

Comparing tense systems: the primacy of the Pres/Past opposition

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1. Preliminaries

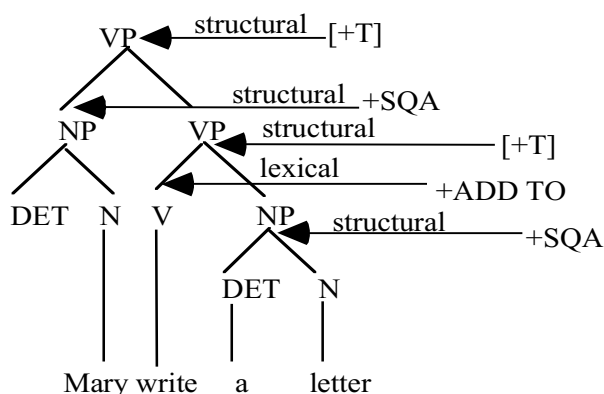
In this paper, we present a semantic formalization of a tense system originally proposed by te Winkel (1866), described in Verkuyl & Leloux-Schuringa (1985) and recently modernized in Verkuyl (2001). As we aim to show, the 1866-system can be considered as superior to Reichenbach's widely recognized model of temporal relations in language because it makes use of referential indices (as Reichenbach does) but also and in particular, because it makes use of binary temporal operators, which can be combined in a regular fashion. By its 2 x 2 x 2 set up, which describes the eight tense forms of Dutch (and English) in terms of three dimensional oppositions Past-Present, Synchronous-Posterior and Imperfect-Perfect, it has clear advantages over the Reichenbach 3x3-organization of the tense system. In the present paper, we will make use of the binary system while focussing on the first dimension because of its primacy in the set of three oppositions with an eye on comparing Russian, Dutch and Spanish.¹

We assume that there is a clear distinction between the temporal and atemporal levels of semantic representation, which implies that in sentences like (1), the basic aspectual information comes from the tenseless part of the predication, i.e. '*Mary write a letter*'.

(1) Mary has written a letter

In the case of (1), the value of the predication is terminative/telic (cf. Verkuyl 1972, 1993, Krifka 1989, and many others). We call this level of aspectual representation predicational aspect. It only concerns the relationship of the verb and its arguments, its value being determined at the predicational level, which in syntactic terms roughly corresponds to the level of the extended VP as shown in Figure 1.

¹ There are other scholars working with a binary set up, such as Vikner (1985) and Julien (2001), but these proposals do not go back to Te Winkel who in our view should be considered as the founder of the binary perspective on tense. Our paper is an attempt to work out Te Winkel's view with the help of modern logical-semantic tools.



(cf. Verkuyl, 1993; p.22)

Figure 1

Another possible value for the predicational aspect which can result from the computation at this level is durative or atelic. The contrast is exemplified by comparing (1) and (2).

(2) Mary has written letters

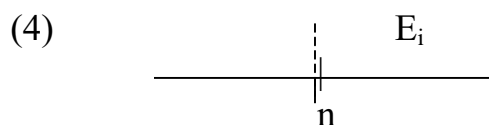
We assume that the aspectual value of a predication determined at this level of representation remains intact and is independent of any temporal information. In this perspective, tense is viewed as a structured set of operators on the tenseless predication, the denotation of which we will call E (to stay close to Reichenbach's notion of Event time). In order to accommodate this information to the temporal structure, we propose that E be immediately assigned an index i , which, in turn, is to be 'translated' into a 'real time' interval I in the course of computation²:

(3) E_i

In the system that we are going to describe, tenses like Perfect and Imperfect do not operate directly on the predication itself, but rather on the index representing the E-information: they provide some higher level information about the temporal domain in which the eventuality E is to be located without affecting E itself. In order to develop a formal representation of a temporal model, we take indices to be our theoretical tools that stand for temporal domains. We will make use of some temporal relations, like simultaneity and precedence, which can be established between indices.

² See Verkuyl (1993) for technical details of this transformation.

It is widely assumed in temporal semantics that a given sentence is evaluated with respect to some ‘anchoring’ point in time, some default time, which is usually called the point of speech. When we introduce this point into our system, we immediately get a simplest configuration, with two obligatory indices, one, n , standing for the speech time, another one, i , standing for the temporal domain in which an eventuality E is located. For instance, if these two indices coincide, we get the simplest temporal meaning: the meaning of present tense:



2. Reichenbach’s temporal model

So far, the theory of tense may appear to be reminiscent of the one by Reichenbach (1947), especially at first sight. Our notion of temporal domain may be taken to be somewhat similar to Reichenbach’s Reference time and our notion of Speech time is just taken from Reichenbach and named differently as in Kamp & Reyle (1993). The legitimate question that arises immediately is where a theory following Te Winkel’s binary set up is different from Reichenbach’s system.

There are certainly some similarities between Reichenbach’s model and the theory we describe in the present paper. In particular, we do not argue against the notions that Reichenbach uses, but we argue against Reichenbach’s set up of a temporal model for a number of reasons. First of all, there is a conceptual problem. Given that compositionality is one of the main basic principles of modern semantics, it is easy to see that Reichenbach’s model is not compositional due to its 3x3 set up. Reichenbach introduces 3 temporal unites: E(vent time), which relates to R(eference time) and R, which relates to S(peech time). The relations between these units are established at the same time: the system does not provide a subsequent set of temporal operations, which would lead to compositionality of the resulting temporal configuration. The relative positions of S and R give us past, present and future, whereas the set of relations between E and R are determined as anterior, present and posterior. This gives us 3x3=9 possibilities, which are not all used up in English.

As observed earlier in the literature there are a number of empirically based objections to Reichenbach’s original system of which we give the

following³. First of all, the tense form in sentence (5) cannot be configured in Reichenbach's model.

(5) Mary would have seen John

Second, the simple future form results for 3 different configurations, all possible in Reichenbach's model:

(6) I will walk
 S, R — E or S — E, R or S — R — E

This should not be allowed in a system predicting nine tense forms: sentence (6) is not triple ambiguous. Finally, the combination of Anterior (i.e. $E < R$) and future (i.e. $S < R$) yields only one tense form, i.e. *will have written*, but three possible configurations can be assigned to this form (7a). Exactly the same problem arises with posterior ($R < S$) future, as shown in (7b).

(7) a. Mary will have seen John
 E — S — R or E,S — R or S — E — R
 b. Mary would see John
 R — E — S or R — E,S or R — S — E

In the light of all these objections, it is clear that the system proposed in Reichenbach (1947) is far from being optimally designed to capture the semantics of tense in language.⁴ The essence of our proposal is, therefore, to explore a redesign of Reichenbach's model, in particular, of its basic setup, and not so much of its conceptual notions. We will discuss a system that is based on another long-standing tradition in temporal logic: a number of binary oppositions, among which the most important one is the opposition between Past and Present.

3 This sort of criticism of Reichenbach (1947) is found in Verkuyl & Loux-Schuringa (1985) and in Vikner (1985), among others.

4 The literature is not without opposition against the use of *would* as an indicative form. We will follow the general attitude of allowing this form taken in its temporal interpretation. It should be added that given the primacy of the first dimension in which Present and Past are opposed, we could even defend the position that Dutch and English and many other languages have just two tense forms. In that case, the auxiliaries *shal/willl* and *have should* be left outside the system. We adopt the more generous or less parsimonious position by including the auxiliaries in the system.

3. The binary system

The tense system we advocate is formed on the basis of Te Winkel’s three oppositions: Present versus Past (“starting point”), Synchronous versus Posterior (posteriority) and Incomplete versus Complete (anteriority).⁵ In other words, we are changing the 3x3-design into a 2x2x2-set up. Every tense form is composed on the basis of a choice made at each of the three steps:

1) “starting point”: present vs. past

In the syntax of sentences expressing a Present Tense or a Past Tense we have the operators PRES and PAST, respectively, that can be interpreted semantically as connecting the information expressed by a tenseless structure either with a point in the present of a domain of interpretation, or with a point in the past. The following notations are introduced: an index n refers to the present and the mirror image of this index in past domain is n' . The 2 tense-operators of the first opposition can be defined as:

- a) PRES: = $\lambda\phi\exists i[\phi[i] \wedge i \text{ o } n]$
- b) PAST: = $\lambda\phi\exists i[\phi[i] \wedge i < n]$

The symbol o stands for the relation of overlap. The definition of the Present says that n overlaps with the index i of the eventuality described by the predication ϕ . Past says that i is located before n .

2) posteriority

The posterior verb form introduces an index positioned after the point introduced by the present tense of the verb or after the point introduced by its past tense. We treat this opposition parsimoniously by only introducing one operator POST and not an operator SYNCHR. The idea is here that operators are only necessary when there is some overt form to carry them (cf. Verkuyl 2001 and Julien 2001 for a similar position).

The operator POST can be defined as in:

- c) POST: = $\lambda\phi\lambda i\exists j[\phi[j] \wedge i < j]$

This definition expresses that the sense of future should not be associated uniquely with the utterance time but also with times located in the past and introduced by the PAST operator. That is, sentences like *Mary would walk*

⁵ Above we have used the terms Imperfect and Perfect. These are the Latin terms for Incomplete and Complete, which we prefer here in order to minimize confusion between Perfect and Perfective.

are now taken as parallel to sentences like *Mary will walk*. The index i introduced by the Past tense of *Mary would walk* is taken as doing the same job as the index i overlapping with the point of speech n in sentences like *Mary will walk*. So, in *Mary would walk* we have a Future in the Past as opposed to a Future in the Present in the case of *Mary will walk*. In Germanic languages the operator is visible. In Dutch, for example, by the presence of the auxiliary *zullen*, in English by the presence of *will*.

3) anteriority

From the point of view of locating eventualities, this opposition amounts to the inverse of the couple Synchronous versus Posterior: it locates the E-index k before another index i . By so doing, it provides the sense of completedness: the event took place as a whole before i . The operator called PERF is defined as:

d) $\text{PERF: } =\lambda\phi\lambda i\exists k[\phi[k] \wedge k < i]$

The operator PERF is in Dutch visible in the form of an auxiliary *hebben* and in English in the form of the auxiliary *have*. Again, there is no need for an operator IMP, all those forms which do not need the operator PERF will then immediately be understood as IMP.

Table 1 represents all the possible combinations of operators, which sum up giving the full Dutch temporal system.

Table 1: Dutch

REPRESENTING THE 8 TENSE FORMS (DUTCH)	
PRES 1a) ik schrijf een brief <i>I write a letter</i>	PAST 1b) ik schreef een brief <i>I wrote a letter</i>
PRES(POST) 2a) ik zal een brief schrijven <i>I will write a letter</i>	PAST(POST) 2b) ik zou een brief schrijven <i>I would write a letter</i>
PRES(PERF) ⁶ 3a) ik heb een brief geschreven <i>I have written a letter</i>	PAST(PERF) 3b) ik had een brief geschreven <i>I had written a letter</i>
PRES(POST)(PERF) 4a) ik zal een brief geschreven hebben <i>I will have written a letter</i>	PAST(POST)(PERF) 4b) ik zou een brief geschreven hebben <i>I would have written a letter</i>

⁶ A possible explanation for the not yet solved question about the differences between the Dutch and the English present perfect would be to say that English has present tuning and Dutch perfect tuning, due to adverbial/contextual information. The difference relies in what it is being understood as present; in English, the utterance time equals the present, while in Dutch it does not.

The main advantages of the binary system are:

1. The system is completely compositional: Verkuyl (2001) has shown that all eight forms can be derived compositionally on the basis of applying the operators on a tenseless sentence.
2. There is no tripartition between Present-Past-Future, but only the basic opposition between Past and Present remains. This becomes obvious since it is the only opposition that needs both operators to function in the system. Moreover in Germanic languages there is no separate marker of the future, future forms being in need of an auxiliary.
3. Richer en poorer tense systems can also be described by this system.

In the remainder of the present paper we will elaborate the third claim: the binary system should have the potential to be extended in order to capture the languages having more than eight forms or shrunk to account for the languages with less than eight forms. We have considered two more groups of languages: Romance (Spanish) and Slavic (Russian). Both languages will be dealt with in detail in the next sections.

4. Spanish as a richer system

Table 2: Spanish

PRES 1a) escribo una carta I-write-PRES a letter	PAST 1b) escribía una carta I-write-PAST-IMP a letter
PRES(POST) 2a) escribiré una carta I-write-FUT a letter	PAST(POST) 2b) escribiría una carta I-write-COND a letter
PRES(PERF) 3a) he escrito una carta I-have-PRES written a letter	PAST(PERF) 3b) había escrito una carta I-have-PAST-IMP written a letter
PRES(POST)(PERF) 4a) habré escrito una carta I-have-FUT written a letter	PAST(POST)(PERF) 4b) habría escrito una carta I-have-COND written a letter

This table shows that eight of the ten Spanish indicative temporal forms can be characterised in the same way as the Dutch tense system: as a combination of operators. The simple forms in 1 and 2 are distinguished by not employing the PERF operator. Until now it matches the Germanic table. Verb forms that refer to incomplete time domains in Spanish are simple, while those forms that refer to complete time domains, make use of an auxiliary to carry the inflections.

The problem that needs to be solved is clear: the Spanish indicative paradigm has got two more tenses and the question is how to do that with the same system that describes eight tense forms.

- (8) Escribí una carta Pretérito perfecto simple
I-write-PAST-PERF a letter
- (9) Hube escrito una carta Pretérito anterior
I-have-PAST-PERF written a letter

With respect to (9) the answer is simple: the ‘pretérito anterior’ is no longer really in use in spoken language. It only occurs in written language. González (2003) contains a discussion of the conditions under which this form can be used, so we restrict ourselves here to the ‘pretérito perfecto simple’, which is a very common form in peninsular-European Spanish.⁷ The term ‘pretérito perfecto simple’ itself tells us a lot about both its form and its meaning: ‘pretérito’ tells us that it is Past; ‘perfecto’ tells us that it refers to a completed time domain and ‘simple’ tells the obvious: it is only one word. So here we find three dimensions fused into one.

However, the form has its own specific inflection. Moreover, the ‘pretérito perfecto simple’ is the only Spanish perfect form that allows the main verb to carry inflection. This inflection can only be understood as expressing Past Perfect so that the ‘pretérito perfecto simple’ (PPS) should be analyzed in its opposition to the past completed form, such as in (3b) *había escrito* (pretérito pluscuamperfecto, I had written).

- (10) **Había escrito** una carta cuando se apagaron las luces
 ‘I had (already) written a letter when the lights went off’
- (11) **Escribí** una carta a María el verano pasado
 ‘I wrote (PPS) a letter to Mary last summer’

Sentences (10) and (11) seem to be very similar in meaning, but there is a clear difference: by the use of *había* sentence (10) requires the presence of the information provided by *cuando se apagaron las luces*. This context is needed to locate the time domain where the eventuality is hosted before an index provided by the tense of *se apagaron*. In sentence (11), on the other hand, the verbal inflection itself gives us all the information needed without any dependency of information present in the rest of the sentence. The question arising now is how the PPS expresses the complex Past+Perfect information on its own within a three-dimensional system.

⁷ In American literature the pretérito perfecto simple has been called the “preterit”; but we will not use this term because we believe it is not only incorrect but also confusing.

The temporal clues the PPS contains are:

- the completion time of the eventuality is located in the past
- the eventuality is located in the past
- the point of perspective with respect to the completion is provided by the context rather than directly by the present itself.

We will call the latter point an *anchoring point*. One way of introducing it is to define an operator ANCH:

$$e) \quad \text{ANCH} := \lambda\phi\lambda i'\exists k[\phi[k] \wedge A_c(k, i')]$$

This operator introduces a contextually given adverbial domain A (either in the sentence itself or in preceding discourse) introducing a point i' which has a similar function as the index i in the definitions of PRES and PAST but different from it because i' is made dependent on the presence of the adverbial information introduced by A. The problem with this definition is that the operator ANCH_c needs to select the past tense in order to make tense assignment possible (it therefore has a form as the operators in c) en d)). Therefore, it seems as if a second way of introducing an Aorist-like PAST is called for:

$$f) \quad \text{PPS}_{\text{AORIST}} := \lambda\phi\exists i\exists k[\phi[k] \wedge A_c(k) = i \wedge k < i \wedge i < n]$$

This definition provides a way to anchor the point of perspective i in a domain introduced by a context A_c so that i is not $i \circ n$ as in the case of PRES nor $i < n$ as in the case of the PAST, but i is defined as the i of a certain domain described by A. The definition expresses that i precedes n (of course, because the speaker of the sentence cannot be eliminated) but it crucially expresses that the point of perspective to be used for the computation of the location of the k -index is determined by considerations that have to do with the domain A. The A-predicate overrules, so to say, the instruction given by $i < n$, because it explicitly locates the i -index with respect to k . The advantage of this way of introducing the Aorist-like operator PPS is that the definition combines the PAST-information ($i < n$) with the idea of attributing a point of perspective that is primarily dependent on information separated from the point of speech. Note in passing that f) expresses some of the Past Perfect-information always associated with the use of Aorist-like forms without have a Past Perfect tense configuration. The PPS in (11) and the Pluscuamperfecto in (10) are then equal in that both take place in the past and both are completed.

However, the PPS has on its own not only a reference index marking the beginning of the temporal interval but also an anchoring point from which the eventuality is taken to be completed. The pluscuamperfecto also needs both indexes, but on its own it can only offer the beginning index. The difference between (10) and (11) can then be represented as given in (10a) and (11a).

(10) a. $\exists i \exists k [I\text{-write-a-letter}(k) \wedge A_c(k) = i \wedge k < i \wedge i < n]$

(11) a. $\exists i \exists k [I\text{-Write-a-letter}(k) \wedge k < i \wedge i < n]$

The crucial difference between the two representations is that the PPS contains itself the instruction to provide a point i from which the k -information about the eventuality is taken to be completed.

We conclude that the 2x2x2 set up of the binary system does not run into difficulties in a richer system. What can be observed is that the PPS is simply an extension of the first dimension (PRES-PAST) by introducing a third possibility for the perspective index.

5. Russian as a poorer language

Modern Russian clearly belongs to the group of languages with rather poor tense systems. It is, therefore, a challenge for us to try and apply the system we advocate in this paper to Russian.

As can be seen from the table 3 below, aspect also interferes in the tense system and in certain cases restricts the formation of particular tense forms.

Table 3: Russian

	NON-PAST	PAST
imp	1a) On piš-et pis'mo (present) <i>He write-3sg letter-acc</i> 2) On bud-et pisat' pis'mo (fut) <i>He be-3sg write-INF letter-acc</i> 'He will write a letter'	1b) On pisa-l pis'mo <i>He wrote-sg.masc. letter-acc</i> 'He was writing a letter'
perf	3a) On na-piš-et pis'mo <i>He PF-write-3sg letter-acc</i> 'He will have written a letter'	3b) On na-pisa-l pis'mo <i>He PF-wrote-sg.masc. letter-acc</i> 'He wrote a letter'

Some remarks are in order here. First of all, we deliberately distinguish only two tense forms in Russian, PAST and NON-PAST, on the basis of inflectional morphology. As the table demonstrates, the imperfective aspect allows for a formation of a periphrastic future forms with the auxiliary *budet* in the present tense and an infinitival form of the main verb.

Historically, the form of the auxiliary used here is perfective⁸. Perfective forms in the NON-PAST tense almost exclusively have only future tense interpretation. We will now restrict ourselves to the right-hand side of the table. The past tense forms, both perfective and imperfective, are frozen participles. They still feature ‘participial’ agreement pattern: the past verb forms agree with the subject in number and, if singular, also in gender, whereas the non-past forms agree in person and number. The so-called ‘resultative’ *l*-participle was used in Church Slavonic and Old Russian for the periphrastic tense formation, in particular, for the formation of past perfect and present perfect tenses and occasionally also for future.

Historically, Russian has not always been a ‘poor’ language with respect to the number of tense forms. Thus, in Old Russian four past tense forms can be distinguished: Aorist and Imperfect, which had specific morphological forms and were not very widely used in the spoken language, and Past Perfect and Present Perfect, the latter being the most common form in Old Russian. It was also used to substitute for other past forms at the later stages of language development. When the auxiliary verb was ‘lost’ for the perfect tense formation, the ‘bare’ participle form took over the meaning of past tense altogether.

Unlike in modern Russian, tense formation in Old Russian was not influenced by aspectual differences. To get just a brief idea about what is meant by aspect in Russian, consider the following examples:

- (13) a. Saša pel pesnju
Saša sang.IMP song.ACC
 ‘Saša sang/was singing a song’
 b. Saša s-pel pesnju
Saša PF-sang song.ACC
 ‘Saša sang a song’

The Russian sentences in (13a) and (13b) are identical, except for one thing—the difference in the *aspectual* form of the verb. The term *aspect* here traditionally refers to the opposition between *perfective* and *imperfective* in Russian. In (13a), the verb *pet* ‘to sing’ is in the imperfective, in (13b) it is in the perfective aspect. Perfectivity is usually morphologically marked on a verb. One of the most common

⁸ Modern Russian does not use many forms of be, so it is hard to say if the form used in the periphrastic future is perfective or imperfective without taking historical evidence into account. But in Old Church Slavonic, for instance, the imperfective and perfective forms of be were both used and clearly distinguished in form: cf. *jesmѣ* (1st.sg.imp) vs. *boudou* (1st.sg.pf)

morphological means to derive perfective forms is prefixation. From the point of view of verbal morphology, the aspectual morphology in Russian is not a part of the tense morphology at the same time: the verb forms in (13) both have the same inflectional past tense morpheme *-l-*.

Let us concentrate now on the interpretation of perfective and imperfective past forms. As for the imperfective past, it has three basic uses. The sentence in (14) exemplify the episodic/background reading, (15)—the habitual reading—, and, finally, in (16) we obtain the progressive meaning:

- (14) a. Včera utrom ona zvonila
yesterday morning she rang.IMP
 ‘She rang yesterday morning’
- (15) a. Ona zvonila každoe voskresen’je
she rang.IMP every Sunday
 ‘She used to ring every Sunday’
- (16) a. Ona zvonila kogda ja eje videla
she rang.IMP when I her saw
 ‘She was ringing when I saw her’

It has been argued in Borik & González (2001) that Russian past imperfective and Spanish imperfecto are analogous and should be analysed in a similar way. The reader is referred to the paper for further discussion as well as the motivation of this step. In the present paper we just assume that the imperfective in Russian is assigned a basic configuration of past tense, which involves only one operator, i.e. PAST.

Russian past perfective forms are ambiguous between the meaning expressed by the English/Dutch simple past on the one hand and past perfect on the other:

- (17) My pozvonili kogda ty prišel
we PF-call-pst.pl when you PF-come-pst.sg.masc.
 a. We had (already) called when you came
 b. We called when (=after) you came.

In this example, the verb form in the first (main) clause can be translated into past perfect or into simple past tense. The ambiguity of this type can only be resolved by some extra (contextual, not necessarily linguistic) information. Moreover, Russian perfect forms, both in past and non-past, give rise to the well-known ambiguity in the interpretation of temporal modifiers, which is usually observed with the English past perfect:

- (18) a. Ona budet zvonit' v 5 only 'call at 5'
 she be-3sg call-INF at 5
 b. Ona pozvonit v 5 'call at 5' / 'call by 5'
 she PF-call-3sg at 5
- (19) a. Ona zvonila v 5 'call at 5'
 she call-IMP-pst-sg.fem at 5
 b. Ona pozvonila v 5 'call at 5'/'call by 5'
 she PF-call-pst.sg.fem at 5

Compare:

- (20) She had (already) called at 5pm ('at 5 pm'/'by 5pm')

On the other hand, just like Spanish PPS, past perfective in Russian functions independently and does not have to be supported by other tense forms (like past perfect, which does not sound natural in a simple sentence taken out of the context). But can the perfective in Russian be associated with perfect tenses in English in general? The answer seems to be negative, when we look at the sentences in Present perfect and translate them into Russian:

- (21) a. I have worked on this paper since March
 b. Ja rabotal/rabotaju/*po-rabotal nad etoj statjej s marta.
 *I worked/work/*PF-worked over this paper since March*

Perfective aspect is not excluded from the translation of English present perfect, to the extent that the use of the simple past is not excluded as a substitute for present perfect in English:

- (22) a. I have read/read a new paper by Chomsky
 b. Ja chitala/pročitala novuju statju Xomskogo⁹
 I read-IMP-pst.sg.fem/PF-read-pst.sg.fem.new paper Chomsky-GEN

We can now suggest a possible interpretation of the data. Given that the auxiliaries in Germanic and Romance languages are semantically loaded elements, i.e. they do influence the temporal interpretation of sentences by contributing operators along the lines sketched for Dutch, English and

⁹ Note that the difference in the predicational aspect, i.e. telicity value, does not really matter here, because the imperfective form can also refer to a 'completed' eventuality. Not all the perfective verb forms necessarily yield telic predicational aspect, see Borik (2000) for a number of counterexamples.

Spanish above, what could have possibly happened in Russian when the auxiliary was lost in the tense formation process?

The logic is the following. It is easy to see from the temporal configurations given in the appendix, that what the auxiliary always does it to place an index i , either as $i \circ n$ or at as $i < n$, depending on its own morphological tense. It is plausible to assume that this part disappeared with the loss of the auxiliary in Russian. This means that in the Russian tense system the connection to the moment of speech is lost in the strict sense of the word. To unravel this idea even further, it means that the Russian tense system is to a certain extent ‘free’ to choose the initial point of reference. If no other specific ‘anchoring’ point is provided, it is by default the ‘now’ point. Some supporting evidence for this hypothesis comes from the following examples. The choice between present and past form is absolutely free in (23). (24) illustrates that there is no sequence of tense in Russian.

(23) Ja xotela/xoču sprosit’ u kogo-nibud’, kogda nam lučše priexat’.
I wanted/want ask at someone, when us better arrive

(24) Emu kazalos’, čto ona sxodit s uma.
Him seemed, that she goes nuts

It is also easy to see that the job the past participle is supposed to do is to “move” the eventuality index k to the left (that’s why it is called the past participle) of the last introduced index. This is what the Russian l -participle still does, therefore providing the ‘past’ interpretation.

Further complexity of a given temporal configuration is done by aspect. We suggest that the perfective aspect introduces an additional index between the anchoring point [‘now’ by default] and the E-index. The interpretational value of this operation is shifting the event domain further away from the anchoring point, so that it becomes inaccessible from the initial anchoring point.

6. Conclusion

Carrying our conclusion about the Russian system to the more general context of comparing the application of the binary tense system to the three families involved, we may start to observe that for Russian the binary system provides a natural way to use the presence or absence of the PERF-dimension in order to explain the existing tenses. As to the PPS of Spanish, we had already noticed that the form that falls outside the binary set up amalgamates two different dimensions (the PRES-PAST-dimension and the

IMP-PERF-dimension of the two Germanic languages discussed) in which <-information plays a role, there being no problem with the (SYNCH-)POST-dimension. In Russian, the POST-dimension is also expressible by an auxiliary, but given the loss of a specific auxiliary to carry a PERF-operator we see again that the first and third dimension of the 2x2x2-system interfere with one another in order to provide for the appropriate tense forms. As pointed out above, this not only accounts for the existing tense forms but it also resulted in a change in the relation between PRES and PAST. In a strict 2x2x2-application as in Dutch and Spanish, the index *i* is either overlapping with *n* or preceding it. Russian, however, seems to compensate the loss of the PERF-auxiliary with a greater freedom as to the role of an index to serve as an independent point of perspective. Notice also that Russian tends to have an opposition between PAST and NON-PAST rather than between PAST and PRES.

The present paper had two goals: (a) to show that a binary tense system offers advantages in the description of tense systems over the 3x3x3-set up of Reichenbach (1947), and we demonstrated that with the help of a comparison between three languages; (b) to point out that the first dimension of the binary system, i.e. the opposition PRES and PAST are primary. In our opinion, we have achieved our goals by discussing three sorts of different tense systems and by pointing out that it is possible to use a coherent explanatory analysis based on the notion of dimensions that make up a binary system, referring to Borik (2002), González (2003) and Verkuyl (2001) for more detailed information.

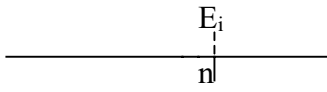
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COMPARING TENSE SYSTEMS: THE PRIMACY OF THE PRES/PAST OPPOSITION

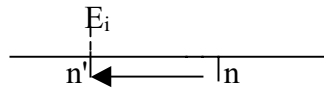
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1a) Simple Present
Mary writes a letter
PRES (ϕ)
 $\exists i[\text{write}(i)(l)(m) \wedge i < n]$



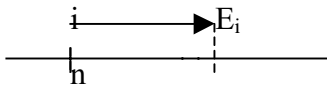
E, R, S

1b) Simple Past
Mary wrote a letter
PAST (ϕ)
 $\exists i[\text{write}(i)(l)(m) \wedge i < n]$



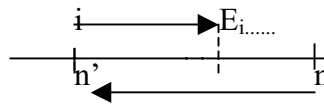
E, R _ S

2a) Present Future
Mary will write a letter
PRES(POST) (ϕ)
 $\exists i \exists j[\text{write}(j)(l)(m) \wedge i < j \wedge i < n]$



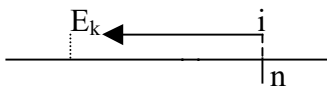
S, R _ E

2b) Past Future
Mary would write a letter
PAST(POST) (ϕ)
 $\exists i \exists j[\text{write}(j)(l)(m) \wedge i < j \wedge i < n]$



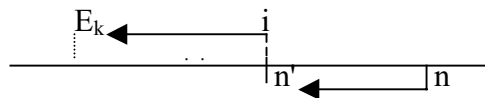
R _ E _ S
R _ E, S

3a) Present Perfect
Mary has written a letter
PRES (PERF) (ϕ)
 $\exists i \exists k[\text{write}(k)(l)(m) \wedge k < i \wedge i < n]$



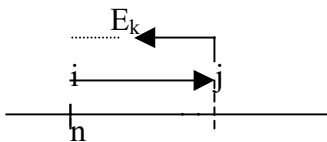
E _ R, S

3b) Past Perfect
Mary had written a letter
PAST(PERF)(ϕ)
 $\exists i \exists k[\text{write}(k)(l)(m) \wedge k < i \wedge i < n]$



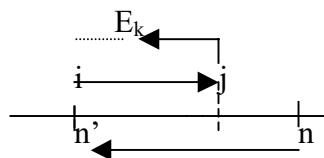
E _ R _ S

4a) Present Future Perfect
Mary will have written a letter
PRES(POST)(PERF) (ϕ)
 $\exists i \exists j \exists k[\text{write}(k)(l)(m) \wedge k < j \wedge i < j \wedge i < n]$

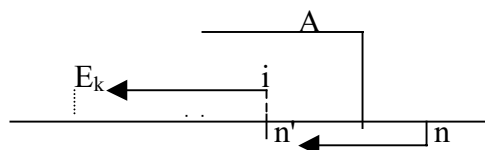


S _ E _ R
S, E _ R

4b) Past Future Perfect
Mary would have written a letter
PAST(POST)(PERF) (ϕ)
 $\exists i \exists j \exists k[\text{write}(k)(l)(m) \wedge k < j \wedge i < j \wedge i < n]$



5b) Pretérito Perfecto Simple (Passé Simple)
María escribió una carta
PAST(ANCH) (ϕ)
 $\exists i \exists k [\text{write}(k)(l)(m) \wedge A(k,i) \wedge i < n]$



E, R _ S