

## FUTURE VS. PRESENT IN RUSSIAN AND ENGLISH ADJUNCT CLAUSES

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## ABSTRACT

We treat the interpretation and motivate the morphology of tense in adjunct clauses in English and Russian (relative clauses, *before/after/when*-clauses) with a future matrix verb. The main findings of our paper are the following:

1. English has a simultaneous reading in present adjuncts embedded under *will*. This follows from our SOT parameter. Russian present adjuncts under *budet* or the synthetic perfective future can only have a deictic interpretation.

2. The syntax of Russian temporal adjunct clauses (*do/posle togo kak...*) shows overt parts that had to be stipulated for English as covert in earlier papers. We are thus able to present a neat and straightforward analysis of Russian temporal adjuncts.

## 1. ADJUNCT TENSE: SETTING THE STAGE

The problem, which to our knowledge has not been properly addressed in the Slavistic literature, is illustrated in the example below from the RuN-Euro parallel corpus compiled at the University of Oslo:

- (1R) Ja eto skažu<sup>[PF,FUT]</sup> emu, kogda on priedet<sup>[PF,FUT]</sup>. [Tolstoj, “Anna Karenina” –  
RuN-Euro Corpus]
- (1E) I'll tell him that when he comes.
- (1N) Jeg skal si det til ham når han kommer.

Examples like in (1) with a superordinate (matrix) verb in the future abound and raise the following question: Why does Russian use a future (here: perfective future) in the temporal clause while Germanic languages like English and Norwegian use the present in the subordinate (adjunct) tense? We will refer to the two configurations as a “future under future (Fut\Fut)” (Russian) and a “present under future (Pres\Fut)” (English). Besides the theoretical issues related to a general theory of subordinate tense which will be addressed in this article, these data also pose interesting problems for second language learning.<sup>1</sup>

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<sup>1</sup> Although we cannot back up this claim with a systematic study of L2, our experience with Russians learning Germanic languages tells us that they often make the following mistake under influence of their native language:

- (1E') ?? I'll tell him that when he'll come / ?? I will tell him that when he will come.
- (1N') ?? Jeg skal/vil si det til ham når han skal/vil komme.

A search on the web shows that the correct form is indeed the one found in the corpus, i.e., (1E/N), “I'll tell him when he comes” [372 hits (yahoo, November 2010)], while the alternative “I'll tell him when he'll come” is not attested [0 hits (yahoo, November 2010)].

We consider two different types of adjunct clauses: (i) Tense in relative clauses; (ii) tense in adverbial clauses, notably *before/after/when*-clauses. In both cases, the contrast between English and Russian is most transparent in constructions with a future matrix.

In order for the reader to understand the *raison d'être* of our study, we propose to spend a few minutes on the following pair:

- (2) Have you ever seen a woman who is driving a truck? (google)  
[have seen ... who is]
- (3) (they also cover themselves from head to foot and)  
by no means will you ever see a man who does not wear a hat on his head.  
(google)  
[will see ... who does]

For our story it is of the utmost importance to distinguish between temporal interpretation and temporal morphology. In (2) the matrix event is shifted to the past, or, more accurately, into the “perfect time span” by the perfect auxiliary (“have”), while in (3) the matrix event is shifted to the future by the future auxiliary “will”. The *interpretation* of the relative clauses above is simultaneous with the non-finite matrix verb (“seen/see”). The present tense morphology in the relative clause agrees with the present tense morphology of the temporal auxiliaries or what we call “verbal quantifiers” (“have” and “will”). By comparing “have” and “will” in the sentences above, it should be clear that “will” – just as much as “has/have” – carries present tense morphology. Semantically, though, “will” is a future shifter, while “has/have”, in this kind of examples, is a past shifter – one is the mirror image of the other.

Since Russian does not have a composite perfect tense, we will focus on the comparison of subordinate tense in English and Russian under a future matrix. In this domain, Russian has the same kind of future auxiliary as in English, viz. the *budet*

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auxiliary, which also displays present tense morphology. In addition, the matrix in Russian can also be expressed by a synthetic perfective future.

### 1.1. Tense in Relative Clauses

With a Past tense matrix verb, English and Russian relative clauses mostly behave in a similar way (Kondrashova, 1998):

- (4) a. Mary talked to a boy who is crying. (morphology: pres\past)  
*deictic*√, *simultaneous*\*
- b. Маша встретила<sup>[PF,PAST]</sup> мальчика, который плачет<sup>[IPF,PRES]</sup>.  
 (morphology: pres\past)  
*deictic*√, *simultaneous*\*

Both for English and Russian a deictic interpretation is the only possibility in (4a/b). When the interpretation in the relative clause is deictic, the subordinate tense is *independent* of the matrix tense, i.e. both (4a) and (4b) mean “Mary/Masha met a boy who is crying NOW”. The crying takes place at the utterance time, hence a deictic present tense.

The alternative, but here non-existing reading, would have obtained if the present tense morphology in (4a) and (4b) could have been *dependent* on the matrix tense. In that case, we would have faced a non-deictic simultaneous interpretation, in other words, what is traditionally called a *relative present*. This notion captures the idea that the present in the adjunct is simultaneous *relative* to the matrix. However, the judgements of native speakers of English and Russian are clear: a dependent simultaneous interpretation is not available in configurations such as (4a) and (4b) with a matrix verb in past tense.

For English the ban on a simultaneous interpretation above is straightforwardly explained by the fact that there is no morphological agreement between the matrix verb “talked” and the subordinate “is crying”, hence the latter cannot be dependent on (bound by) the former. Concerning Russian, the explanation is more subtle and concerns the syntactic and semantic difference between complement tense (where indeed a relative present is possible under past in Russian – see section 2 below) and adjunct tense.

Ogihara observed that things change with a future matrix *will* in English. His famous although quite artificial example is given in (5a).<sup>2</sup> For the Russian counterpart in (5b), contrary to English, we only get a deictic interpretation, similar to the examples above with a past matrix. This means that in Russian the present tense in the adjunct cannot be a relative present with respect to the perfective future in the matrix. The Russian sentence – indeed a highly artificial one – can only mean that the fish is alive at the utterance time.

- (5) a. Mary will buy a fish that is alive. (Ogihara, 1989)  
*deictic (independent) or simultaneous (dependent)*  
 b. Masha kupit<sup>[PF,FUT]</sup> rybu, kotoraja živet<sup>[IPF,PRES]</sup> v Bergenskom akvariume.  
*only deictic*

Our experience tells us that the reader might not like the examples in (5a/b). Here is our version of this kind of examples, adapted to the Russian reality:

- (6) a. Olga will be married to a doctor who lives in Murmansk.  
*deictic (independent) or simultaneous (dependent)*  
 b. Ольга будет<sup>[IPF,PRES]</sup> замужем за врачом, который живет<sup>[IPF,PRES]</sup> в Мурманске.

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<sup>2</sup> In our Russian version of Ogihara’s example, we have added the locative adverb “in the aquarium of Bergen” to enforce an episodic interpretation.

*only deictic*

While the English construction is compatible with a scenario according to which the doctor in question does *not* live in Murmansk at the utterance time, but only at the time of the marriage, the Russian sentence is obligatorily deictic: The doctor must live in Murmansk already at the utterance time.

The judgements of our informants concerning (6a) and (6b) are clear, but in order to convince the reader that these data are not marginal, we provide below various authentic examples from parallel corpora which illustrate the same point. Thus, while a “present under future” as in (5a) and (6a) is in principle ambiguous in English, the same tense configuration must unambiguously be deictic in Russian, as for instance in (7R) – *которая лежит за Южным хребтом*.

(7E) And you and your children and grandchildren shall be blessed, and some will be Kings of Narnia, and others will be Kings of Archenland which lies yonder over the Southern Mountains. [Lewis, “The Chronicles of Narnia. The Magician's Nephew” – Russian National Corpus]

(7R) И будут<sup>[IPF,PRES]</sup> благословенны и вы, и ваши дети, и ваши внуки; одни будут<sup>[IPF,PRES]</sup> королями Нарнии, другие — королями Архенландии, которая лежит<sup>[IPF,PRES]</sup> за Южным хребтом.

When a “present under future” has a simultaneous interpretation in English, the Russian translation uses a “future under future”, as illustrated below in (8R) with a *budet* future in the relative clause. Consider also (9R) which has a perfective future in the subordinate clause:

(8E) He [God] will punish horribly anybody who torments a bum who has no connections! [Vonnegut, “Slaughterhouse-Five Or The Children’s Crusade” – Russian National Corpus]

(8R) Он [Бог] покарат<sup>[PF,FUT]</sup> страшной карой каждого, кто будет<sup>[IPF,PRES]</sup> мучить<sup>[IPF,INF]</sup> любого бродягу без роду и племени!

(9R) Sultan ne ostavit<sup>[PF,FUT]</sup> beznakazanno to udovol'stvie, kotorym poteshatsja<sup>[PF,FUT]</sup> molodcy. [Gogol', "Taras Bul'ba" – Russian National Corpus]

(9E) The Sultan will not permit that which delights our young men to go unpunished.

Russian thus expresses simultaneity in the future with a “future under future” construction. A future tense embedded under a future matrix is obviously used in Russian also with a forward shifted interpretation. Here, “future under future” is the expected pattern also in English:

(10E) "In that case," replied Glinda, "I shall merely ask you to drink a powerful draught which will cause you to forget all the magic you have ever learned".

[Baum, "The Marvelous Land of Oz" – Russian National Corpus]

(10R) — Тогда,—ответила Глинда,—я всего лишь попрошу<sup>[PF,FUT]</sup> тебя выпить<sup>[PF,INF]</sup> волшебный напиток, от которого ты забудешь<sup>[PF,FUT]</sup> все свое колдовство.

So we conclude that a “present under future” is ambiguous in English between a deictic and simultaneous interpretation, while a “future under future” in Russian can correspond to either a simultaneous or a forward shifted interpretation, as summarised in table 1.

Interpretation of relative clause	English		Russian	
	MT	ST	MT	ST
<b>simultaneous</b>	fut	pres	fut	fut
<b>forward shifted</b>	fut	fut	fut	fut
<b>deictic</b>	fut	pres	fut	Pres

Table 1: Correlation between matrix tense (MT) and subordinate tense (ST) in Russian and English future tense contexts.

For the convenience of the reader we clarify the terminology used in this paper in table 2:

Dependent tense (also called “shifted”)			Independent tense
Simultaneous (relative present)	forward shifted (relative future)	backward shifted (relative past)	
= ST is interpreted as overlapping with MT	= ST is interpreted as temporally following MT	= ST is interpreted as temporally preceding MT	ST is deictic, i.e. interpreted relative to the utterance time

Table 2: An overview of the terminology used in the analysis of tense in matrix tense (MT) and subordinate tense (ST).

### 1.2. Tense in Temporal Adverbial Clauses

Again, the most interesting data come from future constructions. The data are quite parallel to what we observed above for relative clauses. In Russian, the temporal adjunct typically has the same tense as that in the main clause, while English has a shifted, i.e. non-deictic, relative present.

We start with some examples of *before*-clauses, which in virtue of the meaning of “before” encode the relation  $MT < ST$ , i.e. the matrix temporally precedes the subordinate tense.

(11E) But I will kill you dead before this day ends. [Hemingway, “The Old Man and the Sea” – RuN-Euro corpus]

(11R) Но я убью<sup>[PF,FUT]</sup> тебя прежде, чем настанет<sup>[PF,FUT]</sup> вечер.

(12E) Yes, sir, I will send them off at once: the boy will be down there before you are, sir! [Jerome, “Three Men in a Boat (To Say Nothing Of The Dog)” – Russian National

Corpus]

(12R) Да, сэр, я отправлю<sup>[PF,FUT]</sup> их сию минуту; мальчик принесет<sup>[PF,FUT]</sup> их вам раньше, чем вы вернетесь<sup>[PF,FUT]</sup>, сэр.

In English, the temporal relation of the subordinate event/state preceding the matrix can, optionally, be explicitly encoded by a perfect in the future matrix:

(13E) Miraz will have finished with Caspian before we get there at that rate. [Lewis, “The Chronicles of Narnia. Prince Caspian” – Russian National Corpus]

(13R) Мираз наверняка покончит<sup>[PF,FUT]</sup> с Каспианом раньше, чем мы туда доберемся<sup>[PF,FUT]</sup>.

*After*-clauses, which express the opposite relation, i.e.  $ST < MT$ , typically have a present perfect in the subordinate adjunct under a matrix future:

(14E) Assure him that the documents will be treated with utmost care, and will be returned after we have completely examined them for authenticity and studied their content. [Miller, Jr. “A Canticle For Leibowitz” – Russian National Corpus]

(14R) Заверьте<sup>[PF,IMPER]</sup> его, что с документами будут<sup>[IPF,PRES]</sup> обращаться<sup>[IPF,INF]</sup> очень бережно, что их вернут<sup>[PF,FUT]</sup> сразу же, как только мы установим<sup>[PF,FUT]</sup> их подлинность и изучим<sup>[PF,FUT]</sup> содержание.

The general patterns observed above for Russian and English temporal clauses also hold for *when*-clauses, viz. “present under future” in English and “future under future” in Russian (cf. also (1) above).

(15E) He sent that note, I bet the Ministry of Magic will get a real shock when Dumbledore turns up. [Rowling, “Harry Potter and the Sorcerer's Stone” – Russian National Corpus]

(15R) Это он послал<sup>[PF,PAST]</sup> записку, я уверен; в министерстве магии очень удивятся<sup>[PF,FUT]</sup>, когда увидят<sup>[PF,FUT]</sup> Думбльдора.

## 2. THE SOT-PARAMETER

The deeper explanation for why tense in English adjuncts behaves differently with future matrix verbs than with past matrix verbs is related to the fact that *will* in English (and *budet* in Russian) are *verbal (temporal) quantifiers*. Unlike the simple past, the future shift is expressed by a temporal auxiliary with its own morphology. The auxiliary is what we call a verbal quantifier.

Concerning the morphology, the paradigm of the verb “will” is indeed somewhat exceptional – notably this auxiliary in English lacks non-finite forms – but this should not deter us from the essential point: “will” is morphologically a *present* tense form. And it is precisely the inherent present tense of the future shifter which is transmitted to the adjunct in the data analysed in this work.

This kind of morphological tense agreement brings us to the theory of sequence of tense (SOT). In Grønn & von Stechow (2010), we proposed the SOT-parameter to account for the different distribution of tenses in subordinate sentences in SOT versus non-SOT languages. Here is a new version of the SOT-parameter which we believe captures more facts with fewer stipulations than in the existing literature.

### The SOT-parameter

A language L is an SOT-language if and only if

- (i) verbal quantifiers of L transmit temporal features.<sup>3</sup>
- (ii) the attitude holder’s “subjective now” does not license present tense morphology.

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<sup>3</sup> The verbal quantifiers in question include attitude verbs and the future auxiliaries **will/would/budet** and (some uses of) the perfect auxiliary **have**; not included is the German/French auxiliary **hat/a** when it has the meaning of PAST.

By contraposition, the behaviour of non-SOT languages like Russian also follows from this parameter. Below is an illustration of the SOT-parameter from attitude verbs and complement tense, the canonical environment for SOT-phenomena.

(16R) Он сказал<sup>[PF,PAST]</sup>, что живет<sup>[IPF,PRES]</sup> под Москвой. [Pelevin, “Pokolenie P” – RuN-Euro Corpus]

(16E) He said he was living just outside Moscow.

(16N) Han fortalte at han bodde utenfor Moskva.

In our system, verbs of attitude like *said/skazal* shift the reference time of the complement (by imposing the attitude holder’s “subjective now” as the time of the embedded proposition) and are therefore considered as verbal (temporal) quantifiers.

Accordingly, since English is an SOT-language, the attitude verb *said* transmits its past feature to the embedded tense. The past tense of the matrix *said* thus determines the morphology of the embedded verb *was*. This is a morphological agreement phenomenon; hence there is no past operator (backward shift) inside the complement. The result is that we get a simultaneous interpretation despite the past tense morphology in the complement.

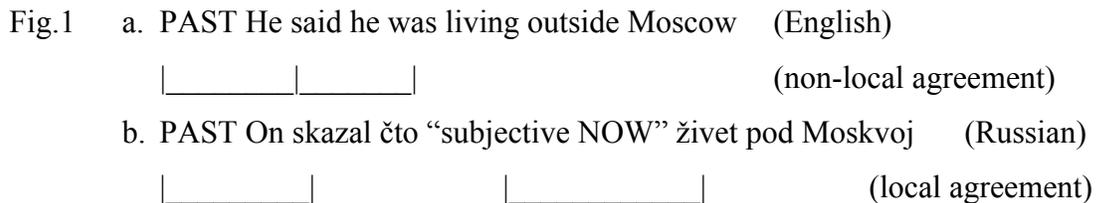


Figure 1: Feature transmission in complement tense

In a non-SOT language like Russian, the verbal quantifier *skazal* is blocked from transmitting its past feature to the complement. To express the simultaneous interpretation in complements, non-SOT languages like Russian makes crucial use of the attitude holder’s “subjective NOW” at the edge of the complement. Semantically,

the “subjective NOW” involves a temporal abstraction which binds the temporal variable of *živet* and licenses its morphology.

These two ingredients in the SOT-parameter allow us to analyse the feature transmission mechanism and its blocking. As we saw above, the morphological contrast between Slavic and Germanic in complement tense follows immediately from the SOT-parameter.

We believe that the current version of our SOT-parameter improves on the existing accounts in the literature, including our own earlier work. For instance, from the SOT-parameter as formulated here, it follows that a present adjunct embedded under a past in Russian cannot have a shifted (simultaneous) interpretation, since adjuncts – unlike complements under attitudes – do not have their own “subjective NOW”, cf. (4b) repeated from above:

- (4) b. Маша встретила<sup>[PF,PAST]</sup> мальчика, который плачет<sup>[IPF,PRES]</sup>.  
 (morphology: pres\past)  
*deictic* \, *simultaneous*\*

In this paper, we thus argue that the SOT-parameter applies also to adjunct tense, notably to relative clauses and temporal adjuncts.

### 3. TENSE THEORY

Our tense theory is laid out in Grønn & von Stechow (2010, 2011). Each finite sentence has a tense projection TP. The head T' is split into two parts: (a) a relative semantic tense like P(ast) and F(uture) and (b) a pronominal semantic tense, the *temporal centre*<sup>4</sup> of the clause, which here will be called T<sub>pro</sub>. T<sub>pro</sub> is an anaphoric pronoun and must be bound by a higher tense. If the binder is N (“now”), denoting the speech time, we get the deictic interpretation.

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<sup>4</sup> Hans Kamp’s “perspective point”.



- a. Deictic Present:  $\llbracket N \rrbracket = \lambda w.s^*$  feature iN
- b. Past:  $\llbracket PAST \rrbracket = \lambda w.\lambda t.\lambda P_{it}.\langle \exists t' < t \rangle P(t')$  feature iP (Heim, 1997)
- c. Future:  $\llbracket FUT_{Rus} \rrbracket = \lambda w.\lambda t.\lambda P_{it}.\langle \exists t' > t \rangle P(t')$  feature: iF (aspect is ignored)
- (ii) Verbal quantifiers
- a. **will**:  $\lambda w.\lambda t.\lambda P_{it}.\langle \exists t' > t \rangle P(t')$  feature uN
- b. **budet**:  $\lambda w.\lambda t.\lambda P_{it}.\langle \exists t' > t \rangle P(t')$  feature uN
- (iii) Temporal pronouns
- a. N: a deictic pronoun denoting the speech time
- b. Tpro: gets its meaning from an assignment g.
- (iv) Verbs
- $\llbracket \text{sleeps/spit} \rrbracket = \lambda w\lambda t\lambda x.x \text{ sleeps in } w \text{ at } t$  feature uN
- $\llbracket \text{slept/spal} \rrbracket = \lambda w\lambda t\lambda x.x \text{ sleeps in } w \text{ at } t$  feature uP

All verb forms have a “timeless” semantics. They are only distinguished by an uninterpretable temporal feature, which makes sure that the form is combined with the correct semantic tense.

The semantics and the feature theory are introduced in greater detail in (von Stechow, 2009).

#### 4. ANALYSIS: TENSE IN RELATIVE CLAUSES

What is the T-centre in relative clauses? The centre can be N (“now”) or, more generally, a temporal pronoun Tpro. We stipulate that Tpro is free in its sentence but obligatorily bound by some higher tense.<sup>5</sup> On the deictic reading, Tpro is bound by N. The more interesting cases are the ones where Tpro is bound by the matrix verb. The

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<sup>5</sup> This holds for Tpro’s that are coreferential with the time argument of a verb. Occasionally, nouns have a time argument, for instances in Enç’s celebrated sentence “Every fugitive is now in jail.” (Enç, 1986). Here “fugitive” has an argument Tpro. We assume that this pronoun is left free, i.e. its value is determined contextually.

idea that the centre of a relative may be an anaphoric pronoun is implicit in (Kusumoto, 1999), a work which is close to ours in spirit and contains a lucid discussion and analysis also of the Russian data. The present formulation of the tense architecture is due to Irene Heim (p.c).

#### 4.1. English relatives

Recall that there are two interpretations of Ogihara's sentence in (5a), repeated below as (18), viz. the dependent, simultaneous interpretation, and the independent, deictic interpretation. While the semantics is different, the feature transmission is the same. The two readings are analysed in (19) and (20), respectively.<sup>6</sup>

(18) N Mary will buy a fish that is alive. (Ogihara, 1989)

iN      uN                      uN

|\_\_\_\_\_||\_\_\_\_\_||

- a. Subordinate tense = matrix tense                      (simultaneous)  
 b. Subordinate tense = speech time                      (deictic)

(19) Simultaneous interpretation of (18)

N  $\lambda_1$  **will**( $t_1$ )  $\lambda_2$  **M. buy**( $t_2$ ) **a fish** WH<sub>3</sub> T<sub>pro2</sub>  $\lambda_4$  **is**( $t_4$ )  $\lambda_5$   $x_3$  **alive**( $t_5$ )

iN      uN                      uN                      uN      uN

=  $(\exists t > s^*)(\exists x)[\text{fish}(x) \ \& \ \underline{\text{alive}}(x,t) \ \& \ \text{buy}(\text{Mary},x,t)]$

*(there is a future time t, such that Mary at t buys a fish which is alive at t)*

The English auxiliary *will* is a verbal quantifier. According to the SOT-parameter, *will* transmits its temporal feature (uN) to the variable it binds. Note that T<sub>pro</sub> – the temporal centre of the relative clause – is semantically bound by  $t_2$ , hence the simultaneous interpretation of the buying event and the state of the fish being alive.

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<sup>6</sup> Due to limitations of space, we must refer the reader to our other papers on subordinate tense for a more explicit explanation of the formalism used below.

The deictic reading requires binding of T<sub>pro</sub> to the matrix N:

(20) Deictic interpretation of (18)

N  $\lambda_1$  **will**( $t_1$ )  $\lambda_2$  **M. buy**( $t_2$ ) **a fish** WH<sub>3</sub> T<sub>pro1</sub>  $\lambda_4$  **is**( $t_4$ )  $\lambda_5$   $x_3$  **alive**( $t_5$ )

=  $(\exists t > s^*)(\exists x)[\text{fish}(x) \ \& \ \text{alive}(x,s^*) \ \& \ \text{buy}(\text{Mary},x,t)]$

(*there is a future time t, such that Mary at t buys a fish which is alive at the speech time*)

#### 4.2. Russian Relatives

The data from Russian relative clauses differ from the English ones inasmuch as “present under future” has to be deictic, i.e. the tense of the relative clause is not simultaneous with the matrix but denotes the speech time. The simultaneous reading must be expressed by a “future under future”.

In view of our comparison with English, we will now try to apply the SOT-parameter to Russian adjuncts.

For a proper discussion of the SOT-parameter in Russian, we should distinguish between two constructions, depending on the form of the matrix: a) the imperfective *budet* construction, and b) the perfective future. From the perspective of the SOT-parameter, the aspectual choice does not matter, but the difference between the *analytic* imperfective future and the *synthetic* perfective future is theoretically significant. The former involves a temporal auxiliary, hence a verbal quantifier, while the latter is a semantic tense. Still, the result is the same: “present under future” cannot be simultaneous in Russian in either case because

a) the future matrix is a verbal quantifier (*budet*) which does not transmit its uN feature from above – since Russian is a non-SOT language.

b) the future matrix contains a semantic tense (i.e., the perfective future) with its own feature iF.

As we recall from the SOT-parameter in section 2, only *verbal quantifiers in SOT-languages* can transmit features.

Let us start with the case of *budet*. The “correct” Russian translation in (21R) involves a “future under future”. To see why a “present under future” is not possible in this case, consider the simplified illustration of feature transmission in (22):

(21E) Let me hope she will be less cruel to the splendid train which are to meet at the tournament. [Scott, “Ivanhoe” – Russian National Corpus]

(21R) Надеюсь, что она не будет<sup>[IPF,PRES]</sup> столь жестока к тому блестящему обществу, которое мы встретим<sup>[PF,FUT]</sup> на турнире.

(22) N ne budet žestoka k obščestvu, kotoroe vstrečаем.

iN uN (feature transmission broken) uN

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Semantically, *budet* is a future time shifter (as we spelled it out in section 3 above). Semantically, the matrix is thus shifted to some time after N. Morphologically, *budet* carries present tense morphology through the suffix “-et”, hence the inherent feature uN. In both respects, *budet* behaves like English *will*. According to our theory, the uninterpretable feature must be licensed by an interpretable feature; in this case the deictic N (“now”). This is trivial and uncontroversial.

The interesting part is the following: The SOT-parameter provides an explanation for why the simultaneous interpretation in (21R) must be expressed by a “future under future” (“vstretim” under “budet”), while (“vstrečаем” under “budet”) in the alternative configuration in (22) is blocked from having this interpretation. Russian is a non-SOT language, and therefore the temporal quantifier *budet* does not transmit its feature uN to the relative clause. Accordingly, the subordinate tense cannot acquire a present form \*встречаем – meet from a simultaneous interpretation with the matrix *budet*.

The same reasoning applies equally well to our toy sentence from section 1, which can only have a deictic interpretation:

(23) Ольга будет<sup>[IPF,PRES]</sup> замужем за врачом, который живет<sup>[IPF,PRES]</sup> в Мурманске  
(only deictic interpretation)

The next step is to compare the matrix *budet* with the perfective synthetic future. For the purposes of this paper we ignore the role of aspect and assume the following semantics for the synthetic perfective future<sup>7</sup> in Russian:

(24) Synthetic future in Russian

$[[\text{FUT}_{\text{Rus}}]] = \lambda t. \lambda P. (\exists t') [t' > t \ \& \ P(t')]$ , feature iF

The semantics is as before, so the only difference from *budet* or *will* is in the features. Unlike verbal quantifiers (auxiliaries and verbs),  $\text{FUT}_{\text{Rus}}$  does not have an uninterpretable tense feature, hence the issue of feature transmission from a higher tense does not arise in the same way as with *budet*. On the contrary, a semantic tense like  $\text{FUT}_{\text{Rus}}$  binds its own feature. In this respect,  $\text{FUT}_{\text{Rus}}$  is like the synthetic past in Russian and English, cf. table 3.

	Verbal quantifier (future shifter)	Verbal quantifier (past shifter)	Synthetic future (future tense)	Synthetic past (past tense)
Russian	<i>будет</i> писать		напишет	(на)писал
Feature	uN		iF	iP
English	<i>will</i> write	<i>has</i> written		wrote
Feature	uN	uN		iP

Table 3: Interpretable (i) and uninterpretable (u) features of time shifters and semantic tenses in English and Russian. N = now/present; F = future; P = past.

<sup>7</sup> See (Grønn & von Stechow, 2011) for our treatment of Russian aspect.

To be concrete, let us return to our Russian “Ogihara-sentence” and show why a “present under future” in (25) cannot have a simultaneous interpretation as in (26):

(25) Маша купит<sup>[PF,FUT]</sup> рыбу, которая живёт<sup>[IPF,PRES]</sup> в Бергенском аквариуме.

ST = speech time (only deictic interpretation available)

\*ST = MT (not possible)

(26) \*N λ<sub>1</sub> FUT<sub>Rus</sub> (t<sub>1</sub>) λ<sub>2</sub> ...kupit(t<sub>2</sub>)...WH T<sub>pro2</sub> λ<sub>3</sub>...živet(t<sub>3</sub>)...  
           iF                      uF—uF              uF              uN—uF !

To get the Ogihara reading (ST = MT), T<sub>pro</sub> must be bound by FUT<sub>Rus</sub> in (26). However, unlike English *will*, FUT<sub>Rus</sub> does not transmit uN but checks uF. Thus, the temporal variable of *живёт* (“lives”) gets the feature uF via T<sub>pro2</sub>. This feature should agree with the inherent feature uN of the verb, but it does not and we have a feature mismatch.

At this point it is legitimate to ask whether one could account for the Russian data by stipulating that Russian adjuncts are always deictic. Indeed, given this stipulation, one could argue that the SOT-parameter is not directly relevant for the Russian data since SOT-phenomena are arguably confined to tense dependencies between the matrix and subordinate tense, and a deictic adjunct means that the subordinate tense is independent of the matrix tense.

Some evidence for this stipulation comes from the unavailability of a backward shifted reading for “past under future” in Russian adjuncts:

(27E) He will ride the black horse which Father sent him from Friesland.

[Dodge, “Hans Brinker or the Silver Skates” – Russian National Corpus]

(27R) Сам он поедет<sup>[PF,FUT]</sup> на том вороном коне, которого отец прислал<sup>[PF,FUT]</sup> ему из Фрисландии.

In this particular context, it is clear that the father sent him the horse before the utterance time. The problem, however, is that it is impossible to find a context where the form “он поедет на коне, которого отец прислал ему” gets a dependent backward shifted interpretation (a relative past). The sentence can never mean \**prislal* < *poedet* & *prislal* > Now. However, this temporal configuration should be possible if the highest tense in the adjunct were an unrestricted anaphoric T<sub>pro</sub>. In that case T<sub>pro</sub> could be resolved to the time of “*poedet*” and the past tense in the adjunct would instantiate the relative past *prislal* < *poedet*, leaving the relation between “*prislal*” and Now unexpressed. For some reason T<sub>pro</sub> seems to be restricted to a deictic interpretation in Russian “past under future” contexts like (27R).

However, it is completely unclear why Russian adjuncts – unlike adjuncts in SOT-languages – should only allow for deictic tense. And indeed, we will argue that the ban on a backward shifted reading for a “past under future” in (27R) must be a purely pragmatic phenomenon due to competition from the alternative form “future under future” (*poedet... pošlet*). This argument is strengthened by data with a “future under past”, where the adjunct cannot possibly be deictic, as in (28):

(28) Именно в университете девушка познакомилась<sup>[PF,PAST]</sup> с Биллом Клинтонем, который впоследствии станет<sup>[PF,FUT]</sup> ее мужем.

(google, from a biography of Hillary Clinton)

(*At the university, the girl got to know Bill Clinton who later would become her husband* – our translation).

From this and similar examples – which are easy to find – it follows that the stipulation that Russian adjuncts must be deictic is not only ad hoc, but plainly wrong. Accordingly, the Russian data should and can be explained in the light of Russian being a non-SOT language.

## 5. ANALYSIS: BEFORE/AFTER/WHEN-CLAUSES

We assume an analysis for *after/before* following (von Stechow, 2002) and (Beaver and Condoravdi, 2004): the prepositions are relations between two times  $t$  and  $t'$  and mean that  $t$  is after/before  $t'$ .  $t$  *when*  $t'$  means  $t = t'$  (or  $t \subseteq t'$  or  $t$  overlaps  $t'$ ). Let us start from some simple past tense sentences:

- (29) a. John left before/after Mary left.  
 b. Vanya ušel<sup>[PF,PAST]</sup> do/posle togo kak Masha ušla<sup>[PF,PAST]</sup>.

Inspired by (Heim, 1997) and (Beaver and Condoravdi, 2004) we analyse the complement of *before/after* as: “the earliest time that is at a past time and Mary leaves at that time”.

To get this, we need a lot of covert structure, namely the EARLIEST-operator, i.e., a sort of definite article, a temporal *at*-PP that locates the reference time of the complement and a *wh*-movement that creates the temporal property, which the EARLIEST operator maps to a particular time. The surface syntax of English does not provide the necessary hints that we need all that. Fortunately, Russian syntax as in (29b) is transparent in this respect: *togo* ‘this’ gives evidence that the complement of the preposition is a definite term. The *wh*-word *kak* shows that the argument of the determiner EARLIEST is formed by *wh*-movement. English has these two things covert.

The EARLIEST-operator, which makes the complement of *after/before* definite, is due to (Beaver and Condoravdi, 2004).

- (30)  $\llbracket \text{EARLIEST}_C \rrbracket = \lambda P$ . the earliest time  $t$  according to the contextual parameter  $C$  such that  $P(t)$ .  
 $= \text{the } t, \text{ such that } C(t) \ \& \ P(t) \ \& \ (\forall t')[C(t') \ \& \ P(t') \rightarrow t < t']$

Apart from the differences in abstractness there is no crucial structural difference between English and Russian “past under past” constructions. So the corresponding

sentences in (29a) and (29b) are analysed alike, cf. (31) below:

- (31) Ваня ушел<sup>[PF,PAST]</sup> после/до того как ушла<sup>[PF,PAST]</sup> Маша. (morphology:  
Past\Past)  
John left after/before Mary left  
**N**  $\lambda_1$  **PAST**( $t_1$ )  $\lambda_2$  **Vanja ušel**( $t_2$ )  $t_2$  **posle/do** **EARL<sub>C</sub>** **kak**<sub>3</sub> **Tpro<sub>1</sub>**  $\lambda_5$  **PAST**( $t_5$ )  
 $\lambda_4$   $t_4$  **AT**  $t_3$  **Maša ušla**( $t_4$ )  
= ( $\exists t_2 < s^*$ ) Vanja leaves at  $t_2$  &  $t_2 > (<)$  the earliest  $t_3$ :  $t_3 < s^*$  & Maša leaves at  
 $t_3$   
(there is a past time  $t_2$ , such that Vanja leaves at  $t_2$  and  $t_2$  is after (before) the  
earliest time  $t_3$  such that  $t_3$  is before the speech time and Mary leaves at  $t_3$ )

Concerning the more intriguing future matrix construction, we observed a similar distribution for relative clauses and temporal adverbial clauses in sections 1.1 and 1.2; hence we expect a similar analysis. However, our account, which worked nicely for relative clauses, cannot generate a “present under future” in English *before/after* clauses:

- (32) John *will* leave before/after Mary *leaves*.  
(cf. authentic examples like (8E) and (9E) above)

This *looks* as if the [uN] feature of *leaves* were licensed by the matrix N via transmission of the [uN] feature of *will*, but this does not make sense semantically, as can be seen from (33):

- (33) “present under future” in English *before/after* clauses (*first try*)  
**N**  $\lambda_1$  **will**( $t_1$ )  $\lambda_2$  **John leave**( $t_2$ )  $t_2$  **before/after**  
**EARL** **WH<sub>3</sub>** **Tpro<sub>2</sub>** **AT**  $t_3$  **Mary leaves**( $t_3$ )

$(\exists t_2 > s^*)$  John leaves at  $t_2$  &  $t_2 <(>)$  the earliest  $t_3$ :  $t_2 = t_3$  & Mary leaves at  $t_3$

The truth-conditions in (33) are contradictory, saying that  $t_2$  should be before (after)  $t_2$ !

In order to get the semantics right in these constructions, we must allow for the insertion of a covert Future in the complement of *before* clauses, and a covert Past in the complement of *after* clauses. We show how this works for *before* clauses in (34):

(34) “present under future” in English *before* clauses (*version 2 – covert future*)

N  $\lambda_1$  **will**( $t_1$ )  $\lambda_2$  **John leave**( $t_2$ )  $t_2$  **before**

EARL<sub>C</sub> WH<sub>3</sub> T<sub>pro1</sub> FUT( $t_1$ )  $\lambda_4$   $t_4$  AT  $t_3$  **Mary leaves**( $t_4$ )

-----uN-----uN

Here, the underlined FUT is the covert one. It has the same meaning as *will*. We would have to say exactly which contexts allow the insertion of a covert Future. For instance, in English matrix sentences we do not want the insertion of a covert FUT under N. Furthermore, we have to stipulate that covert semantic tenses do not block feature transmission.

Contrary to the English construction, the Russian “future under future” is unproblematic and analysed precisely as in the case of relative clauses<sup>8</sup>:

(35) Ваня уйдет<sup>[PF,FUT]</sup> после/ до того как уйдет<sup>[PF,FUT]</sup> Маша.

N  $\lambda_1$  FUT<sub>Rus</sub>( $t_1$ )  $\lambda_2$  **Vanja ujd**et( $t_2$ )  $t_2$  **posle/do**

EARL<sub>C</sub> **kak**<sub>3</sub> T<sub>pro1</sub>  $\lambda_4$  FUT<sub>Rus</sub>( $t_4$ )  $\lambda_5$   $t_5$  AT  $t_3$  **Maša ujd**et( $t_5$ )

iF-----uF

<sup>8</sup> Of course we also find constructions with temporal adjuncts under a matrix *budet*. In these cases, we can either say that the feature transmission of uN to the adjunct tense is blocked by the SOT-parameter, or we stipulate that T<sub>pro</sub> in the adjunct cannot be bound by the matrix tense. This is completely analogous to Russian relative clauses discussed in section 4.2.

=  $(\exists t_2 > s^*)$  John leaves at  $t_2$  &  $t_2 > (<)$  the earliest  $t_3$ :  $t_3$  in C &  $t_3 > s^*$  & Mary leaves at  $t_3$

In (35), the [uF] feature of the embedded verb is licensed by a local  $FUT_{Rus}$ (uture). We note that from a semantic point of view, a “future under future” would make sense also in English *before*-clauses. Indeed, some informants accept the construction below:

(36) John will leave before Mary will leave  
 N  $\lambda_1$  **will**( $t_1$ )  $\lambda_2$  **John leave**( $t_2$ )  $t_2$  **before/after**  
 iN-----  
 EARL WH<sub>3</sub> T<sub>pro</sub>  $\lambda_4$  **will**( $t_4$ )  $\lambda_5$   $t_5$  AT  $t_3$  **Mary leave**( $t_5$ )  
 -----uN-----uN

It is also worth pointing out that the perfect can be used in English-like languages to avoid covert operators. For *before* clauses, the perfect must be located in the matrix; while for *after* clauses, the perfect belongs in the adjunct. The latter is illustrated in (37E) below, which furthermore provides a nice translation into Russian (37R) with the semantically transparent construction *posle togo, kak...*:

(37E) This note, my dear Mary, is entirely for you, and will be given you shortly after I am gone. [Dahl, “Kiss Kiss” – RuN-Euro corpus]

(37R) Это послание, моя дорогая Мэри, предназначено только для тебя, и оно будет<sup>[PF,PRES]</sup> вручено тебе вскоре после того, как меня не станет<sup>[PF,FUT]</sup>.

## 6. CONCLUSION AND LOOK AHEAD

Russian adjunct tenses (relative clauses and temporal clauses) differ from their English counterparts in one important respect: When the English matrix contains a future (*will*), the simultaneous/shifted reading is expressed by a present tense in the adjunct. Russian obligatorily uses a future tense in the adjunct clause as well.

This paper is part of a larger research project on tense semantics, notably subordinate tense. We apply our theory for the syntax-semantics interface to real data from parallel corpora. So far, we have dealt with complement tense (Grønn & von Stechow, 2010). The present paper provides a full-fledged theory for adjunct tense. In this paper, however, we haven't analysed adjunct tense inside complements, i.e. adjuncts under attitude verbs:

(38E) John thought Mary would give birth to a son that had blue eyes.

(38R) Ваня подумал<sup>[PF,PAST]</sup>, что Маша родит<sup>[PF,FUT]</sup> сына, у которого будут<sup>[IPF,PRES]</sup>  
голубые глаза (*как и у отца*)

The highest tense in the complement, the temporal centre of the embedded proposition, cannot be deictic. The reason is that John didn't think in the past about the current speech time. Accordingly, in examples like (38) the interpretation of the adjunct is not dependent on the speaker's utterance time, but on the *subjective now* of the attitude holder. The temporal anaphor T<sub>pro</sub>, which is the temporal centre of adjuncts, is flexible enough to capture this fact. In (Grønn & von Stechow, 2011), we show how to combine our theory for complement and adjunct tenses in order to account for such cases.

Finally, our theory will also include an analysis of modals and counterfactuals (known for their fake past tense and tense agreement between the antecedent *if*-clause and the matrix). Hence, we will eventually be able to properly analyse the tense configurations in complex authentic examples like the following:

(39R) Esli<sup>IF</sup> by<sup>[SUBJ.PART]</sup> v te dalekie gody emu skazal<sup>[PF,PAST]</sup>, čto on, kogda  
vyrastet<sup>[PF,FUT]</sup>, stanet<sup>[PF,FUT]</sup> kopirajterom, on by<sup>[SUBJ.PART]</sup>, naverno,  
vyronil<sup>[PF,PAST]</sup>

ot izumlenija butylku “Pepsi-koly” prjamo na gorjačuju gal’ku pionerskogo  
pljaža. [Pelevin, “Generation P” – RuN-Euro Corpus]

(39E) If in those distant years someone had told him that when he grew up he would be

a copywriter, he'd probably have dropped his bottle of Pepsi-Cola on the hot gravel of the pioneer-camp beach in his astonishment.

(39N) Hvis han i fjerne tider hadde<sup>[PAST,AUX]</sup> visst<sup>[PAST,PART]</sup> at han skulle<sup>[SUBJ.PART]</sup> bli<sup>[INF]</sup> copywriter når han ble<sup>[PAST]</sup> voksen, ville<sup>[PAST,MODAL]</sup> han antakelig ha<sup>[INF,AUX]</sup> mistet<sup>[PAST,PART]</sup> Pepsi-flasken rett i den glovarme hellegangen på stranden i pionerleiren.

This example displays most of the subordinate tense constructions we are interested in.

The temporal **adjunct** (*kogda vyrastet* – *when he grew up*) occurs in a **complement** of an attitude verb (“told”), which itself is the **antecedent** of a counterfactual conditional. A complete theory of subordinate tense should be able to explain why we end up with perfective future morphology in the Russian complement (*vyrastet...stanet*), while languages like English and Norwegian have past tense morphology (*grew up... would be*).

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