should be read as an adjectival passive construction, not as an eventive one. (Of course, no one interprets the sentence in this way.) The sentence expresses a situation that is pragmatically highly unlikely. The example in (31) shows that this kind of PE is not confined to Russian. It is the TARGET perfect expressed by the adjectival passive. What is special with Russian is the fact that Russian allows the forma-

tion of an adjectival passive out of an agentive construction, which is not possible in English, Dutch or German. Furthermore, Russian even allows the temporal location of the eventive phase of the adjectival passive, which is not possible in the aforementioned western European languages either. Here is one of S.'s examples:

- (32) *Ètot dom postroen v pro%olom godu.* (p. 261)  
 this house built in last year  
 ‘?Dieses Haus ist im letzten Jahr gebaut.’ (German)

The German translation is only marginally acceptable, and with other verbs we obtain entirely ungrammatical sentences:

- (33) a. *Ètot magazin zakryt v pro%olom godu.*  
 this shop closed in last year  
 b. *\*Dieses Geschäft ist im letzten Jahr*  
 this shop is in-the last year  
*geschlossen.* (German)  
 closed

It is important to note that the Russian sentences are *not* past statements and can therefore not be eventive passives. It is a well-known fact of Russian Grammar that zero copulas are possible in present sentences only. For instance, the following sentence is not grammatical:

- (34) *\*Irina vāera grustnaja.*  
 Irina yesterday sad

S. admits that she cannot formulate the temporal structure of PPPs at all. The temporal structure assigned to PPPs on p. 270 is E\_R, but this structure does not capture the idea that the target state of PPP must be valid at the reference time. This structure can at best represent pluperfect and future perfect readings. We could, of course, say that PPPs are statives and therefore have the structure of English simple past constructions, but this fails to express the idea that the eventive phase immediately precedes the reference time. In other words, the following two alternatives are equally good and equally bad:

- (35) a. this house is built last year(E) & E\_R,S  
 b. this house is built last year(E) & E,R,S

The first representation temporally locates the event phase; the second one

the target state. Perhaps we have to localize both phases:

(36) this house be build(E) & this house is built(R) & E\_R,S

Apart from the problem of how we could relate this to the syntax, this notation doesn't represent the requirement that E has to abut R. Therefore, a better representation would be:

(37) this house be build(E) & this house is built(R) & E  $\supset$ C R & S,R

Here, E and R are thought of as intervals, and E  $\supset$ C R means that E is to the left of R and E and R have just one point in common ("E abuts R").<sup>10</sup> A representation of this kind is a total departure from Reichenbach's framework. So adjectival passives and Russian PPPs show even more impressively the inherent limits of Reichenbach's system.

Our discussion of S.'s theory thus reaches the following conclusions. S.'s paper contains important insights into the temporal structure of the Russian. She clearly states that perfective verbs in the active have two readings, the PAST or FUTURE reading, and the PAST PERFECT or the FUTURE PERFECT reading, where the first alternative is confined to past perfective forms, the second one to present perfective forms. The second insight offered by S. is that PPPs always have a TARGETative interpretation, though they may be genuine passives having an agent in their structure.

The weakness of S.'s theory consists in her attempt to express the temporal behavior of these constructions within Reichenbach's framework, which lacks the necessary expressive power. We cannot adequately express simple past or simple future readings of perfectives, nor can we express the meaning of the perfect of TARGET. The only configurations for which Reichenbach's notation works are the pluperfect and the future perfect (simple, not continuous).

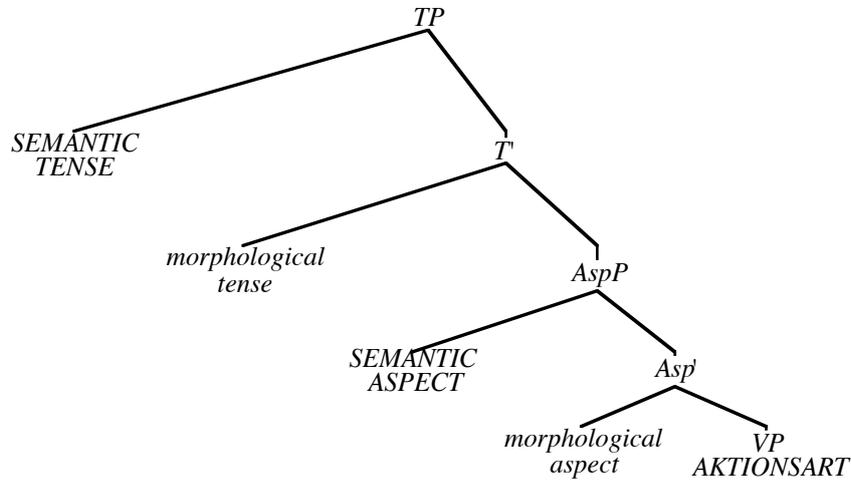
It is time then to restate the findings within a more appropriate conceptual framework.

### 3. Background

#### 3.1. Tense/Aspect/Aktionsart Architecture<sup>11</sup>

The syntactic organization of the T/A/A system will assume the three layers Tense, Aspect and Aktionsart. Furthermore, we will strictly distinguish between morphological and semantic notions. The semantic notions will be represented by capital letters, the morphological ones by small letters. This is the architecture of the finite clause:

## (38) The tense/aspect/aktionsart architecture



The standard semantic tenses are PRESENT, PAST and FUTURE, but there might be some others in addition.

The notion of aspect has a Janus face, which often leads to confusion. The semantic side of the aspect morphology is complicated by the fact that we have to distinguish between two different notional categories, viz. *situation aspect* and *viewpoint aspect*, to use Smith's (1991) terms. In the semantic literature, *situation aspect* is usually synonymous with *Aktionsart* in the sense of (Vendler, 1957). In other words, a situation aspect is an accomplishment/achievement, activity or state.<sup>12</sup> The Vendler *Aktionsart* is expressed by the tenseless and aspectless VP. We will assume that an accomplishment/achievement is a class of events, whereas Vendlerian states are sets of times or states. (Herweg, 1990) and (Katz, 1995) do not distinguish between times and states. We will not take a stand with respect to this question. For the purposes of this paper, we will regard states as particular events with certain qualities that do not change during the existence of the state (e.g. being open, being drunk, being sick).

An event or state is located in time by means of a relation that connects the reference time with the event time or the event state. With (Klein, 1994), we will call these relations ASPECTS simpliciter or, more accurately, SEMANTIC ASPECTS. The following three ASPECTS are used in many languages: the reference time INCLUDES the event time or the state time, the reference time is INCLUDED in the event time, or the reference time follows the event time or state time, being POST. (Smith, 1991) has a fourth ASPECT, called NEUTRAL, which states that the end of the event

time overlaps the beginning of the reference time (see (Pancheva, (this volume))). One and the same morphological aspect may license different ASPECTS. The central thesis of our paper is that Russian perfective morphology selects Vendlerian accomplishments/achievements and licenses either INCLUDES or POST.

Let us make this more precise. Recently, a version of Partee's (1973) deictic theory of TENSE has become increasingly popular. We are following the proposal given in (Heim, 1994), according to which tenses restrict the interpretation of temporal variables:

- (39) Semantic Tenses are symbols of type  $i$  which bear time variables as indices. Let  $c$  be the context of the utterance with  $t_c$  the speech time.
- a.  $\parallel \text{NOW}_j \parallel^{g,c}$  is the speech time conceived as a point.
  - b.  $\parallel \text{PAST}_j \parallel^{g,c}$  is defined only if  $g(j)$  precedes the speech time  $t_c$ . If defined,  $\parallel \text{PAST}_j \parallel^{g,c} = g(j)$ .
  - c.  $\parallel \text{FUTR}_j \parallel^{g,c}$  is defined only if  $g(j)$  follows the speech time  $t_c$ . If defined,  $\parallel \text{FUTR}_j \parallel^{g,c} = g(j)$ .

We will adhere to the terminology introduced by (Reichenbach, 1947) and call the time denoted by a semantic tense the *reference time*.<sup>13</sup> And here is the list of the SEMANTIC ASPECTS mentioned.

- (40) Three semantic aspects
- a. INCLUDES =  $\lambda P \lambda t \exists e. \tau(e) \subseteq t \ \& \ P(e)$ ,  $P$  of type  $vt$   
("PERFECTIVE")
  - b. POST =  $\lambda P \lambda t \exists e. \tau(e) < t \ \& \ P(e)$   
("PERFECT")
  - c. INCLUDED =  $\lambda P \lambda t \exists e. t \subseteq \tau(e) \ \& \ P(e)$   
("IMPERFECTIVE")

Here,  $e$  can be an event or a state, while  $\tau(e)$  is the running time of  $e$ . Nowadays, there is a widespread practice in the semantic literature of using the names PERFECTIVE, PERFECT and IMPERFECTIVE for these relations (cf. e.g. (Kratzer, 1998)), but the relations are in a way purely temporal relations between intervals, relating the event time to the reference time. In fact, they are precisely what (Kamp and Reyle, 1993) call *location time* – not a very suggestive term either. To avoid confusion, we will use the technical terms introduced in (Klein, 1994) because there is no one-to-one correspondence between the aspect morphology and these relations. In particular, the Slavic imperfective morphology may be linked with any of these relations (see section 3.4.). We apply the framework to the examples given in the introduction:

- (41) a. Ma%oa vy%ola v vosem' āasov. (=2)

- b. [<sub>TP</sub> PAST<sub>7</sub> past v vosem' [<sub>AspP</sub> INCLUDES pfv  
[<sub>VP</sub> Ma%*oca* LEAVE]]]
- c. [<sub>TP</sub> PAST<sub>7</sub> past v vosem' [<sub>AspP</sub> POST pfv [<sub>VP</sub> Ma%*oca* LEAVE]]]

For the purposes of this paper, we will assume that || v vosem' || is a modifier meaning  $\lambda P \in D_{it}. \lambda t \in D_i. [t \text{ is at } 8 \ \& \ P(t)]$  and || Ma%*oca* LEAVE || is  $\lambda e \in D_v. [e \text{ is a leaving of Ma\%oca}]$ . The reader may calculate for her/himself that with respect to an assignment *g*, sentence (41b) is true of a past time *g*(7), iff *g*(7) includes the time of leaving of Ma%*oca*. Similarly, (41b) is true iff the reference time *g*(7) is after a leaving of Ma%*oca*. This is a pluperfect reading. As said already, the latter reading is marked and needs an appropriate context or adverb (e.g. *uže* "already") to be activated.

A note as to the representation is in order. We represent the verbal root by an abstract morpheme. LEAVE has the features pfv, past, female, singular, which are not represented. These are checked in the style of the Minimalist Program (cf. (Chomsky, 1995)) by overt or abstract movement to appropriate functional projections. However, we don't (necessarily) want to commit ourselves to the details of that model. Everything we will say is compatible with the model of "Parallel Morphology" favored by Schoorlemmer. Most syntacticians of Russian assume that the verb moves at least to TP (or AgrS).<sup>14</sup> As in German, the verb may even move higher to a verb second position, available also for subordinate clauses. We are not interested in these details here and work with interpretable d-structures.

We will not commit ourselves as to the location of semantic tense and aspect in the syntax. This information may be located in the functional heads or in the specifier. Whatever will turn out to be correct is fine for us. The only thing that matters for our purposes is the relative hierarchy of these categories and their semantic interpretation.

The minimal pair discussed in (4) is formally analyzed as:

- (42) a. V vosem' āasov, Ma%*oca* (uže) uedet.  
b. [<sub>TP</sub> FUTR<sub>5</sub> pres v vosem' [<sub>AspP</sub> INCLUDES pfv  
[<sub>VP</sub> Ma%*oca* LEAVE]]]
- c. [<sub>TP</sub> FUTR<sub>5</sub> pres v vosem' uže [<sub>AspP</sub> POST pfv [<sub>VP</sub> Ma%*oca* LEAVE]]]

Note that these examples show very clearly that we have to distinguish between the T/T/A morphology and its interpretation. The verb in (42) is in the present, but its semantic tense is FUTURE. Furthermore, the perfective morphology expresses two different ASPECTS, viz. INCLUDES and POST.

To complete the exposition, consider some imperfective forms:

- (43) a. *Ja na solny%cke leđu i na*

*solny%oko*

I at sun-dim-P lie-ipfv-pres and at sun-dim-A

*gljaľu.* (song)  
look-ipfv-pres

‘I am lying in the sun and I am looking at it’  
NOW pres INCLUDED ipfv I LIE

b. *Irene spala.*

I. sleep-ipfv-past  
‘Irene was sleeping/slept’  
PAST past INCLUDED I. SLEEP

This use of the imperfective is similar to the use of the English continuous form. We repeat, however, that the imperfective may express any of the said ASPECTS and even others. While the perfective prototypically has the interpretation INCLUDES and, somewhat marked, the interpretation POST, the imperfective stands in a “privative opposition” to the perfective. This term is due to (Jacobson, 1932) and means that the imperfective doesn’t express any particular notion, in particular not the negation of what the perfective expresses – though it may express the negated meaning of the perfective in a particular context (see (Forsyth, 1970) for the most thorough discussion of this point).

The simple ASPECTs introduced above are sometimes too coarse to capture the reality of language. Both the future imperfective and the past imperfective can express XN-readings. For instance, the following sentence expresses what (Stechow, 1999) has called an XF (NOW extended to the future), where  $\|XF\|$  is defined as  $\lambda P \in D_{it}. \lambda t \in D_i. \exists t' [t \text{ is an initial subinterval of } t' \ \& \ P(t')]$ .

(44) - *Ja vseġda budu pomnit' tebja ... Ja budu*  
I always will remember-ipfv you-A... I will

*ĭdat' tebja, - %ceptala ona.* (Fadeev: “Molodaja gvardija”)  
wait-ipfv you-A....

‘“I shall always remember you. I shall wait for you”, she whispered.’ (Forsyth, 1970: 122)

PRES XF will ipfv always INCLUDED I REMEMBER YOU

With an appropriate semantics for ‘always’, this sentence is true if the speech time has an extension toward the future such that any subinterval of that is included in the state of my remembering you. Ignoring XN and XF interpretations, a first rough overview of the Russian T/A-system is, there-

fore, the following one:

(45) The Russian T/A-System

	NOW	PAST	FUTR
INCLUDED	present ipfv	past ipfv	<i>budu</i> + ipfv
INCLUDES	---?	past pfv past ipfv	present pfv
POST	past ipfv	past pfv past impf	present pfv
TARGET	PPP	<i>byl</i> + PPP	<i>budet</i> + PPP

The chart is a “semiasological” one: we start from the meanings and look at how they are realized morphologically. The chart represents the main thesis of our paper: the perfective morphology ambiguously licenses the ASPECTS INCLUDES and POST. Furthermore, the polyfunctionality of the imperfective morphology is visible. This morphology implements at least six meanings, and the difficult descriptive problem is to say which is the right one in a given context.

The chart is insufficient in so far as it considers only episodic readings. The use of present tense is not confined to NOW. In a generic context, we can have TENSE-less present perfective forms that don't denote a FUTR:

- (46) a. *Kak tol'ko vyjdut-pres-pfv, ix srazu rasxvatyvajut-pres-ipfv v magazinax.*  
 ‘As soon as they appear in the shops they are immediately snapped up.’ (Forsyth, 1970: 120)
- b. *Živém v odnom gorode, pošti rjadom, a uvidimsja-pres-pfv raz v nedelju...*(Mazon)  
 ‘We live in the same town, almost next door to each other, and see each other no more than once a week.’ (Forsyth, 1970: 120)

Our chart cannot represent this very frequent use of the present perfective at all. Furthermore, there are the very frequent habitual readings, to which we will briefly return in section 3.5.

### 3.2. Vendler-Aktionsarten

Vendler-Aktionsarten (cf. (Vendler, 1957)) are properties of event types, i.e. properties of second order. They are defined in purely temporal terms or, more exactly, in terms of interval semantics. Semanticists differ somewhat in their exact definitions of the V-Aktionsarten. Instead of comparing

different proposals, let us simply introduce definitions that will do suffice for our purposes. Together with S., we hold the view that the crucial semantic distinction for an understanding of the aspect system is the telic/atelic distinction. We will adopt Krifka's (1989) theory and define *quantized* properties as telic and non-*quantized* properties as atelic. While perfective VPs seem to express telic properties<sup>15</sup>, imperfective VPs may express telic or atelic properties. Thus, atelicity must not be regarded as the meaning of the imperfective morphology.<sup>16</sup> Most semanticists distinguish four V-Aktionsarten: states/activities and accomplishments/achievements. The first two are atelic Aktionsarten, the last two are telic.

*STATIVES*. The classical definition of STATIVES is that they are true of points. But since states have duration we adopt a somewhat more general definition and say that STATIVES are divisive: The property P of events is stative – STATIVE(P) – iff for any event e and e': If P(e) and e'  $\subseteq$  e, then P(e'). " $\subseteq$ " stands for "(possibly improper) part of".<sup>17</sup> States are particular events and are denoted by the letter s (possibly with an index). The running time of a state or event e is written as  $\tau(e)$ . The running time of a state may be 0. Therefore we can always link states to a point of time, say the speech time S, by means of the INCLUDED-operator.<sup>18</sup> STATIVES do not have an AGENT but they may have a HOLDER.<sup>19</sup> One and the same subject can be the HOLDER of different states at the same time, say being sick and being unhappy. But there is only one HOLDER-instance pro STATIVE-instance.

The established term for STATIVE is 'state', but this term is a source of permanent confusion. STATIVE is a second order property characterizing certain classes of events, and Vendler's term 'state' is used in this sense. But the term 'state' is also used for those particulars that instantiate state-properties. For instance, there are states s that instantiate the event type 'the door being open'. States in this sense are particular events. To avoid the confusion, we use the term STATIVE for types of events, whereas 'state' is taken to mean particular events, individual events. In the literature there is a convention of denoting states by the letters s, s' and so on. We will do so too.

*ACTIVITIES* are the most problematic V-Aktionsarten. They do not have a convincing definition. A good start is to say that they are *summative*: ACTIVITY(P) if for any two temporally abutting events e and e' with P(e) and P(e'), we have P(e + e'). Here, + denotes the mereological sum: if e is a walking and e' is a walking immediately following e, then e+e' is a walking as well. Like states, activities always have a certain duration. But activities are not throughoutly divisible. We will use the abbreviation ACT for the property of being an activity.

*ACCOMPLISHMENTS/ACHIEVEMENTS*. We will use the abbreviations ACC and ACH. They are properties of events that are not divisive: P

is an ACCOMPLISHMENT iff for any  $e$ : if  $P(e)$ , then there is no proper subevent  $e'$  of  $e$ , such that  $P(e')$ . While accomplishments have some duration, Achievements have minimal duration, i.e. they are instantaneous events. The properties of being an accomplishment or achievement will be abbreviated as ACC or ACH respectively.

(Krifka, 1989) calls ACCs and ACHs *quantized*. Another term used for ACC/ACHs is 'telic'. We will use telicity in this technical sense, in agreement with the semantic literature.<sup>20</sup> Non-quantized events, i.e. STATIVES and most ACTIVITIES, we will call 'atelic'.

The most thorough discussion of Vendler-Aktionsarten known to us is found in (Dowty, 1979: chap. 3). Dowty has tried to build up V-Aktionsarten systematically by means of a formal language that uses operators like CAUSE, BECOME and AND<sup>21</sup>, together with some primitives for STATIVES and ACTIVITIES. Some linguists believe that this kind of lexical language is a real level of grammatical representation (called Lexical Semantic Structure<sup>22</sup> or Lexical Conceptual Structure<sup>23</sup>). Dowty himself holds the view that his logical language has no theoretical status and merely serves descriptive purposes. This is the view we will adopt in this article. Vendler Aktionsarten are described holistically, but, as we shall see, they are determined by the verb plus its arguments in a fairly systematic way.

### 3.3. Generating Telic and Atelic Verbs

In this section we will define telic and atelic verbs semantically. Furthermore, we will introduce the standard aspectual temporal adverbs that serve as diagnostics for different Aktionsarten.

Most Slavic verbs<sup>24</sup> come in pairs of a perfective and an imperfective form, which are not always strictly synonymous – not a surprising fact for pairs of a different shape. The perfective form always expresses a telic Aktionsart, i.e. an ACC or ACH. The imperfective can express any V-Aktionsart, at least in principle. In many cases, the imperfective verb expresses an atelic Aktionsart, i.e. a STATIVE or an ACTIVITY.

Aktionsarten are not expressed by verbs per se, but by the TENSE- and ASPECT-less VP. Which V-Aktionsart is expressed by a particular VP depends on the semantics of verb and the nature of its arguments. Classic examples illustrating the point are the VPs *pit' vino* 'drink-ipfv wine' and *vypit' vino* 'drink-pfv the wine'.<sup>25</sup> Obviously, the first property is an ACTIVITY: if I am drinking wine at an interval, I am doing so at any subinterval of it down to the length of one sip. But if I drink the (entire) wine at an interval, I cannot drink the entire wine at any subinterval. So the second property is an ACC. There are several ways of making this idea precise. The method best known is presumably the one found in (Krifka,

1989). Krifka thinks that ‘the wine’ is obtained from ‘wine’ by a contextually given measure function that determines a definite amount of wine. If I drink that amount at an interval, the event is obviously telic. Krifka’s theory is applied to Slavic languages in (Filip, 1999).

In this article we will adopt a somewhat different method, which is proposed in (Eckardt, 2002). Eckardt starts from the observation that only indefinite DPs can generate atelic properties, viz. mass nouns and bare plurals. From (Heim, 1982) we know that indefinites come with free variables, which are bound in the syntax.<sup>26</sup> Eckardt’s proposal is that we can generate an ATELIC by introducing a variant of the verb that selects a property and existentially binds it under the event variable. Interestingly enough, this seems to give the correct TARGETS, at least for the core cases. Here are the first meaning rules illustrating the method.

- (47) a.  $\| \text{pit}' \| = \lambda P \lambda e. \exists x [P(x) \ \& \ \text{DRINK}(x)(e)]$ , where P is a property of masses  
 b.  $\| \text{vypit}' \| = \lambda x \lambda e. \text{DRINK}(x)(e)$ , where x is a variable for masses  
 c.  $\| \text{vino} \| = \lambda x$ , where x is a portion of wine

The imperfective VP  $\| \text{pit}' \text{ vino} \|$  is the set of events  $\lambda e \exists x [x \text{ is a portion of wine} \ \& \ \text{DRINK}(x)(e)]$ . Clearly, this property is ATELIC in the sense defined, because if e is a drinking of an amount of wine, then each sub-event of e is a drinking of a (smaller) portion of wine as well. Next, consider the drinking of a particular amount of something. We represent this as  $\| \text{vypit}' x \| = \lambda e. \text{DRINK}(x)(e)$ . This set is not a STATIVE, because if e is a drinking of some particular portion x of some stuff, then no proper sub-event of e is a drinking of that portion x. The important thing is, therefore, that drinking qua STATIVE embeds a property, whereas drinking qua ACC takes an individual.

Here are the representations of complete sentences:

- (48) a. *Olga pila vino desjat' minut/\*za desjat' minut.*  
 Olga drank-ipfv wine 10 minutes  
 ‘Olga drank the wine for 10 minutes’  
 b. PAST<sub>7</sub> for 10 minutes INCLUDED ipfv  $\lambda e [ \text{Olga} \ \text{AG}_e \ \& \ \exists x [ \text{wine}(x) \ \& \ \text{DRINK}(x)(e) ] ]$

Note that sentence (48a) is grammatical under a habitual reading, i.e., when it expresses the proposition that Olga used to drink the wine in ten minutes. The LF in (48b) represents the grammatical case. We will return to the ungrammatical variant in a moment.

Before we continue, a note as to the partitive. Partitive DPs are genuine quantifiers and cannot be incorporated as objects of atelic verbs, for they

require the perfective:<sup>27</sup>

- (49) *Olga vypila/ \*pila vina.*  
 O. drank-pfv/ drank-ipfv wine-G  
 ‘Olga drank some of the wine.’

It follows that the partitive must be interpreted as an operation that applies to an N and makes of it ‘some of the N’.<sup>28</sup> This DP must be quantified into a telic verb for type reasons.

For the adverbial ‘for 10 minutes’ we will tentatively assume Dowty’s (1979: p. 333 ff. ) semantics:

- (50) *desjat’ minut*  
 || for 10 minutes || =  $\lambda P\lambda I[|I| = 10 \text{ min} \ \& \ \forall J \subseteq I: P(J)]$

In Russian, adverbs of duration are expressed as time measure DPs in accusative case. Dowty analyses this adverb simply as a universal quantifier meaning that the modified predicate is true of any moment within a 10-minute period. But he observes that this is not fine-grained enough. Among other things, it would predict that activities can not be modified by *for* adverbials, contrary to the facts. It is quite easy to make the rule work for activities, but examples like *For four years John worked in New York, but he usually spent his weekends at the beach* remain recalcitrant. Perhaps the best way to deal with these is to say that both the main and the subordinate clause express a habitual.

The reader may calculate for herself that the truth conditions provided by the LF in (48b) are correct: the sentence says of the time *I* denoted by  $PAST_7$  that it has a duration of 10 minutes and that at each subinterval thereof includes a drinking of a sip of wine.

Note that we could also have defined the adverb as a quantifier over points if we had wanted to.<sup>29</sup> We want to add that only Dowty’s semantics really *explains* why these adverbs of duration are a crucial diagnostic for stativity. (Krifka, 1989) merely says that these adverbs select a *STATIVE* and measure its length. This is a stipulation because the adverbs could measure the length of *ACCs* equally well, but they don’t.

In order to explain the ungrammatical variant in (48a), recall (Dowty, 1979, p. 335) semantics for durative frame adverbials:

- (51) *za desjat’ minut*  
 || in<sub>1</sub> 10 minutes || =  $\lambda P\lambda I[|I| = 10 \text{ min} \ \& \ \exists! J \subseteq I: P(J)]$

$\exists!$  means “there is exactly one”. Obviously, this temporal quantifier makes sense only for *ACCs/ACHs*. There is never only one *STATIVE* within a

given interval, because STATIVES are divisive. So this adverb cannot modify the AspP, as the reader may check for himself.

The semantics of the adverbial *za desjat' minut* requires an ACC or ACH. This is only possible if the indefinite DP *vino* has wide scope with respect to that adverb. In other words, the LF must be the one given in 52b):

- (52) a. *Olga vypila vino za desjat' minut/\*desjat' minut.*  
 b.  $\text{PAST}_7 \exists x[\text{wine}(x) \ \& \ \text{in}_1 \ 10 \ \text{minutes} \ \text{INCLUDES} \ \text{pfv}]$   
 $\lambda e[\text{Olga} \ \text{AG}_e \ \& \ \text{DRINK}(x)(e)]$

Note that we are forced to choose the ASPECT INCLUDES in order to get the meaning right. Suppose we replace INCLUDES by INCLUDED in the LF, then we would obtain an inconsistent formula:

- (53)  $\# \text{PAST}_7 \exists x[\text{wine}(x) \ \& \ \text{in}_1 \ 10 \ \text{minutes} \ \text{INCLUDED} \ \text{pfv}]$   
 $\lambda e[\text{Olga} \ \text{AG}_e \ \& \ \text{DRINK}(x)(e)]$

There are infinitely many subintervals of the ten minutes that are included in a drinking, so the formula is logically false. This is a welcome prediction in view of our theory that the perfective only licenses the ASPECT POST and INCLUDED.

Also, the explanation given here requires Dowty's semantics. (Krifka, 1989) says of durative frame adverbs only that they modify a quantized event that falls into a time span of some length. Again, this is a stipulation that cannot explain *why* this adverb selects an ACC/ACH.

Delimitative verbs such as *poleĭat'* 'to lay (somewhere) for a while' and perdurative verbs such as *prorobotat'* 'to work through' seem problematic for our approach because they appear to have the subinterval property and therefore seem to be not quantized.<sup>30</sup> Here is an analysis that makes them telic:

- (54) Delimitatives and perduratives as telics  
 a.  $\| \text{poleĭat}' \|^\text{c} = \lambda s \in D_v[\text{LAYING}(s) \ \& \ \tau(s) = \text{short while}(c)].$   
 b.  $\| \text{prorobotat}' \|^\text{c} = \lambda e \in D_v[\text{WORKING}(e) \ \& \ \tau(e) = \text{while}(c)]^{\text{31}}$

„short while(c)“ is a particular short duration specified by the context; while(e) is a duration of a contextually specified time span, say last night. It follows immediately that these verbs are quantized because the state/event that instantiates them must have a particular duration.<sup>32</sup> Note that it is not clear whether *poleĭat'* is a property of states or events. Let us assume that the entry given is correct. A representation of the sentence *ona poleĭatla* would then be this:

- (55) PAST<sub>1</sub> [<sub>AspP</sub> INCLUDES pfv  $\lambda_s$  [<sub>VoiceP</sub> HOLDER(s)(she)  
& [<sub>VP</sub> LAYING(s) &  $\tau$ (s) = short while(c)]]]

Given that the VoiceP can only be true of a state of one particular duration, it follows that it is quantized. The analysis of perduratives proceeds in a similar way.

The generation of atelics by plural nouns as objects of verbs of consumption requires a bit more effort. Consider the sentence:

- (56) *Vova el-ipfv jabloki dva āasa.*  
'V. ate apples for two hours'

First we have to say that the plural noun *jabloki* 'apples' denotes groups of apples.<sup>33</sup> Let us denote group predicates as \*P. Then the two verbs of eating a plural object are these:

- (57) a.  $\parallel$  est'-atelic  $\parallel = \lambda *P \lambda e \exists x \exists y [*P(x) \& y \text{ is a part of } x \& \text{EAT}(y)(e)]$   
b.  $\parallel$  s'est'-telic  $\parallel = \lambda x \lambda e [\text{EAT}(x)(e)]$

The STATIVE 'eat apples' is formalized as  $\lambda e \exists x \exists y [*apple(x) \& y \text{ is a part of } x \& \text{EAT}(y)(e)]$ . This is the event of eating a (different) part of apples at each moment. The part may even be of different apples. We leave it to the reader to represent the two readings appropriately.

We can use this technique for an analysis of (Dowty, 1979, p. 180) example<sup>34</sup>:

- (58) a. *For two weeks, John discovered fleas on his dog.*  
b. *Dve nedeli Ivan naxodil-ipfv v%oej u svoej sobaki.*

The two entries for 'to find' are then these:

- (59) a.  $\parallel$  naxodit'-atelic  $\parallel := \lambda *P \lambda x \lambda e \exists y [*P(y) \& \text{FIND}(y)(x)(e)]$   
b.  $\parallel$  najti-telic  $\parallel := \lambda y \lambda x \lambda e. \text{FIND}(y)(x)(e)$

Omitting the PP 'on his dog', an appropriate representation of the example is therefore this:

- (60) for two weeks INCLUDED ipfv  $\lambda e \exists y [*flea(y) \& \text{FIND}(y)(John)(e)]$

Finding one or several fleas takes place in a moment. Therefore the intervals quantified over must be very short. So the sentence indeed expresses the idea that John finds different fleas at each moment. So despite the use of the ASPECT INCLUDED, the quantification runs over points.

Verbs of creation like ‘to write’ remain the most difficult to analyze. The problem is that the object created exists only through the act of creation. A detailed discussion of different attempts of analysis is found in (Stechow, 2001). The difficult entry is not the telic one, but the atelic. Here is a partial proposal:

- (61) a.  $\| \text{napisat}'\text{-telic} \| := \lambda x \in D_e. \lambda e \in D_v [\text{WRITE}(e) \ \& \ \text{cause}(x)(e)]$   
 b.  $\| \text{pisat}'\text{-atelic} \| := \lambda x \in D_e. \lambda e \in D_v \exists y \in D_e [y \subseteq x \ \& \ \text{WRITE}(e) \ \& \ \text{cause}(y)(e)]$

Here, ‘cause’ should be defined in such a way that the caused object exists completely only at the end of  $e$ . Definition (61b) makes the verb atelic, but the object  $x$  is purely extensional. The following would be a representation of the AspP *pisat' pis'mo dva āasa* ‘writing a letter for two hours’, where we represent the two hours simply as  $I$ :

- (62)  $\exists x [\text{LETTER}(x) \ \& \ \forall J \subseteq I: \exists e [J \subseteq \tau(e) \ \& \ \exists y [y \subseteq x \ \& \ \text{WRITE}(e) \ \& \ \text{cause}(y)(e)]]]$

This makes sense only if the entire letter exists not earlier than at the end of the interval  $I$ , though parts of it exist before that. In case the letter is never finished, we have to modalize the statement by means of Dowty’s and Landman’s (1992) progressive operator. Note that we cannot give the quantifier ‘a letter’ narrow scope with respect to  $\lambda e$  because that would make the reading too weak: we would not know that the parts are parts of the same letter.

With respect to adverbs of duration and durative frame adverbs, ACC/ACH and ACT/STATIVES form disjoint classes. But there is another meaning of the PP *in 10 minutes* with respect to which ACH and STATIVES pattern together. This meaning can be paraphrased as “after 10 minutes from  $t$  on”, where  $t$  is an anaphoric variable referring to some contextually given time (which in German must be the speech time). In Russian, this meaning is expressed by the preposition *āerez*, in Italian by the preposition *fra/tra*. It follows that the English temporal preposition *in* is ambiguous.

- (63) Russ. *āerez*, Engl. *in*<sub>2</sub>  
 $\| \text{āerez } 10 \text{ minut} \| = \| \text{in}_2 \text{ } 10 \text{ minutes} \| = \lambda t \lambda P \lambda t' [\text{distance}(t, t') = 10 \text{ min} \ \& \ P(t')]$

The semantics of this adverb presupposes that both the reference time  $t$  and the “goal time”  $t'$  are points. (In German, *in*<sub>2</sub> is even confined to the speech time, i.e. the preposition is deictic.) Here are two examples illustrating the

use of this PP:

- (64) a. *âerez desjat' minut Vova budet spat'-ipfv.*  
 'In<sub>2</sub> 10 minutes V. **will sleep.**'  
 b. *âerez desjat' minut my ujdém-pres-pfv.*  
 'In<sub>2</sub> ten minutes we **will leave.**'

It is interesting to note that the LFs for the two examples are structurally virtually identical.

- (65) a.  $\exists_7$ [<sub>TP</sub> FUTR<sub>7</sub> pres [<sub>AuxP</sub> byt in<sub>2</sub> 10 minutes(<sub>t<sub>c</sub></sub>)  
 [<sub>AspP</sub> INCLUDED ipfv SLEEP(Vova)]]]  
 b.  $\exists_7$ [<sub>TP</sub> FUTR<sub>7</sub> pres in<sub>2</sub> 10 minutes(<sub>t<sub>c</sub></sub>)  
 [<sub>AspP</sub> INCLUDES pfv LEAVE(we)]]]

The auxiliary *byt'* in the first example checks the semantic FUTR in the TP-head. There is an interesting difference in temporal behavior for the two sentences: while the sleeping of Vova may have started before the ten minutes were over, the leaving takes place exactly at that point. This prediction is borne out by the facts.

In addition, the second sentence can express a future perfect reading that can be triggered by means of the adverb *uļe*.

- (66) *âerez desjat' minut my uļe ujdém-pres-pfv.*  
 'In ten minutes, we **will have gone** already.'

It is the telicity of LEAVE that licenses the ASPECT POST. Sentence (64a), however, cannot mean that Vova will be after a sleeping, even if we add *uļe*.

The conclusion to be drawn from this section is that the telicity or atelicity of Russian verbs is a matter of the scope of the indefinite object with respect to the operator binding the event variable. We know from (Verkuyl, 1972) that the nature of an Aktionsart is determined compositionally: also the scope of an indefinite subject matters and the lexical contribution of certain adverbs. For the time being, we may say that the lexicon contains two versions of verbs, the telic and the atelic version. Closer inspection, however, reveals that the root of the verb ultimately always has a telic interpretation in the sense that the entire object is affected by the object. This might not be desirable, but the ontology of the standard logic enforces this view.<sup>35</sup> We think that the findings of this section are in agreement not only with the aspect theory in (Schoorlemmer, 1995: chapter 5), but also with the descriptive insights of (Forsyth, 1970) and much of the literature. As we will see, we will have to differentiate among telic verbs: in addition to the

1-state verbs we have discussed in this section, there will also be Klein's 2-state verbs.

### 3.4. The "Meaning" of Aspect Morphology

At the risk of repeating it *ad nauseam*: aspectual morphology has no fixed meaning. The perfective morphology does two things: it marks the VP as telic, a semantic property, and it licenses two different temporal embeddings, INCLUDES and POST. Thus, the perfective has at least two meanings. A third one will come into play when we return to the past passive participles. The imperfective morphology stands in *privative opposition* to the perfective morphology (cf. (Jakobson, 1932)); it signals the lack of a semantic notion and consequently has many more uses than the perfective. This picture of aspect faces the danger of making very weak empirical predictions for the use of the imperfective, but we think the picture is dictated by the facts. Let us briefly point out where we consider ourselves to be in agreement with the tradition and where we are not.

(Krifka, 1989) conceives of the perfective aspect as a sort of filter that checks whether a VP is telic in the sense defined above. We subscribe to that view. Our addition is that this morphology licenses the two said temporal embeddings.

(Klein, 1995) emphasizes the need to study the temporal behavior of aspect and tries to give a summary of the variations of the definition of the perfective-imperfective distinction:

1. The situation is presented in its totality – not in its totality ((Cherny, 1877)). Here are two typical citations belonging to that tradition: „Der perfektive Aspekt drückt einen Vorgang als ganzheitliches, zusammengefaßtes Geschehen aus, der imperfektive Aspekt läßt dieses Merkmal unausgedrückt.“ ((Isachenko, 1968: p.350)); “A perfective Verb expresses the action as a total event summed up with reference to a single specific juncture.” (Forsyth, 1970:8); (Comrie, 1976) characterizes the perfective similarly.

2. The situation is presented as completed – not completed. (Miklosich, 1883: 274).

3. Presence – absence of an (internal) boundary: (Jakobson, 1932), (Vinogradov, 1947), (Timberlake, 1982), (Timberlake, 1984), (Dahl, 1985), (Bondarko, 1987), (Bondarko, 1990). Bondarko makes fine distinctions between internal/external, real/potential, explicit/implicit, absolute/relative boundaries. For instance, a boundary is absolute if the action could not be prolonged, a modal notion.

4. Viewed from outside/inside: (Ruzhichka, 1952: 4, 165): „Der perfektivisch ausgedrückte Prozess liegt geschlossen im Blickfeld des Sprechers

und wird ‘gleichsam von außen in einer perspektivischen Sicht’ in seiner Gesamtheit übersehen.”

(Klein, 1995) criticizes the traditional definitions of aspect as obscure and refutes each definition by giving counterexamples. He proposes a reconstruction in terms of the three “ASPECTS” introduced above. We accept the idea that aspects have a temporal dimension, but we believe that “aspect” has a second dimension viz. that of being systematically connected with V-Aktionsarten. In particular, the Perfective marks a telic VP, at least in the core cases. We think that this view of the aspect architecture is in agreement with (Smith, 1991).

(Schoorlemmer, 1995, p. 128) tries to give rules that connect the aspect morphology with the semantics:

(67) Aspect distribution according to (Schoorlemmer, 1995: 128)

+inh	=>	perfective
imperfective trigger	=>	imperfective
both	=>	*
neither	=>	compositional aspectuality:
+telic	=>	perfective
-telic	=>	imperfective

By ‘compositional aspectuality’ Schoorlemmer has in mind the semantic contribution of different objects (mass nouns, plurals etc.) to the determination of telicity/atelicity, which we have discussed in section 3.3. She gives no semantics for the composition, but uses the feature formalism invented by (Verkuyl, 1972). [+inh] marks verbs that are always perfectives (e.g. *poexat* ‘start driving’, *pojti* ‘start going’, *zaplakat* ‘start crying’). They express achievements. Among the imperfective triggers are “aspectual operators” like PROGRESSIVE, the GENERICITY operator, the HABITUALITY operator, certain adverbs and adverbials of temporal quantification (*vsegda* ‘always’, *každyj den* ‘every day’, *bol’šee ne* ‘never again’), certain negated modals (*nado*, *nužno*), the so-called *general factivity* (konstatacija fakta dejstvija, something like the “existential perfect”), *telic presupposition*: an event is presupposed, but certain details are added or corrected: *Kto ukladyval-ipf veščai v äemodan* ‘Who is the one who put my stuff into the suitcase?’.

The hard task is to describe the imperfective triggers precisely. First, there are the verbs that are inherently imperfective. These should enter the rules as well. Then there is the conative use. The imperfective is generally used in the historical present. There are the “two-way” actions: *Ja bral-past-ipfv knigu v biblioteke*. ‘I took the book from the library (and brought it back.)’ There is the conative use (*Tina zvonila-ipfv k Gejzmanam, zvonila-ipfv otcu i ne mogla dozvonit’sja-pfv*. ‘Tina rang the Geizmans and

her father but couldn't get through.' (Forsyth, 1970: 100)) Non-occurrence of an event of certain type (*Ona ni na minutu ne umolkala-ipfv*. 'She was never silent for a moment.' (Forsyth, 1970: 107)) also triggers the imperfective. Forsyth gives many examples that show that there is a great deal of freedom in using the imperfective (cf. e.g. verbs of speech<sup>36</sup>). Reading his book, one gets the impression that it is hopeless to find a few factors as triggers for the imperfective. Even if we could enumerate all the factors that trigger the imperfective, there seems to be no structural functional category that could somehow be linked with an imperfective feature in AspP. In any case, we do not feel competent to say anything revealing about the imperfective. For the time being, we follow the line indicated by Jacobson and Forsyth: there is no such thing as the meaning of the imperfective; this 'aspect' is really a non-aspect.

The more interesting question is whether perfective morphology can be used without licensing the viewpoint aspect PERFECTIVE. Possible counterexamples are found in (Mehlig, 1999, 198 f.). They all involve habituality or a sort of law. Consider the following sentence:

- (68) *Krugom ti%oina. Li%o' vremja ot vremeni*  
 in-the-round silence. Only from-time to time
- gde-to zapoet-pfv ptica i opjat' tixo.*  
 somewhere sings-pfv bird and again silent

The perfective present form is embedded under a habituality operator that gives us a large interval surrounding the speech time. Within that interval, the PERFECTIVE may localize the event time. The IMPERFECTIVE is possible under the habituality operator as well, of course. The surrounding time span can be introduced explicitly, e.g. the verb *byvaet* 'it happens'.

- (69) *Byvaet, āto zaderĭitsja-pfv i prixodit-ipfv tol'ko v devjat'.*  
 'It happens that he is kept back and returns only around 9 o'clock'  
 (Mehlig, 1999, p. 190)

Arguably, the present in the subordinate doesn't denote the speech time, it rather is a bound variable. The complex VP *Byvaet, āto zaderĭitsja-pfv* means something like  $\lambda s. \exists t[\tau(s) \subseteq t \ \& \ \exists e[\tau(e) \subseteq t \ \& \text{keeping-back}(e)(\text{him})]]$ , where  $t$  is the PRES-variable bound by the matrix verb and the information  $\tau(e) \subseteq t$  comes from INCLUDED. For tenses as bound variables, see (Kratzer, 1998).

Laws are modalized and omnitemporal, hence present perfective forms are possible in lawlike statements such as *Saxar rastvoritsja-pfv, esli dobavi%o' vodu* 'Sugar dissolves if you add water'. So these are no coun-

terexample for the theory that perfective morphology licenses telicity.

### 3.5. A note on habituality

In view of the fact that a large part of present statements are interpreted as habituals, it is important to have at least an idea about what their interpretation could be. Schoorlemmer assumes a HAB-operator, which does two things: (a) it triggers the imperfective; (b) it binds the event variable of the verb (cf. section 4.2.2). We think that the first claim is correct; however, we will argue that the second claim cannot be true. Consider one of the examples given by S. on p. 110:

- (70) *My kaľdyj god ezdili/\*poexali na kurort.*  
 we every year went-IMP to spa  
 ‘We went to the spa every year.’

The habitual reading can be paraphrased as: “We used to go to the spa every year.” Clearly, the information HAB is contained in the control (or perhaps raising) verb ‘use to’. This verb does *not* bind the event variable of the VP. This becomes clear as soon as we paraphrase the intended meaning, which must be something like this:

- (71) There is a past time I which is contained in a larger interval K such that for every year in K:  $\exists e[e \text{ is contained in } K \ \& \ e: \text{ we go to the spa}]$

Obviously, the event variable is bound by the ASPECT INCLUDED. HAB on the other hand, must bind the reference time. As a very first approximation, we can say the following:

- (72) HAB is of type (it)(it). It is defined only for summative properties of intervals, more accurately ‘habits’.  
 $\| \text{HAB} \| := \lambda P \lambda I \exists J [I \subseteq J \ \& \ P(J)]$

The definition has the consequence that HAB(P)s are STATIVES. The LF of (70) is, therefore, something like the following expression:

- (73) PAST HAB  $\lambda I [kaľdyj \text{ god}(I) \lambda_1 [INCLUDES \text{ my ezdit}' \text{ na kurort} [IN \ t_1]]]$   
 $= \text{PAST } \lambda I \exists J [I \subseteq J \ \& \ \forall K [\text{year}(K) \ \& \ K \subseteq J \rightarrow \exists e [e: \text{ we go to the spa} \ \& \ \tau(e) \subseteq K]]]$

The formula makes it transparent that HAB binds the time variable of

‘year’, whereas the event variable of the verb is bound by INCLUDED. Sentences involving the quantifiers *never*, *seldom*, *often* etc. are treated in same fashion. Closer inspection would reveal that we have a problem with compositionality: the HAB-operator does not modify ACTs; rather, it takes predicates of intervals that are characterized by an activity distributed somehow over the interval. The important thing is that the entire interval is so described. ‘John calls three times’ is not a habit, but ‘John always/never/seldom calls three times’ is one; the reason is that the first property does not describe a summative interval, but the second does. More has to be said about HAB, whereas our rough sketch certainly reconstructs Verkuyl’s dictum that these sentences are “internally perfective and externally imperfective”: the internal ‘perfectivity’ is reconstructed as INCLUDES, the external ‘imperfectivity’ is reconstructed by the semantics of HAB, i.e. the relation  $\subseteq$  = INCLUDED.

#### 4. Active Perfect readings

##### 4.1. PERFECT licensing

This section provides data that support what we have called for a number of years the

- (74) *PERFECT over Perfective Principle*<sup>37</sup>  
 Perfective morphology licenses PERFECT (and PERFECTIVE) ASPECT.

PERFECT and PERFECTIVE are to be taken in their technical sense, i.e. the terms are synonyms for POST and INCLUDES defined in (40). So the principle might be more appropriately be called POST over Perfective Principle. It could be that the principle defined in terms of telicity, i.e. perhaps one could say that any telic VP licenses POST and INCLUDES, regardless of what morphological aspect it has. The principle immediately entails that there should be pluperfect readings and future perfect readings in Russian.

Note that the principle does not exclude the possibility of having PERFECT over Imperfective as well. The principle only says that perfective VPs are quite generally ambiguous with respect to their location time. As B. Comrie (p.c.) remarks, the explicit statement of the principle might be even confusing, for the data in the following sections show that the PERFECT is licensed quite generally under past morphology. So we need an additional descriptive principle:

(75) Past morphology licenses PERFECT.

The only verbal morphology that doesn't license PERFECT seems to be the infinitive imperfective, e.g. the *budu* future.

#### 4.2. Pluperfect Readings

The following examples have been taken from the literature. They clearly exhibit pluperfect readings. The best descriptions of the phenomenon known to us are found in (Forsyth, 1970).

(76) *Èto bylo v stolovoj. Vse poobedali-past-pfv, razo%dis'-past-pfv. Koroteev sidel-past-ipfv odin...* (Erenburg:Ottepel')  
 'It happened in the canteen. Everyone **had had lunch** and **dispersed**. Koroteev was sitting alone...' (Forsyth, 1970, p. 93)

Clearly this example and the following ones must be analyzed as PAST POST perfective. Note that the first VP is an ACT and must be maximized in order to obtain the property 'telic'.

(77) *Ispugannyj neudañej, Uxanov neskol'ko dnej nazad pozvonil-past-pfv Baxirevu, prosja soveta i pomo%ãii.* (Nikolaeva: Bitva v puti.)  
 'Scared by his lack of success, Uxanov **had phoned** Bakhirev several days before and asked for advice and assistance.' (Forsyth, 1970, p. 101)

The following example must have the same analysis as the previous one.

(78) *Ona poxudela-past-pfv i podurnela-past-pfv, i na ulice vstreãnye uñe ne gljadeli na neé kak preñde, i ne ulybalis' ej.* (ãexov, quoted after (Maslov, 1987: 208))  
 'She **had lost weight** and **had become ugly**, and on the street the passengers didn't look and smile at her as they had done before.'

In this example, 'she loose weight' and 'she become ugly' are accomplishments and therefore correctly selected by the perfective.

(79) *... a gde vzjat' e%ãe takuju Alju? Takuju umnuju, gostepriimnuju, Alju, kotoraja uñe sdala-past-pfv kandidatskij minimum, a potom, soobraziv, ãto na svete su%ãestvuet neãto vañnee dissertacij, brosil-past-pfv rabotu i rodila-past-pfv L'vu Petroviãu srazu dvux prelestnyx detej.* (Kaverin, V.: Dvuxãasovaja progulka)

‘...but where to take such an Alja? Such an intelligent and hospitable Alja, who **had passed** the first exams already and then, after having thought that there were more important things in this world than a dissertation, **gave up** her work and **bore** Lev Petrovich two sweet children at once.’

The relative clause is a clear case of a PAST POST reading, but try to link the statement ‘Alja pass the exams’ precisely with time and you will see how difficult this is. Perhaps the forms *brosila* and *rodila* are best analyzed as pluperfects as well.

- (80) *Na poroge stojala molodaja Īen%āina v āérnom plat’e. Oāevidno, ona toropilas’-past-ipfv vyjti k nemu i ploxo priāesalas’-past-pfv.*  
(K. Paustovskij, quoted from (Maslov, 1987))  
‘In the door stood a young lady in a black coat. Obviously, she **had come** in a hurry and she **had combed** (her hair) badly.’

It is not clear what the best analysis of the imperfective form *toropilas’* should be. Perhaps we have the combination PAST XN INCLUDED ipfv VoiceP, because the coming in a hurry takes place during the entire perfect time span. The perfective verb *priāesalas’* is presumably best analyzed as PAST POST VoiceP.

- (81) – *Pomilujte, da vy razve veruju%āij? - sprosila ja , pamjatuja, āto sovsem nedavno on sdaval-past-ipfv ěkzamen po filosofii .* (Krestiny. "Izvestija")  
‘ – Excuse me, but are you a believer? – I asked, thinking of the fact that he had passed his exam in philosophy not long ago.’

Our system suggests that this is a PAST POST ACC reading. A puzzling consequence is that the temporal adverb *nedavno* ‘not long ago’ should modify a property of events then, because the adverb is in the scope of POST. Temporal adverbs should modify times directly. So there might be something wrong with our system.

- (82) *V xaraktere pojavilis-past-pfv nesvojtvennye emu ran%oe āerty re%aitel'nosti i ĩestokosti. Tri ěpizoda postepenno vospitali-past-pfv v něm ěti novye āuvstva...* (Il'f and Petrov: Dvenadcat' stul'ev)  
‘In his character there **had appeared** traits of resoluteness and harshness which previously were not part of him. Three episodes **had nurtured** these new feelings in him.’ (Forsyth, 1970, p. 64)

Both verb forms are presumably PAST POST ACC readings. We don’t

have a clear idea of why the first form is in the imperfective, the second in the perfective.

- (83) *Ètot poezd vstretil-pfv gde-to kur'erskij sostav, begu%ãij na Dal'nij Vostok, èti vagony videli-ipfv ego pozle, ãem rasstalas'-pfv Frosja so svoim ljubimym ãelovekom...*(Platonov, Fro.)  
 ‘Somewhere on its way this train **had encountered** the express dashing towards the Far East; these carriages **had seen** (in English, we would have to use past perfect continuous here) that express since the time Frosja **had parted** with her beloved.... (Forsyth, 1970, p. 68)’

All of these have the PAST POST interpretation. There is no perfective synonym for the verb *videt*’. Perhaps this is the reason for the choice of the imperfective form.

- (84) *Xodila ona na snosjax, no zakonno: v pro%dom godu letom priezãal-past-ipfv Gavriila iz polka, privéz-past-pfv Èene pol'skogo sitca, progostil-past-pfv nedolgo...* (·oloxov: Tixij Don.)  
 ‘She was pregnant, but it was quite legitimate. Gavriila **had come** on leave the previous summer, bringing her some Polish calico, and had stayed for a short time... (Forsyth, 1970: 80)’

The two perfective forms certainly express PAST POST readings; the use of the imperfective in the first form must be purely denotative, i.e., it describes the occurrence of an event within an Extended Now. So this is perhaps an XN INCLUDES reading.

- (85) *Ona videla-past-ipfv v okno zatjlok Volodi, ego seruju %oljapu i seroe pal'to, kotoroe oni vmeste pokupali-past-ipfv, radujas', ãto udalos'-past-pfv podobrat' v ton i ãto vsë èto tak idët Volode.* (Nikolaeva: Bitva v puti.)  
 ‘Through the window she saw the back of Voldoya's neck, the grey hat and coat which they **had gone to buy** together, and they **had been** so glad that they were a good match and suited Volodya so well.’ (Forsyth, 1970: 86)

Again, we find this curious imperfective/perfective change. The first verb has perhaps an PAST XN interpretation, the second one a PAST POST interpretation.

We have seen quite a number of imperfective verbs that have pluperfect interpretations. Another famous case are the so-called two-way-actions

(e.g., taking – bringing back), which are illustrated by the following example:

- (86) *Da, ja äital-past-ipfv ètu knigu. Ja bral-past-ipfv eë v biblioteke.*  
 ‘Yes, I have read that book. I **had it out** of the library.’  
 (Forsyth, 1970: 60).

This is best analyzed as PAST POST.

#### 4.3. Future Perfect readings

Future Perfect readings have present perfective morphology and FUTR POST semantics. As in English and German, these readings are rather marked, but their existence has been noticed for a long time by grammarians. Here are just two examples cited from Forsyth.

- (87) *Mne budet legãe, kogda skaïu-pres-pfv emu.*  
 (Forsyth, 1970, p. 135)  
 ‘I shall feel better when I **have told** him.’  
 ‘Ich werde mich besser fühlen, wenn ich es ihm **gesagt habe**.’ (German)

As Forsyth notes, even in English we generally omit the future auxiliary *will* in these constructions. The same is true for German.

- (88) *K tomu vremeni, kogda ty uvidi%o’-pres-pfv ego, ja uë skaïu-pres-pfv emu.*  
 (Forsyth, 1970: 135)  
 ‘By the time you see him I shall already have told him.’

The following example illustrates a case of so-called asyndetic subordination: the first sentence has the meaning of a temporal adjunct clause without there being a syntactic ‘syndesmos’ (conjunction) between the two:

- (89) *Katja zapisyvala i govorila: ‘Srok - dve nedeli. Proãtel’-pres-pfv i prixodi-imp-ipfv snova.’* (Nilin: Îstokost’)  
 ‘Katya registered the book and said: ‘You get it for two weeks. When you’ve **read** it, come back.’ (Forsyth, 1970: 137).

Clearly, we find a future perfect reading here.

## 4.4. XN-Readings

For XN-readings, the imperfective is expected for the simple reason that a telic VP must be located entirely within the XN, which is not the case for the so-called “universal perfect”, a reading exhibited by the following two sentences.

(90) *Kogda my pri%di, on Īdal-past-ipfv uĭe āas.* (Forsyth, 1970: 69)  
‘When we arrived he **had** already **been waiting** for an hour.’

(91) *On Īil-past-ipfv tam uĭe god, kogda otec umer.*  
‘He **had been living** there for a year when his father died.’  
(Forsyth, 1970: 69)

The following example illustrates the purely denotative use of the imperfective, the “declaration that the fact happened”. The traditional term is ‘konstatacija fakta dejstvija’.

(92) *Vse sāitali ego obrazovannym āelovekom. On āital-past-ipfv Lenina.*  
‘Everyone took him for a knowledgeable person. He **had read** Lenin.’

The corresponding English construction would be that of an “existential pluperfect”, i.e. an Extended Past plus an existential adverb. The analysis of the sentence could be this:

(93) PAST<sub>i</sub> XN ipfv INCLUDES he read Lenin  
=  $\exists t[XN(t, PAST_i) \ \& \ \exists e[\tau(e) \subseteq t \ \& \ \text{READ}(e)(\text{Lenin})(\text{he})]]$

This is a case where the imperfective carries a PERFECTIVE viewpoint aspect. The “perfect of experience” analyzed in the same way. The following example is taken from (Mehlig, 1999);

(94) *Vy uĭe vstreāalis`-ipfv-past?*  
‘Have you met already?’

The analysis is PRES XN INCLUDES.

## 5. Past passive participles: Perfect of result

### 5.1. Lexical and syntactic PPPs

As in English and German, there are lexical participial passives in Russian, i.e. words that are adjectives without internal syntactic structure and with idiosyncratic meaning. In other words, PPPs can be formed by the rules of word formation. We are not interested in these. But PPPs can also be formed in the syntax by attaching the functional category Part to a passivized VP, i.e. a VoiceP. Hence we need a sort of “parallel morphology” in the style of (Baker, 1988) or (Borer, 1997), as correctly pointed out by Schoorlemmer (cf. the reference cited in (Schoorlemmer, 1995)). The participle head introduced in the syntax has a constant meaning, which may be called grammatical meaning. It is the TARGET-component, whose semantics will be made precise in the next section. The distinction between lexical and syntactic past participles occurs in English and German as well. For instance, the sentence *The bud is still closed* can be translated into German either as (95a) or as (95b):

- (95) a. *Die Knospe ist noch geschlossen.* (participle)  
 b. *Die Knospe ist noch zu.* (adjective)

There was no preceding event that caused a transition of the bud from being open to being closed, but the use of the participle is appropriate. Hence it has a purely adjectival meaning expressing the state of being closed. But the participle *abgeschlossen* “being closed by means of a key” only has a TARGETative meaning. So looking at Russian PPPs, we must always reckon with the possibility that a PPP is simply an adjective with idiosyncratic meaning. (Schoorlemmer, 1995: 218) mentions the adjectival participle *ĭevannyj* ‘crumpled’, which is derived from the verb *ĭevat* ‘to chew’, which means something quite different, so the participle has obviously undergone semantic drift and is therefore not formed in the syntax. By definition, there is no systematic theory for the meaning of adjectival participles, and we will not be concerned with these. Our discussion is confined to syntactic PPPs.

### 5.2. The Result Parameter

The theory of target states assumed here has been outlined in section 1 already. We start by making some details more precise. The main idea is that the eventive verbs are divided into those that give us a lexically specified target state and those that do not. Verbs of the first class may be called resultative verbs; they are precisely those verbs that (Klein, 1994) calls 2-

state verbs. The TARGET-operator externalizes the target state and existentially binds the event argument. It is morphologically realized as the PPP in Russian and as the adjectival passive in German and English. TARGET maps a relation between events into states into a property of states and may therefore be called a *stativiser*.<sup>38</sup> Recall our analysis of *The window was closed*:

- (96) *The window was closed./ Das Fenster war geschlossen.*  
 SS:  $[_{TP} \text{the window}_4 \text{ was } [_{PartP} \text{-ed } [_{VP} \text{close- } t_4]]]$   
 LF: **the window**  $\lambda_4$  PAST<sub>5</sub> [INCLUDED  
 $[_{PartP} \text{ TARGET } [_{VP} \text{close- } t_5]]]$

It is unclear whether we need an extra functional AspP as a carrier of the ASPECT INCLUDED or whether that information is simply adjoined to the PartP. The semantic information is also contained in the SS. We have separated it for expository reasons. For convenience, we repeat the definitions of TARGET and **close-**:

- (97) a. TARGET is of type  $(v(vt))(vt)$ , where  $v$  stands for the event/state type.  
 $\parallel \text{TARGET} \parallel = \lambda R \lambda s \exists e. R(s)(e)$  (Kratzer, 2000)<sup>39</sup>  
 b. **close-** is of type  $e(v(vt))$   
 $\parallel \text{close-} \parallel = \lambda y \lambda e \lambda s [\text{cause}(s)(e) \ \& \ \text{closed}(y)(s)]$

We don't believe that an extensional definition of 'cause' is possible; rather, we need something like Lewis' and Dowty's relations of CAUSE, a modal notion defined by means of causal dependency.<sup>40</sup> For the purposes of this paper, we will ignore the difficulty, however. By mechanical calculation (using functional application) it can now be established that the LF expresses the reading  $\exists s [\text{PAST}_5 \subseteq \tau(s) \ \& \ \text{closed}(\text{the window})(s) \ \& \ \exists e [\text{cause}(s)(e)]]$ . German and English certainly have this LF, but Russian PPPs must have a more complex representation, namely one that includes the agent of the closing. Before we introduce that, we consider the representation of active sentences.

The active 2-state verb needs an *eventizer*, which existentially closes the state variable and externalizes the event variable:

- (98) EVENT is of type  $(v(vt))(vt)$ , where  $v$  stands for the event/state type.  
 $\parallel \text{EVENT} \parallel := \lambda R \lambda e \exists s. R(s)(e)$

An active counterpart of sentence (96) consequently has the following LF:

- (99) *Ma%oa zakryla-pfv okno/Mary closed the window.*  
**Ma%oa**  $\lambda_5$  PAST<sub>i</sub> [<sub>AspP</sub> INCLUDES  $\lambda_e$ [<sub>VoiceP</sub> AG<sub>e</sub>(t<sub>5</sub>) & [<sub>VP</sub> EVENT  
**close the window**]<sub>e</sub>]]

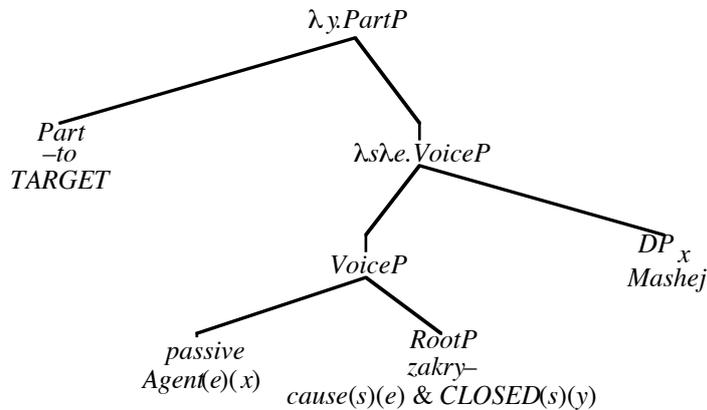
Again, the reader may convince her/himself that the LF has a precise meaning, viz. that a particular past time includes an event with Ma%oa as agent, and this event generates the TARGET that the window is closed.

This is how it works in German and English, but the Russian PPPs must be able to include the subject of the action, as we know from the examples given in the first section and as will become clear from many more examples. Recall from section 2.2. that the following sentence is not an eventive passive, but rather an adjectival one.

- (100) a. *Okno zakryto Ma%cej.*  
 window closed Ma%oa-I  
 ‘The window is in the state of **having been closed** by Ma%oa.’  
 b. *Okno zakryto special’no.*  
 window closed deliberately  
 ‘The window is in the state of **having been closed** deliberately.’<sup>41</sup>

So the LF for Russian PPPs must be something like this:

- (101) Russian Participial Passives



The Voice head and the VP must be interpreted conjunctively, of course. The instrumental Ma%cej plays the role of the English by-PP. The index x is interpreted as the movement index λx. The passive-feature must do two things: (a) it must assign structural accusative to the agent x; (b) it must make x syntactically inert, i.e. the accusative must not be able to be checked via movement to a case position.<sup>42</sup> This is, of course, the GB-

theory of the passive. But the passivized agent can be made visible by means of an adjunct, here ‘by Ma%oa’. The PartP correctly expresses the property  $\lambda y \lambda s \exists e [\text{Agent}(e)(\text{Ma}\%oa) \ \& \ \text{cause}(s)(e) \ \& \ \text{closed}(y)(s)]$ .

The parameter that distinguishes Russian from English and German is therefore the following:

(102) The Result-parameter

English/German: [<sub>Part</sub> TARGET ] selects an agentless VP.

Russian: [<sub>Part</sub> TARGET ] selects a VoiceP [+passive].

This account reconstructs Schoorlemmer’s intuitions about the Russian PE: (a) the effects of the action are valid at the reference time; and (b) the PE cannot be analyzed in purely temporal terms. Both properties are explained by the interaction of the lexical semantics of 2-state-verbs and the TARGET-operator. A description in temporal terms is not possible: PPPs are STATIVES, which are predicated of the event time. But they are special STATIVES in so far as they have been generated by an immediately preceding event. The fact that Russian PPPs can only be formed of transitive verbs should follow from the TARGET parameter plus an appropriate theory of the Russian passive. As in English, the passive feature requires a Voice-head that embeds a VP with an argument in Russian.

As said initially, Greek *men*-PPPs seem to pattern together with Russian PPPs. Here are some of the many data presented by (Anagnostopoulou, this volume) illustrating the claim:

- (103) a. *Ta keftedakia ine prosektika tiganis-mena.*  
 the meatballs are carefully fried  
*Manner Adverb possible*
- b. *Ta keftedakia ine tiganis-mena apo tin Maria.*  
 the meatballs are fried by the Mary  
*Apo-phrase possible*

Details aside, the analysis of Greek and Russian must be alike in these constructions.

We now have the tools available to analyze many relevant data that have been treated under the label ‘perfectnost’ in the literature. We think particularly of (Maslov, 1987).

## 5.3. PPP-data

## 5.3.1. PPPs modified by ‘since’-adverbials

We start with data that combine the ‘since’ adverbials with PRES and PPP. In English, since-adverbials are ‘perfect level’ adverbials, i.e. they combine only with tenses formed by means of *have*.<sup>43</sup> These are prototypical ‘perfect readings’. Russian behaves here essentially like German, where a ‘since’ adverbial introduces an XN and specifies either its left boundary or its length. The AspP must be stative and is predicated of the XN<sup>44</sup>:

- (104) a. *On uvolen s 30 ijunja.*  
 he fired since 30 June  
 ‘\*He **has been fired** since June 30<sup>th</sup>.’  
 (Maslov, 1987, p. 197)
- b. *Er ist seit dem 30. Juni entlassen.* (German)

The sentences mean: “There is a time I starting with June 30<sup>th</sup> and reaching up to now such that during I he is in the target stated of having been fired”. The time I is precisely the XN introduced by the adverbial. The English paraphrase is not acceptable for most speakers. The German sentence is a literal translation of Russian, i.e. German uses the present. The meaning of this ‘since’ is described as:

- (105)  $\|s\| := \lambda t \in D_i. \lambda P \in D_{vt}. \lambda t' \in D_i. \exists t'' \in D_i. [XN(t'', t') \ \& \ LB(t'') = t \ \& \ P(t'')]$ , where STATIVE(P)

LB means ‘left boundary of’. The analysis of the example is this:

- (106) PRES s 30 ijunia [<sub>PartP</sub> TARGET on uvol-]

It is not even necessary to have an ASPECT in this construction because “since t” converts a predicate of events into one of times. Note that the PartP is a STATIVE although the verb underlying the PartP is telic, a fact that has been observed by Schoorlemmer and certainly many others. We would like to stress that the “assertion” made by the sentence is not made about the ‘tense time’, i.e. the time denoted by PRES, but rather about the time interval introduced by the adverb *s 30 ijunia*. Cf. (Musan, 2001) and (Stechow, 2002a) for an analysis of German ‘since’ along these lines.

The following example has essentially the same analysis but is interesting for the fact that this seems to be a PPP that is TARGETative but not transitive, at least not in an obvious sense. So claims that PPPs can only be formed from strictly transitive verbs must be qualified, it seems.

- (107) *V komnate nakureno so vāera%onego dnja.*  
 in room-P smoked-PPP-neutr since yesterday-Adj day-G  
 ‘The room **has been full of smoke** since yesterday.’  
 (Maslov, 1987: 197)

The other version of ‘since’, which gives us the length of the introduced XN, is expressed by a time denotation in the accusative. For example, *dva dnja* can mean  $\lambda P\lambda t\exists t'[XN(t',t) \ \& \ |t'|\ = \ 2 \ \text{days} \ \& \ P(t')]; |t'|\$  is the length of the interval  $t'$ .

- (108) a. *Magazin zakryt dva dnja.*  
 the-shop closed two days  
 ‘The shop **has been closed** for two days.’  
 (Maslov, 1987: 197)  
 b. *Das Geschäft ist seit zwei Tagen geschlossen.* (German)

Be aware that this is a Present Perfect reading, which is *not* translated into German as *Das Geschäft ist für zwei Tage geschlossen*. The adverbial appropriate for that interpretation would be *na dva dnja*. The following example has the same analysis as the previous one.

- (109) *Fortoāka otkryta uļe oāen' dolgo.*  
 the-window opened already very long  
 ‘The window **has been opened** for a long time.’  
 (Maslov, 1987: 197)

Here is an example of participle that is presumably best analyzed as an adjective:

- (110) *Vot uļe tri goda ja prikovana k posteli,*  
 particle already three year-G I(am) confined to bed  
  
*otorvana ot ĭizni, ne mogu trudit'sja .*  
 kept-apart from life, not can work

‘For three years **I have been confined** to my bed, I have been kept away from life, I have not been able to work.’  
 (Pravda 88-07-09)

5.3.2. *Frame adverbials in the scope of TARGET*

Syntactically, ‘since’ adverbials are not so interesting because the PPPs behave exactly as if they were adjectives. While the sentences of the last section behave exactly as their German counterparts, we find differences stemming from the fact that Russian PPPs incorporate the VoiceP and therefore a much wider range of adverbial modification than the German examples do. We can have temporal adverbs in the scope of the TARGET operator, which is not possible in German:

- (111) a. *Segodnja v devjat’ Vasja prigovorěn k smerti.*  
 today at ten V. sentenced to death  
 ‘Vasja is in the target state of **having been sentenced** to death at ten.’  
 (Schoorlemmer, 1995: 261)
- b. \**Vasja ist heute um 10 zum Tode verurteilt.*  
 V. is today at 10 to death sentenced

This is impossible in English or German, whereas the structure in Russian is quite obvious. For instance, in (111), the temporal adverb must modify the VoiceP, and only thereafter can we form the TARGET phrase. The d-structure must be:

- (112) [<sub>TP</sub> NOW INCLUDED [<sub>PartP</sub> TARGET [segodnja v devjat’ [<sub>VoiceP</sub> pass [<sub>VP</sub> **prigovorěn** k smerti Vasja]]]]]

It determines the following LF:

- (113) NOW INCLUDED TARGET  $\lambda s \lambda e [AT(10)(e) \exists x [Ag(x)(e) \& \text{cause}(s)(e) \& \text{sentenced-to-death}(Vasja)]]]$

Similarly, the following sentence is a present tense statement, and not, as one might believe, a past tense statement.

- (114) *On vāera podstriěn.* (Maslov, 1987, p. 197)  
 he yesterday cut-PPP  
 ‘He **had** a hair cut yesterday.’

The following is bad for the same reason as the English sentence *He is in love in<sub>i</sub> three days* is, where “in” must be taken to have the sense defined in (51).

- (115) \**Za tri dnja on vljublën.* (Maslov, 1987: 197)  
 in<sub>1</sub> three day-G he in-love

The following example shows how complex things can be in real texts.

- (116) *Eé porazilo, äto Tanja xoäet sejãas otpravít'*  
 her-D surprised that T. wants now sent

*Sincovu pis'mo, kotoroe napisano davnym-davno,*  
 Sincov-D letter, which written-PPP long-ago,

*kogda vsé bylo po-drugomu, kogda ona e%ãe*  
 when everything was different, when she still

*ne byla ranena.* (Simonov: *Poslednee leto*)  
 not was wounded-PPP

'She was surprised that T. wanted to send the letter to S., which **had been written** long ago when everything **had been different**, when she **had** not yet **been wounded**.'

The present in the subordinate is due to the sequence of tense rule in Russian: the subordinate expresses a simultaneous reading with respect to the attitude 'surprise'. The PPP is interpreted relative to that shifted time and can therefore be in the present as well. The following *kogda*-clauses are in the scope of the TARGET-operator, i.e., they qualify the time of the writing, which is a long time before the time of the wanting. In other words, the analysis of the PPP in the Russian relative clause is roughly this:

- (117) the letter, which was [<sub>PartP</sub> TARGET [written when everything was different]]

It would be extremely tedious to work out the formal details for this analysis; for a heroic attempt of this kind, see (Stechow, 2002b).

### 5.3.3. Eventive PPPs

So far, we have been considering only PPPs with a zero copula, which is always interpreted as PRESENT. In each case, the reading seemed to be a TARGETative one, or, as (Schoorlemmer, 1995: 261) puts it: "...present participial passives are eventive as well as stative". Our theory reconstructs this completely: they are eventive in as much as they are caused by an

event described by the participle, and they are stative in as much as they express a lexically characterized target state. For past participial passives, most textbooks assume that they may express eventive passives *simpliciter*. In fact, it is not difficult to provide examples that are hard to interpret as TARGETatives:

- (118) *Ja pri%œel āerez dve nedeli i byl prinjat-PPP kakoj-to devicej so sko%œennymi k nosu ot postojannogo vran'ja glazami.* (M. Bulgakov, "Master i Margarita")  
 'I arrived two weeks later and **was received** by a certain girl, whose eyes were squinting at the nose from permanent lying.'

This example suggests that the Part.II can be interpreted as an eventive passive and is thus not TARGETative. But the conclusion is not forced upon us. The meaning might very well be TARGETative.

The following example is due to Maslov and called narrative-aoristic (*narrativno-aoristicheskoe*) use:

- (119) *Kogda my proexali tunnel', okno snova bylo-past otkryto-PPP (= okno snova otkryli) i v kupe stalo ne tak ĭarko.* (Maslov, 1987: 201)  
 'When we had passed the tunnel, the window was opened again and it was not so dark in the compartment anymore.'

The most plausible interpretation of this PPP is, indeed, that of eventive passive (Bondarko, 1967, p. 180).

- (120) *Dver' byla-past zakryta-PPP, kogda ja v pjat' āasov proxodil mimo, no ja ne znaju, kogda ona byla-past zakryta-PPP.*  
 'The door was closed-PPP when I passed nearby, but I don't know when it was closed-PPP'

It is hard to imagine how the second PPP could be interpreted as a stative perfect. So perhaps the following generalization is true:

- (121) PPPs are stative passives if combined with the present copula. They are stative or eventive passives if combined with the past copula.

We haven't investigated the combination of *budu* + PPP yet. It has been observed in the literature, cf. e.g. (Xrakovskij, 1991), that the perfective aspect of the PPP prevents it from having an IMPERFECTIVE meaning. So simultaneous readings are not possible in the following sentence (our example):

- (122) a. *We couldn't use the car because it **was** being repaired.*  
 b. \**My ne mogli pol'zovat'sja ma%oinoj, potomu āto ona **byla otre-**  
**montirovana-PPP.***

## 6. Conclusion

We think that we have managed to derive the majority of Perfect readings found in Russian in a principled way. It is true that the picture we have been drawing is rather complex. However, we believe that we have refrained from introducing any ad hoc distinctions and, instead, introduced only those notions that are necessary for understanding the tense/aspect interaction in Russian. Obviously, many questions remain open, and there are, of course, alternative ways of theorizing. Our working hypothesis has been that we can always interpolate a sort of relative tense, viz. the relation POST or PERFECT, between the AspP and the TENSE. An alternative would be to make the semantics of TENSE more complicated by considering it as an irreducible 3-place relation between the speech time S, the reference time R and the event time E. But such a theory could not be Reichenbach's, because it is crucial that E must be able to be included in R or *vice versa*, as we have seen. Although this more complicated theory could perhaps get rid of the notion of viewpoint aspect altogether, it seems to us that it would have to replay all the conceptual distinctions we have made. A system that could serve as a paradigm for such an approach is (Nerbonne, 1984). But such a theory remains to be worked out.

Some colleagues have told us that there is no ambiguity found with Russian temporal expressions. They claim that the information structure always makes clear what is meant.<sup>45</sup> This might be so, but it is a matter of terminology. Even if the information structure did disambiguate the two readings in question, we would still have to represent their LFs in a different way. To find (out) the correct perfect readings for the LFs was our aim, not to give a mechanism that gives us *the* reading of a sentence in context. Our approach is entirely compatible with any theory that tells us how to disambiguate a sentence.

## Notes

1. We wish to thank T. Berger, B. Comrie and the participants of the Leipzig Aspect Workshop, February 22-24, 2003, for critical comments.
2. These are the verbs that Klein (1994) calls 2-state verbs.
3. e is the type of individuals, s is the type of worlds, i is the type of times, v is the type of events or states, t is the type of truth-values.

4. Viz.  $\lambda s \exists e_{[VP]} e \text{ cause } s \ \& \ \text{closed}(s)(\text{the window})$
5. Chomsky (1981)
6. We can achieve this result by assuming that the AGENT head checks the accusative, which can therefore no longer be checked at a higher structural case position, nor can it be the case of an internal argument. SpecVoice is not a structural case position, however. Therefore, there cannot be an overt accusative DP in the syntax. The outcome is that the internal argument must have another structural case, viz. the nominative. Furthermore, the subject  $x$  located in SpecVoice is still available for adverbial modification.
7. For a clear statement to that effect, see Klein (1994, 1995).
8. Recall the contrast between *\*Bill has left Boston on Friday* versus *Bill had left Boston on Friday*.
9. If these data are waterproof, then there cannot be an eventive passive in Russian. There are, however, contexts which almost force an eventive interpretation; see below for discussion. We don't understand yet what is going on in such cases.
10. This notion is used everywhere in interval semantics; cf. e.g. Fabricius-Hansen (1986) or Kamp and Reyle (1993).
11. We will abbreviate Tense/Aspect/Aktionsart as T/A/A.
12. In the philology of Slavic languages, the term *aktionsart* is used a bit differently. Aktionsarten describe the manner of actions such as inchoativity, terminativity, frequentativity and whatever else (there is that) can be expressed by verbal prefixes and some suffixes. The Verndlerian Aktionsarten are classes of events defined by their temporal properties. The term says nothing about the problem of how the VP expressing such an Aktionsart is built up by means of internal Aktionsarten in the traditional sense.
13. This is what Bäuerle (1979) and Fabricius-Hansen (1986) call *Betrachtzeit*, what Klein (1994) calls *topic time* or *time of the claim*, and what Musan (2000) calls *tense time*.
14. For details, see King (1992), Bailyn (1995), Schoorlemmer (1995), Junghanns and Zybatow (1997) and many others.
15. The problematic cases are delimitative and perdurative verbs; we will say a few words about them in section 3.3.
16. Bertinetto (2001) seems to believe that everyone using the concept telic/atelic is committed to the view that there is a one-to-one correspondence between perfectivity-telicity and imperfectivity-atelicity. We make no such claim.
17. This definition of STATIVE is not generally accepted. Dowty (1979) and Katz (1995) define states as sets of time points. If that option is chosen, a STATIVE of an interval can be predicated only by means of a universal quantification over time points, whereas our definition allows us to apply a STATIVE directly to an interval. If we conceive of STATIVES as points, we have to say that the points instantiating a STATIVE are never isolated. They always have adjacent points instantiating the same STATIVE as their neigh-

- bor. In other worlds, if a STATIVE P is true of the point t, then there is an immediately adjacent point t' of which P is true as well.
18. If STATIVES were properties of times as Katz (1995) claims, we could predicate STATIVES of the reference time without a mediating ASPECT INCLUDED. Presumably, this is the theory to be preferred. The reason for not doing this here is that we will make use of Kratzer's theory of the perfect of result, which makes use of individual states which seem to be different from times.
  19. This notion goes back to Parsons (1990).
  20. Cf., e.g. Eckardt (2002); Schoorlemmer's use of the term telicity seems to be compatible with ours.
  21. Not the usual logical truth-functor but a rather complicated operator involving intervals.
  22. E.g. Rapp (1997, 2001).
  23. E.g. Bierwisch (1986), Jackendoff (1990), Wunderlich (1997).
  24. The facts are more complicated: There are at least four classes in the Russian verb lexicon: (a) verbs that have only an imperfective form: *buit* 'exist', *ĭit* 'to live' etc; (b) verbs that only have a perfective form: *poljubit* 'take a liking', *zaplakat* 'start weeping', etc. (c) paired verbs that are synonymous: *perepisat* – *perepisyvat* 'to copy'-pfv/ipfv (d) paired verbs that are not strictly synonymous: *pisat* – *napisat* 'to write'-pfv/ipfv
  25. See Forsyth (1970).
  26. This is basically the semantics assumed for "incorporated indefinites" in van Geenhoven (1996). But van Geenhoven did not apply her analysis to the semantics of atelic verbs as far as we know.
  27. Forsyth (1970) gives examples: ...Larisa Fëdorovna narezala-pfv ãernogo xleba i postavila na stol tarelku s neskol'kimi varenymi kartofelinami (Pasternak: Doktor ĭivago) 'L. F. cut some black bread and put on the table a plate with some boiled potatoes.'
  28.  $\parallel \text{part II} = \lambda P \lambda Q \exists x \exists y [P(x) \ \& \ y \subseteq x \ \& \ P(y)]$ , where P and Q are properties of masses.
  29. That would make the semantics identical to that assumed in Katz (2000).
  30. B. Comrie (p.c.) writes: "Delimitative perfectives like "poãitat" 'read a little' are arguably bounded, but not telic." Recall that we define the term "telic" as "quantized". So Comrie seems to have another understanding of the term.
  31. For most perdurative verbs, the contextual duration has to be expressed overtly: *on proĭil vsju ĭizn v gorode* 'he lived in the city the entire life'. Here, while(c) = the entire life.
  32. We hope that the approach to these verbs which is developed in Filip (2000) turns out to be equivalent to our proposal. Recently, a similar problem arising with sentences such as *John wrote a sequence* is discussed in Zucchi and White (2001). The authors would reject the scope solution given here but, as far as we can see, they offer no better alternative.

33. Cf. Schwarzschild (1996) for many other examples.
34. Dowty wants to describe stativity of the VP by means of Carlson's [Carlson (1977)] theory of bare plurals. This is possible as well. For Carlson, a bare plural denotes a kind. Thus  $flea_k$  is the flea kind. Kinds have manifestations (individuals and stages thereof) that vary with time. We use the notation  $Rt(x,k)$  for "x is a manifestation (a stage) of k at time t". We can define the STATIVE find-ipfv as  $\lambda k \lambda x \lambda e \exists y [R\tau(e)(y,k) \ \& \ \text{FIND}(y)(x)]$ . We can then replace the VP in the last example by  $\lambda e \exists y [R\tau(e)(y, flea_k) \ \& \ \text{FIND}(y)(John)]$ . This would give us exactly the same result. The analysis in Dowty (1979) is contradictory:  
 $(\forall t: t \in \text{six weeks}) \text{AT}(t, \text{BECOME}[\text{John knows that } (\exists x [R(x, fleas) \ \& \ x \text{ is on his dog}])])$   
 We can remove the inconsistency by giving the quantifier  $\exists x [R(x, fleas) \ \& \dots]$  wide scope with respect to BECOME. Thus, we have to define the imperfective verb "find" as  $\lambda k \lambda x \lambda e \exists y [R\tau(e)(y,k) \ \& \ \text{BECOMEI}(x \text{ knows } y \text{ is on his dog})]$ . The comparison clearly shows that kinds are higher order entities, regardless of whether or not they are treated as individuals technically.
35. This strategy stands in opposition to that proposed by Giorgi and Pianesi (2001), who say that verb has no inherent telic/atelic distinction. The difference somehow comes from the morphology. It is not clear to us how the details of that theory can be spelled out.
36. Forsyth (1970).
37. We have changed the name a number of times. In earlier papers we also used the name PAST over Perfective Principle, where PAST is a relative Past. The first paper stating that principle dates from 1998.
38. The notion was introduced in Kratzer (2000), but related ideas are found in Pinón (1999) and Stechow (1996).
39. Kratzer doesn't use the name TARGET but speaks of a stativizer. The name is used in Stechow (1996), where a similar operator is defined.
40. Combined with interval semantics, the definition of CAUSE is very complicated. As evidence, see Dowty (1979). With a few exceptions, the literature on decomposition ignores the issues involved here.
41. We take it that *deliberately* is a relation between an agent and an event:  $\parallel \text{deliberately}(x)(e) \parallel$  iff x is involved deliberately in the action e. It is not clear how the variable x is controlled. This fact has led people to take the adverb simply as a predicate of e meaning "the agent of e is deliberately involved in e"; cf., among many others, Eckardt (2002). This creates the problem that the adverb *deliberately* could modify the VP of the English/German adjectival passive.
42. The technical details of such a theory are not clear. But our sketch is no less precise than any other proposal that has been made in the syntactic passive literature of the GB-tradition.
43. For a discussion, see Dowty (1979).

44. Cf. Stechow (2000a).  
 45. U. Junghanns (pers.com.)

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