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Temporalisation of eventualities

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TEMPORALISATION OF EVENTUALITIES

Introduction

A text-user operates simultaneously in two domains: the event domain (E-domain) and the text domain (T-domain). Generally, a domain is an ordered system of entities. The task of a text-user (text-encoder or text-decoder), broadly speaking, is to link the entities of the T-domain to some entities of the E-domain. The apparatus for such linking is the language system of temporalization. The concept of temporalization has opened a broad field of research[1]. An analysis of this concept is important for modelling natural language processing because temporal information is constantly coded into language by the speaker and decoded by the hearer. Additional value of such research lies also in the connection to AI studies, as well as in the light this research might throw on some issues of cultural studies, such as description of discourse, narration etc.

The E-domain is part of the (actual or possible) world. As this paper focuses on temporality, I will view the E-domain as consisting of event(ualitie)s characterised by duration and frequency and essentially ordered in time. Eventualities are temporal entities situated on and occupying portions of the time-line model. Postulating events as basic entities of semantic ontology is common practice of temporal semantics even if it may be problematic. For example, Kamp & Reyle (1993) introduce events as basic entities, but admit that

> The identity criteria are ill-defined; it is difficult to know under which conditions events exist... and it is not clear how events are related to other entities, such as, for instance, times.
>
> (666)

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[1] Semantics of time has been extensively discussed in a number of recent publications in the wake of the pioneering achievement of H. Reichenbach (1947). It is impossible for one individual to read, least of all to absorb, all this production. I will mention a few authors to whom I owe the broad cognition-based approach to temporal interpretation: Ö. Dahl (1985), N. Hornstein (1990), W. Klein (1994), T. Parsons (1990), A. Kratzer (1998), R. Bäuerle (1979). The analysis of time in tensed predicate calculus (TPL) is critically reviewed in Kamp & Reyle 1993, Vol. 2, pp. 483–510. The approach of the two authors, called discourse representation theory (DRT), is a variant of model-theoretic semantics.

As far as the T-domain is concerned, it consists of tokens of linguistic objects such as words and sentences implemented in a text. The arrangement of utterances as semiotic tokens has naturally its own temporal aspects such as rhythm, tempo, sequence etc. Most of these aspects, however, will be ignored in this paper. I will assume only a strict temporal sequence of 'propositions' (roughly coincident with VPs). This means that at most one utterance$_i$ is identified with speech orientation time (t_0) at any moment of the discourse or text processing until a new utterance$_{i+1}$ takes over the position of t_0. In spoken clauses, t_0 is equal to speech time of the root clause. The representation of speech time is thus based on the order in which propositions enter the user's cognitive base. This is in close correspondence with the intuition expressed in Firbas (1983.11) where static and dynamic semantics are contrasted. By dynamic semantics Firbas means 'the functioning of semantic contents... in the act of communication, i.e. at the moment a communicative purpose is being fulfilled'. Thus dynamic semantics would be unthinkable without establishing t_0. Beyond this notion of successive update of speech time and its changing relation to other temporal entities, I will concentrate in my work mainly on the denotations of T-objects (T_e T_r – to be explained below) and study their contribution to the temporal interpretation of the message.

The knowledge of the two types of objects (those belonging to the E-domain and those belonging to the T-domain) must clearly be minimally available to us if we are to understand and successfully use the temporal meanings of sentences. In my present contribution I will, moreover, argue that these two domains are not sufficient to give us a satisfactory description of the current temporal meanings. In connecting E-domain with the T-domain, we need to refer to time slots. We must take into account the coding strategy consisting in selecting and signalling relevant portions of time, time of relevance, (T_r). T_r represents, in my view, the time interval projected on the time-line by various means of temporalization. In brief, T_r provides a guideline which takes the decoder from some orientation time to the pertinent time zone where the events being described are to be situated.

The model-theoretic approach to natural language communication usually assumed a linearly-arranged framework of time points or time intervals. 'Times' were regarded as primitive elements of some kind, abstract slots (points, spans) and eventualities, such as states and events, as the things inserted into them. By adopting such ontological constituency, the pre-existence of 'times' containing events was taken for granted. In the present paper I would like to argue that these 'times' are not naturally given the way we thought. They mostly result from the cognitive coding done by linguistic means. In discourse we find various T-objects which have times as their denotations. The most obvious of these are time adverbials; phrases like *yesterday, this morning, at two o'clock, a few days ago*. Very often, the times of events are explicitly referred to or made precise by such expressions. However, the actual way how these times enter into the mental reconstruction of reality has not yet been described and requires research[2].

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[2]   The view expressed here may, of course, be regarded as a partial rehabilitation of the early structuralist belief in the active role of language in the shaping of human experience.

Within this work, I will focus on the means of explicit temporalization. These are, above all, time adverbs, time phrases or time clauses. Syntactically, they have the potential to get adjoined to several targets: we usually distinguish sentence adverbials or VP-adjoined adverbials. Tense, a competing means of temporal location, may also be considered an explicit means of temporalisation. But the role of tense was exaggerated: some authors writing about tense (Lyons 1995.312) did not take the interplay between tense and other time specifications in the sentence seriously enough and so regarded some languages as basically tenseless. One of the points made in this work is the realization that some adverbials bear tense features in analogy to verbs (see section 4).

I do not pretend to any finality of statement nor an exhaustive treatment of the field. Studying temporalisation, one should devote some attention to the meaning of time clauses and time connectives. Another neglected issue here are time expressions serving as predicate complements or predicate nominals. I can assure the reader that I am going to fill these gaps in my future work.

Before I set out on my main task, two special outcomes must be mentioned. First, cases where there is more than one temporalizing expression in a clause. In such cases, the potentially competing expressions can enter into several possible relationship: submodification, co-ordination, or, with the loss of grammaticality, conflict. Frequently, a division of labour can be found between different means of temporalisation e.g. adverbials can get different syntactic attachment, an adverbial and tense can chain into concord and so on. Second, it can occur that there is no overt temporalization. In such a case, the following solution is adopted: if, in a given clause, there are no temporal expressions present, then T_r (relevance time) is either inherited from the clauses (sentences) locally preceding it, or it is per default identical to the speech time.

My paper is structured in the following fashion: In section 1, I introduce the notion of relevance time (T_r) and show its usefulness in several descriptions, one of them being the use of tense in so called performative utterances. In this connection, I attempt some solutions to the problem of tense in embedded clauses. In section 2, I provide an analysis of the different treatments of embedded (bound) tense in Czech and English. Alongside the sequence-of-tenses issue, I propose a theory of tense composition and compare it with other theories. Section 3 completes the picture by adding remarks about multiple-event reading and extended-now theory. In section 4, I attempt a preliminary analysis of time adverbials specifying two respects in which time adverbials have their occurrence grammatically constrained: by tense feature [past] and aspect feature [durative].

Closing this brief introduction I would like to say a few words about the ontological commitment. In order to avoid this aspect of my investigation, I would like to invoke the distinction between internal and external questions of existence made by Carnap (1950) in these words:

> we must distinguish two kinds of questions of existence: first, questions of the existence of certain entities of the new kind within the framework; we call them internal questions; and second, questions concerning

the existence or reality of the system of entities as a whole, called exter-
nal questions

and say that I do not pretend to any questions external to the field of text analy-
sis or language description.

1 Times

1.0

First of all, I present the uninitiated reader with a brief explanation of the
symbols of formal apparatus for describing the temporal framework. I limit my-
self only to those symbol which will be used in the present paper.

T	<u>means</u>	period or interval of time
t	<u>means</u>	a point of time, an interval lacking extension
$T_1 < T_2$	<u>means</u>	whole period 1 precedes whole period 2 (strong precedence)
$t_1 < t_2$	<u>means</u>	point 1 precedes point 2
$t_1 = t_2$	<u>means</u>	identity or coincidence of two time points
$T_1 = T_2$	<u>means</u>	identity of two time intervals (periods)
$t \in T$	<u>means</u>	point t is an element of interval T
$T_1 \supset T_2$	<u>means</u>	period 2 is a genuine subinterval of period 1
generally '$\alpha \subset \beta$'	<u>means</u>	'α is included in β' or 'α is a subinterval of β'
$T_1 \supseteq T_2$	<u>means</u>	period 2 is a subinterval of period 1 or coincides with it
$t \neq T \rightarrow$		not $(t \supseteq T \lor t \subseteq T)$

To distinguish between different types of temporal referents the standard
practice is to add subscripts to the symbol representing time intervals or points.
The subscripts used in this article will be explained at the point of their intro-
duction.

1.1

As far as the pre-history of the notion T_r is concerned, I do not have to re-
mind the reader of the work done by Reichenbach (1947). The term reference
point plus the realisation that reference point cannot be simply identified either
with the temporal location of the event reported in the sentence, or with the time
of the text production (speech time), is due to him. My slightly modified term
relevance time should manifest, by its alliteration, its Reichenbachian origin.
I decided, however, against using the original term because it has been overused
and suffers from too many different readings.

My starting hypothesis is that all temporal expressions (tenses, time phrases,
time clauses) are the indicators of the so called relevance time. **Relevance time**
(T_r) makes it possible for the sentence decoder to come to terms with the task of

finding the relative time position of the event (this search may be called temporal interpretation). The idea behind this is that T_r is the temporal perspective brought into the interpretation by one part of the sentence and applied to the rest of it. Sometimes it operates on a time denoted by the preceding sentence. Sometimes it may look as though T_r could be transferred through several sentences in a series. But this illusion appears when T_r of a sentence does not undertake any shift on the event time handed down from the previous sentence. One cannot assume that T_r is directly projected in the same way as one cannot assume that nominal referents are projected from antecedents to anaphors.

As far as the actual transfer mechanism of T_r is concerned, several proposals have been made so far which can be divided into forward-projecting and backward-projecting varieties. Partee (1984) argues that every event in a linear narrative discourse introduces a reference interval, and this interval projects the time at which the following eventuality is located. Partee, of course, concentrates on linear arrangement of simple clauses. For Kamp and Reyle (1993), in contrast to Partee, T_r is projected back from the current eventuality onto a previous time to find its temporal location. A similar backtracking mechanism in complex sentences is described in the work of Panevová et al. (1971.53) where the search for T_r starts in the most deeply embedded clause and works its way recursively upwards, always going to the immediate matrix clause. The natural end of the process is reached when T_r is identified with the speech time (t_0) of the highest clause (or the first sentence in the series). See section 1.2 for the introduction of the symbol t_0. Another theory utilizing the same principle are Declerck's (Declerck 1997) topological diagrams of temporal domains. Each temporal domain is rooted on the deictic time axis in some relation to the moment of speech (before, after, or co-existing with it).

My own preference is to keep to the notion that each sentence (clause) is a potential introducer of its own T_r rather than projecting a time for the next eventuality. Clauses which do not use the privilege of their own temporalisation send the decoder in search of the relevant time in the previous co-text, or in the external context of utterance. It is only then that a backtracking mechanism is properly started. Partee's idea of a simple sentence providing T_r for the following event seems to be intuitively out of tune with the principle of economy (maxim of greed). As each sentence possesses a potential finality, it could be easily imagined to be the last one in the given text or the given series (Declerck's domain). Then T_r would be provided by such a sentence vacuously. It would be unused. In section 1.3, I will come back to the issue of projecting T_r forward when I deal with adverbial time clause. In the meantime, I would like to introduce more arguments in favour of T_r.

Performative utterances can be adduced as an additional piece of evidence to support the view that T_r can be understood as the speaker-claimed time for the validity of what is being said. One condition on the performative use of verbs such as *I promise* (see Austin 1962.56) seems to be the category 'simple present indicative active'. Later in the same chapter, Austin undermines this grammatical condition by providing counterexamples like second person passives: *You*

are hereby warned etc. In my view, the essential criterion of performative use does not lie in the morphology, but in the possible identification between speech time and event time: $T_s = T_e$, or $t_s = t_e$ (avoiding the decision whether the temporal entities are intervals or points) Thus *I promise* is a successful performance of the promise if and only if the speaker makes the event time (time of this particular speech act) equal to the speech time, i.e. if the act is presented as carried out at the moment of speech. Such a unification can be best done via $T_r = T_s (t_s)$. The encoder makes it clear that the validity claim is anchored to the speech time by intending $T_r = T_s (t_s)$. This is done, among other ways, by not bringing any other temporal specifications into the sentence. Even adding 'now' to get *I promise now* diminishes the present validity of the promise by casting a shadow of doubt on the sincerity of the speaker. A positive, more formal, strategy consists in using the explicitly token-reflexive *hereby*.

1.2

Let me provide some concrete examples of what I understand by relevance time (T_r) and how it may or may not distance itself from either speech time (T_s) or event time (T_e). We can start with the simplest unmarked case: the coincidence or unification of all three temporal parameters.

(a) $T_s (t_s) = T_r = T_e$

Such a complete coincidence is to be expected at the very textual beginning before any communication takes place. It can also be the normal case in utterances which by themselves instantiate a whole text. This kind of implicit reference to the closest moment at hand, the speech time, seems to be a universal property of human languages. An example (all English examples are taken from *Hidden Symptoms* by Deirdre Madden: HSDM) might be (1)

(1)   I'm sorry (HSDM 108)

(1) represents an apology given for a specific motive in a specific situation. In view of the unification (a), no temporal specification is required, either by means of temporal adverbials or tense morphemes. Tr is automatically selected as non-distinct from speech time. Because the role of tense is to provide a rough orientation Tr in relation to speech time, tense is not needed in (1). We see that, in the situation referred to, the copula-verb in (1) is elliptable together with its 1st person subject.

Before we deal with sentence (2), a few explanations shall be presented about the two other time parameters of sentence decoding, $T_s (t_s)$ and T_e.

$T_s (t_s)$ is traditionally taken as a point rather than an interval, and I see no reason for discontinuation of this tradition. From now on, I shall be symbolizing it as a point, with the subscript t_0 rather than t_s. The 0-subscript can be seen as standing for the zero-point of the deictic time axis but also as a short for **orien-**

tation time. Orientation is basically a indexical device and, from the point of view of strict semantics, it is provided contextually, by the moment of the utterance. Now we can rewrite the equation (a) as (a').

$$(a') \qquad t_s \subseteq T_r = T_e \qquad or \qquad t_0 \subseteq T_r = T_e.$$

The condition is that t_0 must be contained within T_r. I will deal with the relation between the speech time point and the relevance time interval in more detail below.

T_e, event time, is the time, factual or fictional, during which the described eventuality takes place or holds. This time may be taken as the representation of the event within temporal semantics. An event is thus recognised as a potentially temporalised entity. T_e is the eventual goal of the temporal interpretation. Between T_r and T_e there could be ideally identity as the former is the location of the latter. Whether or not complete identity is achieved, however, depends on several other factors, among them the length of the time span focused on, the aktionsart (stative versus dynamic) of the eventuality in the VP, its possible aspectual modification and so on.

1.3

As an entry into the problems of dependent tense, let us look at examples (2) and (3).

(2)   I said I'm sorry (HSDM 108)
(3)   I said I was sorry (invented example)

In both (2) and (3), $2T_e$ is situated at least partially before t_0. In the conventional wisdom of grammar manuals, however, (2) seems to indicate that the temporal extension of $2T_e$ is such that it overlaps t_0. The speaker is probably still sorry, the apology is intended. *Collins Cobuild English Grammar* (1990.327) has the following to say about sentences like (2):

With the reporting verb in the past tense, a present tense is sometimes used in the reported clause to emphasize that the situation still exists.

(3), on the other hand, invites the inference that $t_0 \neq 2T_e$. But (3), strictly speaking, does not indicate that $2T_e$ is not extending to t_0.
Collins Cobuild English Grammar again:

However, when the reporting verb is in the past tense, a past tense is used in the reported clause even if the reported situation still exists.

The tense contrast [-past] versus [+past] in such clauses is then neutralized. In the embedded Czech clauses of this sort present tense forms seem to be employed only as signals of simultaneity between the two eventualities, the saying time is the same as the time of being sorry, in (2'), a Czech translation of (2).

Therefore the extension-to-t_0 effect cannot be brought about in Czech so easily. The inferential distinction between (2) and (3) is not available in Czech as there is no tense-shifting rule. (3'), the literal translation of English (3) into Czech uses past tense, thus signalling the $1T_e > 2T_e$ anteriority.

(2')	Řekla	jsem,	že	mi	to	je	líto
	said+PART+FEM	aux+1stPER	that	me+DAT	it	is	pity

(3')	Řekla	jsem,	že	mi	to	bylo	líto
	said+PART+FEM	aux+1stPER	that	me+DAT	it	was	pity

As we shall see later, this situation has led some authors to regard Czech tense morphemes as ambiguous between the temporal meaning (before now, after now) in independent clauses and the anteriority versus posteriority meaning within embedded contexts. In my view, the data show rather that tense morphemes become in some contexts deprived of their semantics altogether. This formal dependence of the embedded tense on that of a matrix clause is called tense binding and can be regarded a syntactic process rather than a semantic one. It thus resembles other syntactic dependencies such as gender and number agreement, or the behaviour of negative polarity items in English or multiple negation in Czech. If this view is correct, it will necessitate a change in the view that tense is a syntactically-independent variable expressed in (Panevová 1971.23).

Tim Stowell's (1996) distinction between deictic tense (TENSE) and morphological tense [tense] seems to help us in explaining the phenomenon of tense binding. The (presumably universal) deictic TENSE denotes the time of utterance and relates to t_0. [tense] formally matches TENSE with morphological means available in a given language. In my view, it is [tense] that is bound in a syntactic locality, i.e. exactly in those cases when it is dependent on TENSE of the left-adjacent clause. Bound tense is thus regarded as a special case of [tense]. If [tense] is free, then it has a minimal local relation to TENSE.

Two globally available methods of breaking the binding from the matrix tense are at the disposal of speakers. The first one is to use Direct Speech mode. Example: I said: 'I'm sorry'. Here, tense binding has been successfully avoided but the price is that the matrix speaker (although he or she is identical with the speaker of the embedded clause in our example) seems to have nothing to say about the validity of the reported proposition at t_0.

The second method consists in presenting the reported proposition as an independent assertion first and conjoining it with the reporting clause containing an anaphoric pro-form link ('so') to the previously asserted proposition. Example is given as (2'').

(2'')   I am sorry and I said so

I leave open whether (2), as it occurs in the original text, is a case of not-punctuated Direct Speech or whether we are justified to analyse it as an instance

of so called Double Access (double access tense construction can be construed in both ways: as (2'') or as bound tense).

The explanation of the Czech-English difference can perhaps be brought into connection with the fact that there is no usable equivalent of the English pluperfect in Modern Czech.

Let us now look at a more detailed analysis of the temporal relations between matrix and embedded clauses[3]. In (2), the present tense clause (1) is embedded as a complement clause inside a past tense matrix clause. I will assign numbers rising from left to right to the two clauses: the matrix will be [1], the embedded clause will be [2]. The past tense of the matrix clause indicates that reference time is before speech time. This is the semantic effect of the past tense. Given the past tense of the verb SAY, and in the absence of some other temporalizing specification, the decoder has sufficient reason to believe that $1T_r$ has been shifted to the time zone before t_0. The resulting relationship is, therefore, $t_0 \neq 1T_r$, or rather, $t_0 > 1T_r$.

Theoretically, $1T_e$ could now fall anywhere within the whole past time zone (a very long time span) indicated by $1T_r$. One has, however, some reason to believe that a stronger (more informative) identification between $1T_r$ and $1T_e$ is possible. The speaker of (2) usually has in mind a particular, textually pre-given, occasion in the past. Specification of $1T_r$ is consequently inherited from the previous context and so $1T_r$ can be narrowed down to a particular interval. It is only in absence of any such signal that T_r is allowed to encompass the whole past. This is the well-known distinction between existentially quantified tense (at some time or other) and the anaphoric tense (at that particular time). Pursuing the second line of reasoning, we could think that the speaker of (2) could, for instance, have referred to the particular occasion of uttering (1). Such a possibility is in fact confirmed by our sample text where both (1) and (2) occur (HSDM 108) as a sequence of utterances, in that particular order.

The embedded clause, despite its tense form, does not fall in within speech time (t_0), therefore we can write $t_0 \neq 2T_r$. In order to simplify the matters, I do not take into account the regular update of t_0 mentioned in the introduction nor do I distinguish $1t_0$ from $2t_0$. The convention adopted here is to regard t_0 as anchored to the utterance of the introductory clause of a series (complex sentence, or Declerk's domain) and remaining there till another anchoring is carried out. Notwithstanding this simplification, $2T_e$ must be now different from t_0 anyway. We can immediately see one effect of this non-identity: (2) cannot represent a genuine act of apology any more. Recall that Austin's performativeness of 'I'm sorry' has to meet the condition of $t_0 = T_e$. Just to comment on the terminology used, T_e of the embedded clause is the time during which the speaker is sorry (or the time at which his or her apology is pragmatically available; the difference

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[3] As matrix clause is only the highest clause in the syntactic tree structure, we should be speaking here, more properly, about a head clause; a head clause may be a subordinate clause. I owe this to a PC by C. Absolon. The reader will hopefully be tolerant to such terminological imprecision.

between these two views of event time of a performative verb is a problem beyond the scope of this work).

2 Tense

2.1

Previous authors (Panevová et al. 1971.53) adopted a rule according to which T_e of matrix clause (here the 'dicens' clause) must automatically be made referentially identical to T_r of its complement proposition (the 'dictum' clause).

(b) $1T_{e \text{ <matrix clause>}} = 2T_{r \text{ <embedded complement clause>}}$

The undeniable fact that there does not have to be simultaneity between the act dicendi and the content of what is being said (the dictum) could not have escaped the grammarians' attention though. Traditionally, it was taken for granted that the dictum can be anterior or posterior in relation to its matrix clause. Given rule (b), Panevová et al. (1971) concluded that the tense morphemes in Czech express homonymously two kinds of temporal meaning:

a) the relation between t_0 and T_e designated as Temp
                                              and divided into Past, Present, Future

b) the relation between T_r and T_e designated as Rel
                                              and divided into Anterior, Simultaneous,
                                              Posterior

Meaning a) is expressed in root clauses (in contexts that are transparent with respect to speech time), whereas meaning b) is expressed in embedded clauses (in contexts that are opaque with respect to speech time). As contexts a) and contexts b) syntactically clearly differ, there is a possible way how to work out the common denominator of the tense meanings above and showing that the difference comes as a reflex of syntactic configuration.

The major problems of the above-mentioned approach, however, lie elsewhere: First, T_r is not recognised as a genuine temporal location. It automatically coincides either with t_0—in simple and introductory sentence, or with T_e of the higher clause—in embedded clauses. In view of this, the system could easily work without T_r. But as we have seen we need T_r for independent reasons. Second, the existence in English of a backshifting rule (so called sequence of tenses) and its absence in Czech must be postulated as an unexplained difference between the two languages.

2.2

My present theory of tense composition attempts to tackle both these problems. First of all, two universal systems of tense meanings are assumed (I use the term 'system' in the sense: choice between n (1< n) alternative values for some variable):

1) a three-way system of relations between T_r and a point called generally LOCAL ORIENTATION TIME (LOT). LOT is a generic term and can be instantiated either by t_0 or the event time (T_e) of the immediately preceding tensed VP. System 1) can be called non-finite as it readily appears in both finite and non-finite clauses[4].

2) a binary system of showing whether the given eventuality is in the NOW-time zone, or not. System 2) occurs only in finite clauses.

In syntax, one might want to distinguish tense system 1) and tense system 2) by locating them in two different nodes: system 1) would be properly expressed in the VP-aux node. System 2), on the other hand, would appear in head of TP. The syntactic architecture, without designating specifier positions, could be represented as (c).

(c) $[_{TP}$ +/-past   [* $_{VP-aux}$ have/will/etc. $[_{VP-lex}$ lexical verb]]]
       tense system 2)   tense system 1)

The representation in (c) has recently met a wide consensus within Government and Binding framework. The essentials of the theory are outlined in Chomsky (1981), Pollock (1989), among others. Empirically it is supported by several facts attested for English: only the first auxiliary has the feature [+/- past]; auxiliaries subcategorise for a VP of a certain type; and they can stack. This leads to the conclusion that auxiliaries such as 'have', 'will' must be heads of VPs of their own. Anticipating our discussion later in this section, we might notice that whereas English possesses at least two syntactic nodes for coding temporal meanings, TP, VP-aux, Czech is not so generously endowed so that we can assume only TP.

The asterisk at VP-aux should indicate both optionality and potential recursivity of the node. In (c) it is prima facie visible that tense is formed not in the lexical verb but in two separate layers above the verb. Only the higher level is responsible for finiteness (understood as person and number agreement). For the discussion of the mechanism guaranteeing that tense is attached to the closest verb I refer the reader to the rich literature of GB (Chomsky 1995, for a review of extant literature).

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4   The terms 'finite clause' and 'tensed clause' are often used interchangeably because it is taken for granted that in English a person/number morpheme and a tense morpheme are fused in one morph. But, as the two morpheme do not have to behave in the same way, there is a clear advantage in possessing a definition of finiteness independent of tense. The basis of such a definition should be sought, in my view, in agreement phenomena.

MEANING OF TENSE SYSTEMS:

1) ternary non-finite system of relations between LOT and T_r

      a) LOT $< T_r$
      b) LOT $> T_r$
      c) LOT $\supset$ or $\subset T_r$

2) binary finite system of deictic link to NOW (t_0):

      a) not linked to NOW = then [+past]
      b) linked to NOW = now [-past]

As a next step, let us look how these two system are implemented morphologically in English and Czech. This will enable us to study the differences between Czech and English.

English possesses morphological means of encoding both systems. System 1) is encoded by non-finite expressions (auxiliaries + verbal forms). In other words, its node is headed by a word which does not agree in number and person with the subject.

      a) is encoded by   *will* + inf
      b) is encoded by   *have* + participle
      c) is encoded by   zero (I abstract from progressive aspect)

System 2) is encoded by finite expressions (headed by forms with person and number agreement)

      a) is encoded by   present finite forms
      b) is encoded by   past finite forms

In English, both system 1) and 2) are readily combinable. This results in 3 x 2 = 6 combinations, again not including progressive aspect. It is also worth noticing that in finite constructions, system 1) in English is optional whereas system 2) is obligatory.

Czech, on the other hand, has a morphological system for encoding the three-way system 1) but seems to lack a separate morphological encoding of the binary system 2). Due to this lack, tense forms in Czech (here given only for 1st person plural of an imperfective V)

      1a)   (my) <u>jsme pracovali</u>   *we* aux+1st+Pl *worked*
      1b)   (my) <u>pracujeme</u>   *we* *work*+1st+Pl
      1c)   (my) <u>budeme pracovat</u>   *we* aux+1st+Pl *work*

frequently do both jobs at the same time. This is facilitated by the constraint that almost all (with the exception of old-fashioned transgressives) Czech form which express tense are finite.

The lack of separate morphology for indicating the link to the topmost NOW does not normally cause problems because in simple sentences NOW is readily accessible and so this link can be easily inferred. The only part of grammar where it cannot be done are embedded clauses bound by a past tense verb. Whereas English can easily combine both system 1) and system 2) in order to visibly bind the tense in embedded clauses to t_0 of the root clause, Czech has no such means. As a result, there is no formal binding of dependent clauses in Czech and therefore no sequence-of-tenses (backshifting) rule.

For the description of the English system and maybe even universally, this present theory has some important consequences: All of them concerns compositionality of what is traditionally called grammatical tenses, constructions like Simple Past, Present Perfect, Past Perfect etc. If such terms are used as taxonomic descriptors, useful labels, not much harm is done. But often they are regarded as basic categories of the particular tense system, so called constructions. They are then treated as primitive entities which are brought together with meanings (contextual interpretations) in an arbitrary ad hoc way.[5] In order to describe the compositionality of embedded tense forms, we must overcome this traditional picture. The first step has been made already in generativist syntax which deconstructs tensed verbs by analysing them in two separate nodes. The next step should be made in semantics by combining the characteristics of individual elements (morphosyntactic primitives = words and morphemes) and observing their contributions to the interpretational output. A minor, but not totally unimportant, issue is to derive the final form of the verb from the combination of the morphosyntactic primitives postulated. It is my hope that we shall be able to analyse all 'constructions' along the same lines. This is not difficult in such forms as the past perfect—see (x)—where the construction wears the compositionality on its sleeve,

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[5] Constructions in this sense are not primes, they are derived epiphenomena. There is no necessary reason to consider a construction such as Present Perfect the minimal unit of interpretation. It is quite possible to attribute interpretability to individual words or morphemes. Thus, meanings could be systematically derived from a combination of fundamental properties. The traditional approach obscures this possibility. It is my conviction that linguistics should start by looking for the genuine primitives of the systems studied.

Objections against the compositional approach usually invoke linguistic holism which say that every interpretation is a global process and can succeed only if large portions of context are taken into consideration simultaneously. This way of thinking confuses linguistic interpretation with some general hermeneutics. The speed with which natural language processing takes place is only explainable when we attribute stand-alone interpretability to the optimal-size chunks of the message. The optimal size is smaller than we used to think.

All this does not, of course, categorically exclude the scenario where constructions like Simple Present become, in some of their uses at least, idiomatized and must be learned as unpredictable pairings of form and meaning. As such I regard, for instance, English present tense forms used to refer to some indefinite past time: *I hear, They say, I am told*. Still, as it a common practice in the field of idioms, such effects can be attested only for those cases which resist the normal compositional approach.

(x) *had known*   [+past [*have* pp-ed   [V]]]

but, it is more difficult in the following examples where, in my view, an analogical analysis has to be provided for (xx), (xxx).

(xx) *knew*   [+past [0   [V]]]
(xxx) *would know*   [+past [*will* inf   [V]]]

In our examples [+past] of the binding deictic PAST is separated from the auxiliaries which express the ternary system. The 0-sign in (xx) stands for the morphologically unmarked simultaneity in system 1c) above.

   The reader will be able to extend these suggestions into a full-blown paradigm. The morphological outcome of such a system is not difficult to imagine. It is clear that, given the lexical verb V = KNOW, the underlying structure like (xx)—repeated below—produces a one-word *knew*, a fusional implementation.

(xx)   [+past   [0   [V]]]

It is less clear, however, how the same word *knew* could result from the combination of features available in an embedded clause bound by PAST in the matrix as in (4). We could speculate that such a combination might look either like (d) or like (d')

(4)   He told me [he knew him well]
         the tense inside the embedded clause in (4):

(d)   [+past   [0 = (-past)   [KNOW]]]
(d')   [+past -past   [0   [KNOW]]]

In (d) the original present is relegated to the right into the lower non-finite system. While this is a bit unorthodox solution because of moving features from one system into the other, in (d') we have again a contradiction between plus and minus values of the same feature [past]. This is inevitable so long as we derive the form *knew* in (4) according to the traditional backshifting rule:

BACKSHIFT RULE:
If the verb in the original utterance is in the Present, shift it into the Past.

Somehow, we get both plus and minus features, though from different sources, into one node; the verb is, implausibly, present and past at the same time. We could avoid such a clash, if we adopted the derivational representation of the rule (e) formulated in the style of phonological rules

(e)   [-past] → [+ past] / [PAST [clause _____]

Reading: change the sign of the parameter in a clause governed by PAST.

Here I can perhaps again adduce support for this description from Stowell (1996) who, as we have seen above, distinguishes between past morphology—represented as [past]—and the semantic operation PAST. For Stowell, past morphology, i.e. [past], is like a negative polarity item insofar as it must be in the scope of the semantic past operator PAST. Present morphology behaves like a positive polarity item with respect to PAST: it must not occur in the scope of PAST[6].

On second thoughts, however, I am not ready to adopt such a solution. Although rule (e) seems to be capable of taking care of other cases like *will* → *would, has* → *had,* one is not sure if a derivational rule is exactly what we want. First, one would have to assume a vacuous feature [-past] in all sort of forms, and then, (e) would not apply if the original utterance were in past already such as (5)

(5)   (original utterance):   'I knew him'
        (embedded in matrix):   He said [he had known him]

Because of these problems, I prefer the 'relegation' solution (d). Perhaps, there is still another reason to prefer (d) : in Czech a simple rule like (e) would be applicable to some cases (*zná* → *znal*), inapplicable to others (*bude znát* → ???). The situation would be so exactly like that in English and no explanation as to the difference between these two languages would be available.

(d), on the other hand, might easily work if we adopted a fixed order of tense auxiliaries, if we further assumed, a standard assumption in the generativist school, that the first auxiliary—whatever it is—raises to the abstract head of T, and finally if we stipulated that the [+past] feature resulting from the government would be always realised as the highest auxiliary in the string. Additionally, as the same solution would not produce any results in Czech there not being any non-finite system of VP-auxiliaries, we would get something approaching an explanation of the difference.

2.3

Some superficial resemblance between our system and the system of tenses presented by Halliday (most recently 1994) should not tempt anybody into ignoring the differences between the two systems. Halliday labels our 3 examples (x), (xx), and (xxx) above as

past in past   (compositionally correct)
past   (compositionally incorrect)
'no label'   (xxx does not figure in H's tense system at all)

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6   For some more arguments that embedded tense forms should be regarded as semantically empty and automatically controlled by tenses in the upper sentence (see also Stechow 1995.5).

The only similarity between the present theory and Halliday's description is the differentiation into primary and secondary tenses. Unfortunately, for Halliday, there is no question of covert (unexpressed) semantico-grammatical features; every feature must be formally encoded, otherwise there is no sense in postulating it in the first place. Therefore, both primary and secondary systems in Halliday are three-way systems and all nine values are morphologically encoded. Halliday's secondary system is, moreover, recursively open-ended, the total number of forms amounting to 36 but not ending at this number.

Our conclusion is that Czech does not reflect tense binding (b) in the morphology of the verb. The result is that it appears as if Czech were using the same means to express both $t_0 > T_r$ and $T_r > T_e$ relations. But as we can bring these two relations to a common denominator: LOT * T_r (* standing for either < or >), it is not necessary to assume such a homonymy for Czech tense as Panevová et al. (1971) proposed. But we would rather do this in order to avoid the other possible conclusion, namely, that there is no T_r in the semantics of Czech.

3 Multiple events

3.1

If we look at the main clause of (6), an invented sentence, we see still another distribution of $t_0 \, T_r \, T_e$.

(6)   Every time I see it, I'm sorry   (invented example)

The main clause *I'm sorry* must be interpreted as having a multiple event time. This is the effect of the introductory temporal clause quantified with *every time* which binds the variable event time of main clause. Therefore, we conclude that $t_0 \neq 2T_e$, a plausible conclusion, as t_0 is always contextually given by the NOW of the utterance[7].

For (6), it remains to be decided to which of these two time parameters t_0 and T_e, T_r aligns itself to. T_r is not identical with the speech time because it is clear that the speaker does not say anything about the present moment. Notice the ungrammaticality of (6') if it is explicitly anchored to the moment of speech.

(6')   Every time I see it, I'm sorry (*now/*at this moment).

On the other hand, T_r can hardly be identified with the variable T_e. In that case, it would give us multiple relevance time. This seems strongly unintuitive. I would like to claim that T_r chooses the large interval containing all occasions of

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[7]   In case of written language, t_0 can be given by the here-and-now of the reader at the moment of reading the message. Alternatively, some scholars (Weinreich 1970, "Tense and Time", *Archivum Linguisticum* 1.31-41; Bache 1985), who narrow down the meaning of tense to temporal deixis in the strict sense, hold the view that one is generally not entitled to speak about tense in fictional mode as there is no clearly given 'moment of communication'. I regard such a view as unnecessarily radical and probably false.

T_e. In my view, the latter proposal seems to be the best solution to the puzzle. It is also suggested by the tense value [-past] shared by both clauses (adverbial clause and the main clause) in (5). Contrasting it with the other possible choice of [+past], we see that speakers must have had some reason for their choice. The semantic contribution of [+past] is the arrangement where $T_r < t_0$. Consequently [-past] signals something like $T_r \supseteq t_0$ In other words, T_r embraces a temporal domain which includes the moment of speech but extends indeterminately on either side of it. It represents a vague temporal area known an the extended present (McCoard 1978). As a result the temporal distribution of the embedded clause in (4) can be represented like (f).

(f) $T_r \supset t_0 \neq T_e$

As mentioned in the introduction, behind my approach, there is the assumption that T_r is usually signalled by some explicit means. For instance, it can often be computed from the meaning of time adverbials. I regard this as safe guess although Partee (1984.265-6) claims that 'Reference times are not directly denoted by any part of the sentence'. To agree to this proposal would mean to view reference time as some mysterious and unpredictable entity. Ultimately, we would admit that we are unable to bridge the gap between interpretation and syntax. In my view, reference time is more often than not stated explicitly by some part of the sentence.

According to what we know about T_r so far, it must be conceived of as a period, not as a moment, despite the view presented in Stechow (1999.2). This is made intuitively understandable when we compare T_r with T_e. T_e in dependence on the meaning of the predicate can virtually take just one single moment to start, unfold, and finish. For instance, the event time of punctual VPs like *explode, win the race, catch the ball, arrive* can be said to be momentary in this sense (so called 'punctual' predicates in Vendler's classification). The relation between T_r and T_e is thus $T_e \subset T_r$. T_r is, however, flexible, i.e. shrinkable as well as extendable. A use of a suitable adverbial like *at that very point* can 'shrink' T_r to just the requisite moment. In the absence of an explicitly focusing adverbial, our judgement is naturally based just on the meaning of tense. In such a case the default assumption is that T_r is a period.

What I have just written can be demonstrated on how the effect of past tense. [+past] contributes to the temporal structure of a sentence. This is done shifting T_r onto the period before the speech moment t_0. T_r can be represented like (g)

(g) $\exists i \, [i < now]$

i.e. some indefinite time before the moment of speech. Here 'now' stands for speech time and 'i' is an arbitrary interval. The existential quantifier does not say anything about the length of such an interval, neither does it exclude the possibility of there being more than one such interval in some sequential arrangement.

4 Adverbials

4.0

This section considers semantic interpretation of temporal adverbials. The time denoted by temporal adverbials (formally including adverbs, prepositions, NPs, temporal subordinate clauses) will be understood as a specification of T_r (a subinterval of T_r).

There is probably no straightforward automatic method how to choose temporal adverbs. Lists of words which are used as temporal adverbs can be taken from standard grammars of individual languages. They are roughly divided into the following 3 semantic types:

1)	TIME LOCATION ADVERBIALS	WHEN?
2)	TIME-SPAN ADVERBIALS	HOW LONG?
3)	FREQUENCY ADVERBIALS	HOW OFTEN?

I will briefly deal with the first two categories.

4.1

As far as TIME-LOCATION ADVERBIALS (TLA) are concerned, the majority of them do not denote a time point (t) like *at 3 o'clock* but an interval (T) like, for instance, *on the 1st October*. Every interval is naturally capable of being segmented in many different ways into subintervals.

The one problem connected with the use of TLAs which I want to discuss here are grammatical constraints on their use. There are specific restrictions on co-occurrence between TLAs and tense and restriction on co-occurrence of more than one TLA in one clause. My attention will be paid first to the tense-temporal adverbial agreement.

First, it is necessary to look at the relations between a temporal adverbial and the eventuality expressed by the not-yet-tensed lexical verb. If T_r denotes an interval, then the temporal denotation of TLAs covers not only the time when the given event happens, T_e, but potentially also some time before and after this. Thus, the event is temporalised within the provided time slot. The opposite situation is typical for stative situations which may 'spill' beyond the boundaries of the specified T_r. One can then make the reverse claim that the given state includes the period specified as T_r. On the whole, three major kinds of different temporal relations between, T_e and T_r must be considered (c being rather exceptional):

a) $T_e \supseteq T_r$
b) $T_e \subset T_r$
c) $T_e = T_r$

The relation of T_r specified by TLAs to the tense within the same clause underlies some regularities. TLA obviously must not clash with the meaning of the tense. We do not yet know whether this constraint is a result of semantic selec-

tion (motivated by interpretability), pragmatic incoherence, or whether it has some syntactic determination. Let us suppose that, at least in some cases, there is a syntactic regularity responsible for this constraint. We could, e.g. extend the notion of grammatical agreement to cover this dependence. Now the potential violators of the presumably syntactic tense agreement must be only indexical adverbials, namely those which belong to the so called A-series temporal expressions. That is the reason why I call them tensed (or tense-oriented) adverbials. Examples are easy to provide:

yesterday [+past], *next year* [+future]

Also some time-span adverbials (TSAs) like *since yesterday* must be included into this group. The B-series expressions (those which provide calendar dates) can take part at most in a pragmatic incompatibility on condition that we are informed about the moment of communication. Thus, (11) below seems incoherent if communicated at a time which is known to be after the mentioned date.

An indexical TLA which denotes a t_0-inclusive period (like 'today', 'this week') does not trigger any observable constraints on tense choice. It is only when the period denoted is such that $t_0 \notin T_r$ (i.e. a period located completely before or after NOW and completely belonging to the past or the future) that the tense value of the opposite extreme is excluded, see (8) to (8''').

(8)   I'll apply next year/this year/*last year
(8')   I applied *next year/this year/last year
(8'')   He comes yesterday and tells me
(8''')   We go to France next summer

Notice also that the use of present is grammatically combinable with past tense TLA and future tense TLA, even if in both cases an instance of a marked textual strategy: 'historical present' or 'talking about fixed plans' respectively.

Before one can correctly judge the ungrammaticality of possible clashes, one has also to eliminate the cases of generic temporal reference or contexts where an alternation between specific and generic temporal reference could occur.

Generic TLAs (in analogy to generically referring NPs) do not fix a specific token of time but provide only a certain type of time. In this, they characterize the type of situation mentioned but they do not lead the decoder to any precise time location. One reading of (9) *at night* has the time adverbial only as a way of describing the necessary circumstances of a successful observation, it does not use it as a clue to some exact date like, for instance, *in the coming night*. Generic TLAs usually contain cyclically occurring time units and use them as indefinite NPs. In contrast to the ambiguous meaning of the time adverbial in (9), both (10) and (11) are specific, (10) in a way dependent of the context of utterance i.e. indexically, and (11) context-independently, i.e. in a temporally permanent way.

(9)   You can watch Mars at night
(10)   You can watch Mars tonight
(11)   You can watch Mars on the night of 25th of July

We can test adverbials for generic temporal reference by the impossibility to translate their time denotations into B-series (calendar specifications). Whenever such a translation is impossible or whenever it distorts the meaning of the adverbials, we can assume a generic temporal reference. When applied to (12), the translation test shows unmistakably that *today* and *tomorrow* in (12) are not meant as the day of uttering (12) and the day following the day of uttering (12), respectively.

(12)   Never put off till tomorrow what you can do today

On the other hand, A-series indexicals can be translated into B-series expressions easily on the assumption that we are exposed to the cyclic time landmarks (diurnal cycle) and have access to some conventional calendar and time measuring system.

4.2

Thus, after eliminating all B-series expressions, and generically used A-series expressions, we shall continue by concentrating solely on the specifically referential indexicals, the so called tensed TLAs. Concerning these expressions, I have the following hypothesis:

Assuming the clause architecture as presented in 2.2 (c) and repeated here in a slightly modified manner as (c'), we might claim that the tensed TLA is syntactically checked in position [spec, TP]. Note that for other types of time adverbials no such requirement is postulated.

(c') $[_{TP} [T^0 [_{VP\text{-}aux} [VP\text{-}aux^0 [_{VP\text{-}lex} [V\text{-}lex^0]]]]]]$

In (c'), to each head node (T^0, VP-aux^0, V-lex^0) an associated left-adjoined specifier position is added. These positions have their conventional phrasal guests: they are available either as launching sites of generation or landing sites of checking. Thus, for instance, the subject-NP is base-generated in its thematic position [spec, VP] and raised for nominative case checking into some higher spec position within the architecture. It is currently assumed (Chomsky 1995) that the checking position of the subject-NP is [spec, AgrS] (this position is not included in the representation (c') but can be expected to be higher than TP). If this assumption is correct, then the specifier of TP is free to check the tense feature of the relevant TLA. Thus we can assume that the tense concord as presented in (8) to (8') is a special case of a syntactic spec-head agreement. The similarity of the typical position of the subject with the position of a tense-oriented TLA can be also seen in nominalisations of clauses where the possessive genitive applies to subject-NPs and to indexical time adverbs like

this year's yesterday's etc.

Some evidence for the syntactic nature of this concord, and not just a semantic uninterpretability, might be seen in examples like (13) to (13'')

> (13)   He was at work yesterday. He will be at work again tomorrow.
> (13') What days is he at work this week? Yesterday and tomorrow.
> (13'') *He was/will be here yesterday and tomorrow.

Both (13) and (13') are perfectly interpretable and thus semantically well-formed. The co-ordinated phrase *yesterday and tomorrow* alone is not semantically incompatible either. In spite of that, (13'') is ungrammatical. A seeming Czech counterexample like (14) can be easily explained by adjoining the TLA *tomorrow* to the NP as its modifier

[*timetable* [*for tomorrow*]]

and thus releasing it from its checking dependence on TP.

> (14)   Já   jsem   změnil   rozvrh   zítra
>   I   changed the timetable (for) tomorrow

More evidence could be adduced from the well-known restriction on the English 'present perfect' barring all definite TLAs except those which include t_0 like *today, this year*. The restriction can be demonstrated by example (15)

> (15)   Harry has joined the navy (*in 1960)
>   (example is taken from Michaelis 1994.113)

This phenomenon is usually put down to an indefiniteness feature of the present perfect construction being incompatible with a definite time interval. A more straightforward explanation falls out from the recognition that TLAs as canonical specifiers of TP must be checked by the head of T. In (15) and in similar clauses, T^0 bears the feature [-past] as it can be seen from the inflection of the auxiliary (*has*). The checking by a head marked by [-past] is satisfied if and only if the TLA being checked carries also [-past]. Feature [-past] defines a natural class of adverbials (including *today, this year, this week* and so on). These are exactly those expressions which are grammatical in a sentence like (15)

> (15') Harry has joined the navy this year

A non-tensed expression like *on the 12th July* do not bear any tense feature, consequently they do not bear the 'present' feature either. This predicts that they cannot be checked by the head of TP marked for [-past]. There still remain some

questions, though. First, why are not definite non-tensed adverbials barred from present tense clause, across the board ? Why is (16) possible, for instance, in a CV?

(16)   Harry joins the navy in 1960

My answer to this question could be simple. I would deny the temporality of such a clause. Although, the morphology says 'present tense', the sentence is atemporal. Its truth value does not depend on its moment of speech. Alternatively, we could say that the morphological tense is rendered uninformative (is overridden) by the presence of TLA, a case of conflict between two means of temporalisation mentioned at the beginning of this section. Another problem threatening to undermine my theory is that of such all-inclusive TLAs like *in the past, ever.*
They do not make present perfect sentence ungrammatical but, on the other hand, cannot be easily claimed to contain the correctly-checking feature 'present', at the same time. One solution would be to regard *ever* as temporal quantifier and thus not belonging to the tensed category of adverbs at all. But there still remains *in the past.* Sentences with the perfect which contain the adverbial *in the past* fall into the 'existential' reading of the perfect. (17), one of such sentences, describes in fact the present experience of the speaker as if saying: this is now what my experience looks like.

(17)   I have done it in the past
(18)   He has done it all his life

Compare also (18) where *all his life* has a similar meaning and the use of the perfect implies that he, whoever he is, is still alive. Regarding the two previous sentences (17) and (18) in the light of (19), we could assume that in all three of them there is a potential presence of *now.*

(19)   Now I have done it three times on a Sunday

Perhaps we could assume that in some case, (17) being one of them, a covert *now* rises and checks (and erases) the feature of the T head. As a result, another adverbial can then remain low adjoined to the VP-lex and does not have be checked. But this is not everyone's cup of tea, not mentioning the flood of other problems which such a hypothesis would open. I will therefore leave the remaining questions open.

4.3

TIME-SPAN ADVERBIALS (TSA) do not enter into grammatical agreement with tense but they undergo constraints with respect to aspect. While we spoke about tensed (or tense-oriented) TLAs, we can analogically speak about aspect-oriented TSA and consider aspect an important parameter of TSA's subdivision.
TSAs can be subdivided more narrowly thanks yet to one other parameter: the

time-boundary parameter. The time-boundary parameter allows the division of time-span adverbials into three temporal groups: open intervals, which do not have their boundaries defined; single-limit intervals, in which only the lower or upper boundary is defined; and double-limit intervals, which have both lower and upper boundaries defined. Needless to say, one of these boundaries can be left implicit and contextually-oriented. The English 'since', a preposition denoting a double-limit interval, typically leaves the upper boundary unexpressed as it coincides with the time of utterance, t_0.

The aspectuality parameter allows each TSA a choice of the compatible aspect. Therefore we distinguish durational TSAs (they are the co-called 'for'-adverbials in English) and framing TSAs (which, in English, are represented by the 'in'-adverbials). Durative adverbials are familiar from the aspectual literature as a standard diagnostic for recognizing an eventuality as continuative [+cont]. This feature characterises states and activities and separates them from the two kinds of events (accomplishments and achievements). As mentioned, durative adverbials in English are typically realised as prepositional phrases headed by *for* (*for twenty minutes*), but they may take other forms as well (*all day, the whole month, throughout the morning*). The aspectual distinction drawn by durative adverbials is exemplified in (20) and (21).

(20)   Peter was ill all the week
(20')   Mary wrote for twenty minutes

(21)   # Mary solved the homework problem all afternoon
(21')   # Peter won the race throughout the morning.

It can be seen that, in a given configuration, one aspectual form is the preferred one, the other form is permitted only with a concomitant reinterpretation (coercion), i.e. the meaning is adjusted to the preferred aspect. The sign # does not stand for ungrammaticality but demonstrates the necessity of reinterpretation. This can easily be tested by translating the sentence into Czech, a language with overtly spelled-out aspect.

Conclusion

In my present contribution, I made several claims about a system of temporalisation by which I understand the set of means indicating the temporal location of the content of each sentence.

The innovative move of my approach lies in assuming that, apart from the time of the speech act and the time of the eventuality described in the sentence, the decoder has to consider the time of relevance. Further I assume that the time of relevance explicitly appears in several layers of the sentence. I concentrated on two such layers, tense and adverbials, and I discussed some of the relations they undergo between one another as well as the relations they develop towards

the time of speech. Alongside this, I established a class of tense-oriented adverbials and distinguished them from the rest of time adverbials. Additionally, within the framework of Government and Binding framework, I provided a possible syntactic underpinning of the theory by showing one possible way how tense-oriented adverbials have to check their tense features against the head of a functional tense phrase. A plausible explanation of the incompatibility of Present Perfect with definite time phrases falls out from that hypothesis. In the course of the discussion, I have also drawn the reader's attention to the phenomenon of bound tense in embedded clauses and hypothesised some explanations of the cross-linguistically different treatment of the sequence-of-tense rule.

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