

# A prominence-based account of temporal discourse structure



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Received 26 March 2018; received in revised form 23 August 2018; accepted 23 August 2018

Available online 21 September 2018

## Abstract

In this article, we develop an account of temporal discourse structure that is composed of three different levels and based on the notion of prominence. The levels of temporal structuring in discourse are as follows:

- (i) the level of the linear and hierarchical temporal structure, which is constituted by time points and time spans as well as their interrelations,
- (ii) the level of perspective and perspective taking, and
- (iii) the level of foregrounding and backgrounding and text segmentation into story lines.

Although these levels have already been identified by the research literature, they have neither been explicated in a systematic way while taking prominence into consideration nor brought together in a complete descriptive account. The unifying ingredient of our account is the principle of prominence, according to which the elements of a set of equals compete as to their prominence status, with one of them standing out with respect to the others at a certain point of the unfolding discourse. We show the crucial role of prominence in the structuring of discourse on each of the three levels.

Our prominence-based account highlights the hierarchical structuring of discourse. This allows us to consider all important features of temporal discourse structure in one integrated account: tense choice, aspect, adverbial expressions and connectors, discourse relations and episode structure.

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**Keywords:** Temporal discourse structure; Prominence; Tense

## 1. Introduction

The temporal make-up of discourse concerns different “informative levels”. First, eventualities are basically ordered as to what happens after what, and what holds while something else happens and suchlike (linear ordering). Second, eventualities are ordered relative to their contribution to a main story line or their belonging to the background. Third, within a text, perspective may be shifted so that eventualities may be viewed from different time points. Although these levels have been considered individually in the research literature, they have not been integrated under the unitary principle of

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prominence. Importantly, all these levels are necessary for an explanation of tense choice and the role of tense in discourse structuring, especially when it comes to narrative texts. This unifying perspective is also designed to overcome some of the problems existing theoretical approaches encounter with less-than-typical uses of tenses. Still, as is well known, tense choice is only one tool contributing to the complexity of the temporal structure in natural discourse.<sup>1</sup> Additionally, not only grammatical and lexical aspect, but also further lexical items such as adverbs and conjunctions, and also rhetorical relations play an important role. We bring all this together and take prominence as the unifying factor for the different levels of discourse quoted above. Our contribution thus aims to put together the ingredients of this perspective to describe the temporal structure of discourse with a focus on narratives. In a first step, we intend to account for the temporal structure in Romance languages but we envisage to extend our approach in order to cover further languages. One of the future desiderata will be to flesh it out converting it into a rule-based model that will be falsifiable and may be used to make correct predictions for different sorts of language data.<sup>2</sup>

The basic formal system of our approach is in the tradition of Reichenbach ([1947] 1956), and takes up further DRT-based developments elaborated by Kamp and Rohrer (1983) and Kamp and Reyle (1993), and refined in further publications especially by Kamp and colleagues (e.g., Kamp et al., 2011). In order to account for discourse relations and their role in the hierarchical structuring of discourse as well as its temporal interpretation, we also integrate notions developed by Asher and Lascarides (1993, 2003), who extended the original DRT approach to a Segmented Discourse Representation Theory (SDRT).

We additionally introduce prominence. It is a central property of discourse structuring that has hardly been mentioned in discourse analyses so far. We define it in terms of Himmelmann and Primus (2015) and also flesh it out by applying it to the temporal discourse structure. For example, to operationalize prominence better, we implement a domain restriction. Our refined definition of the domain adopts the right frontier constraint (cf., e.g., Asher and Lascarides, 2003) (see Section 4.1).

As we will show, the descriptive potential of the aforementioned theoretical accounts is restricted to rather typical cases of tense choice. We will present some interesting French examples that are particularly problematic for standard tense theories. By introducing prominence as an additional feature attached to time points, these difficulties can be adequately dealt with.

## 2. Temporal modeling: from Reichenbach to DRT

The temporal structure of discourse is dynamic. At the heart of temporal modeling thus lies the issue of how to model an update, and how to differentiate it from its stative counterpart. We have to ask ourselves what the basic building blocks of the temporal structure of discourse are, which ones may be updated, and furthermore, how the update works. Undoubtedly, if a story advances in time, it seems straightforward to talk about events or actions occurring one after the other. As we will see, however, this basic intuition is too simple for a refined description. What is more, in the early days of temporal modeling, an important focus was placed on tenses, and not so much on the temporal interrelations between eventualities. This is too restrictive for an overall description of temporal discourse structure.

In what follows, we will have a close look at three important steps which the description of temporal structure took. It seems to us that the reference point is an adequate basis to model temporal updating in texts. Therefore, it will receive special attention. We start with a brief summary of Reichenbach's ([1947] 1956) tense model where the reference point is first mentioned. We will then continue with more recent treatments of the concept of reference point and how it is implemented in the literature. With this in mind, we will add the further ingredients of the basic temporal model. We will close the section with some remarks on the limitations which a prominence-based temporal account is able to overcome.

### 2.1. The model of Reichenbach (1947)

The influential tense model by Reichenbach ([1947] 1956) describes time reference of tense forms as a relation between three time points or time spans (cf. Reichenbach, 1956:287 ff.). The basis of temporal reference is the utterance time ("point of speech" in Reichenbach's terms and abbreviated as *S*). The utterance time is intrinsically linked to the primary origo, that is the speaker and his/her *hic* and *nunc*, i.e., his/her local and temporal coordinates (cf. Bühler [1934] 1982). The so-called "point of the event" (*E*) is the time at which the eventuality<sup>3</sup> occurs or holds and is, at least in the case of simple tenses, described as being situated relative to the speech time, i.e., before, simultaneously, or after (cf.

<sup>1</sup> For the time being, we will mostly focus on problems especially relevant in written narrative discourse.

<sup>2</sup> For reasons of simplicity we use the term account to refer to the approach presented here. It should not be misinterpreted as already fully developed in terms of formalization.

<sup>3</sup> The term "eventuality" is intended to be a generic term for events and states and other types of situation (cf. also Kamp et al., 2011:199, footnote 19). As Kamp et al. (2011:199, footnote 19) state, the term goes back to Bach (1981).

Reichenbach, 1956:288). A model based only on two time points, however, would be too simplistic, as it could not capture, for instance, the difference between simple and compound past tenses in English (cf. Reichenbach, 1956:289). Therefore, Reichenbach introduces a third time point, the reference point (“point of reference”, *R*) (cf. Reichenbach, 1956:288). The three time points are again ordered and every one of them may be situated before, after, or simultaneous with one or two others (cf. Reichenbach, 1956:290).

Reichenbach assigns the possible combinations of *S*, *E* and *R* to English tense forms (cf. Reichenbach, 1956:296). There are 13 possible combinations, which he reduces to “9 fundamental forms” (Reichenbach, 1956:296), because, as he states, some do not result in different tense forms (cf. Reichenbach, 1956:296).<sup>4</sup> His mapping of the combinations on English tense forms is in several cases an individual one-to-one mapping (cf. Reichenbach, 1956:297). The relevant past tenses are the following (Reichenbach, 1956:297):

*E* – *R* – *S* Past perfect  
*E*, *R* – *S* Simple past  
*E* – *S*, *R* Present perfect

This typology of tenses is often quoted in the literature for very good reasons.<sup>5</sup> For our specific aims, though, it turns out to be somewhat deficient. Two factors shall be mentioned in this regard.

First, the model does not capture aspectual differences. The original reason might be that, although it is intended as generally applicable, it seems to have been informed mostly by the English verbal system. If we set aside that problem, we may restate that the analysis of tenses with a three-partied relation grasps very important properties of the tenses. However, the system is not refined enough for the description of aspect. Reichenbach seemingly notices a shortcoming and introduces the additional value of event extension (cf. Reichenbach, 1956:290 ff.). This is problematic. On the one hand, he ascribes fixed values to specific tenses. For example, he classifies the progressive forms with *be* + present participle as “extended tenses” (Reichenbach, 1956:290). Although this may be considered correct for iterative uses (cf. Reichenbach, 1956:290), it does not hold for progressives. The eventuality referred to by means of a progressive is “monofocalized” in the words of Bertinetto (1986:164), i.e., the assertion only holds for a single point of an ongoing eventuality. Apparently, Reichenbach’s basic classification does not deal well with divergent readings. Interestingly, he also includes the French imparfait in the category of extended tenses (cf. Reichenbach, 1956:291). This generalization runs counter to linguistic facts (see Section 2.5 vs. Section 4.3).

Second, Reichenbach’s ([1947] 1956) description is in principle sentence-based. Still, as the author shows, it may be applied to two or three sentences with basic content relations where it can determine basic temporal relations (cf. Reichenbach, 1956:293 ff.).<sup>6</sup> However, it is expected to be less applicable and informative when further sentences with more complex interrelations come into play.<sup>7</sup> This has to do with the fact that Reichenbach’s account is virtually blind to discourse dynamics. In his model, time points and time spans can neither be ranked nor weighted – two central ingredients of the account we propose in Section 3 ff.

In defense of the famous part of Reichenbach’s ([1947] 1956) book, one might argue that it does not present an exhaustive description of the application of his own theory. However, there have been attempts to adopt and develop the model further, focusing more on discourse. Particularly noteworthy is Kamp and Rohrer’s seminal 1983 article, which will be discussed in the next section.

## 2.2. The reference point according to Kamp and Rohrer (1983)

While Reichenbach’s ([1947] 1956) model is very precise in the description of tense in single sentences, it has certain shortcomings when it comes to describing sequences of sentences and the relation among those sentences. Fundamental to this problem is the reference point (*R*). As said, Reichenbach ([1947] 1956) introduces it to capture compound tenses. Still, he does not describe its functionality to be restricted to tense meaning, but states that it may be “given by the context of speech” (Reichenbach, 1956:288). However, when analyzing examples, he takes *R* to be fixed for sequences of various sentences despite temporal updates (cf. Reichenbach,

<sup>4</sup> Reichenbach ([1947] 1956) mentions, for example, a possible past tense without a corresponding tense form in English, which he calls “Posterior past” (Reichenbach, 1956:297). It can realize the following combinations: *R* – *E* – *S*; *R* – *S*, *E*; *R* – *S* – *E* (Reichenbach, 1956:297).

<sup>5</sup> Its value extends beyond its descriptive potential. It is, for example, also a very helpful mode of visualization in language teaching. However, there is also much criticism of this typology, but we will not go into details here.

<sup>6</sup> The examples presented by Reichenbach ([1947] 1956), however, partly consist of subordinated clauses and thus do not all show the aforementioned potential to describe several sentences in a row.

<sup>7</sup> This critique also partly holds for the account(s) by Kamp and colleagues which will be presented in the following sections.

1956:288 f.).<sup>8</sup> Interestingly, Klein's (1994) *topic time* seems to be reminiscent of this conceptualization of *R* (see Section 2.4, where, however, we argue for its similarity to the location time, which will also be introduced there).

Kamp and Rohrer (1983) partly adopt Reichenbach's account. They depart from the crucial insight that “the significance of the tenses lies primarily in the temporal relations which they establish between the sentences” (Kamp and Rohrer, 1983:250). They mostly reduce *R* as being “established by context” (cf. Kamp and Rohrer, 1983:255, see above) but model it in more narrow and precise terms. As we will see in Section 2.3, the notion of the reference point is further subdivided in more recent publications (cf. e.g., Kamp, 2013:116). Nevertheless, we start from the more basic modeling in Kamp and Rohrer (1983) as its simplicity seems helpful at this stage, and especially because of the intuitive way it treats temporal updating.

According to Kamp and Rohrer (1983) at least the following interrelations are possible.<sup>9</sup> A reference point may be (i) updated or (ii) maintained.

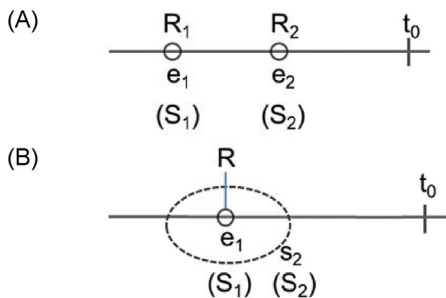
The following two classic examples represent (i) and (ii), respectively.

- (1) *Pierre entra<sub>PS</sub>. Marie téléphona<sub>PS</sub>.* (Kamp and Rohrer, 1983:253)<sup>10</sup>  
'Pierre came in. Marie called someone.'
- (2) *Pierre entra<sub>PS</sub>. Marie téléphonait<sub>IMP</sub>.* (Kamp and Rohrer, 1983:253)  
'Pierre came in. Marie was talking on the phone.'

The first example shows the typical use of the passé simple. The eventualities of the two sentences occur in sequence. That means that the first sentence introduces a reference point, which is then updated in the second sentence (cf. Kamp and Rohrer, 1983:256).

The second example, by contrast, shows, according to Kamp and Rohrer (1983), the typical case of a sentence in the imparfait. It “covers a period which includes the [previously introduced, M.B. and J.E.] reference point” (Kamp and Rohrer, 1983:254).<sup>11</sup> Hence, the reference point is maintained. The two eventualities may be considered simultaneous with open boundaries of the second eventuality.

We summarize Kamp and Rohrer's (1983) visualizations as follows (cf. Kamp and Rohrer, 1983:254, and Kamp and Rohrer, 1983:254 f., respectively).



In both examples, the temporal reference of the two sentences is before speech time ( $t_0$ )<sup>12</sup>. They also have in common that the first sentence (capital S stands for sentence in the depictions of this chapter and the following one) introduces a reference point *R* at which the event  $e_1$  occurs. The differences obtain because of the second sentence. (A) then shows the update realized by the passé simple verb in the second sentence from  $R_1$  to  $R_2$  where  $e_2$  occurs. In (B), *R* is maintained by the sentence in the imparfait, which is considered stative (s for state) by Kamp and Rohrer (1983:255)

<sup>8</sup> An example with a temporal update in Reichenbach ([1947] 1956:288 f.) is the following: *In 1678 the whole face of things had changed [ . . . ]. The Roundhead party seemed to be not merely overcome [ . . . ]. Then commenced the reflux of public opinion.* The adverb *then* is a clear sign of the update. Still, Reichenbach (1956:289) maintains that “[t]he point of reference is here the year 1678”. This is different from the conceptualization of *R* in the model of Kamp and colleagues.

<sup>9</sup> See Section 2.3 for the question how a reference point is introduced.

<sup>10</sup> In the present article, we use the following basic glosses for French tense forms: PRES for présent (present tense), PC for passé composé (compound past), IMP for imparfait (imperfective past), PS for passé simple (perfective past, i.e., simple past), PQP for plus-que-parfait (pluperfect), CONDII for conditionnel passé (past conditional) and SUBJ for subjonctif (subjunctive).

<sup>11</sup> Kamp and Rohrer (1983:254) call this the “imparfait rule”.

<sup>12</sup> The abbreviation  $t_0$  is replaced in later publications by *n* (cf., e.g., Kamp and Rohrer, 1983, see also below).

However, the two tense-aspect forms may also be used differently. E.g., on the one hand, the passé simple may also refer to an already set reference point (see (3) below), and on the other hand, the imparfait may also update the reference point (see Section 2.5 and Section 4.3).

- (3) *L'année dernière Jean escalada<sub>PS</sub> le Cervin. Le premier jour il monta<sub>PS</sub> jusqu'à la cabane H. Il y passa<sub>PS</sub> la nuit. Ensuite il attaqua<sub>PS</sub> la face nord. Douze heures plus tard il arriva<sub>PS</sub> au sommet. (Kamp and Rohrer, 1983:260)*  
 'Last year, Jean climbed the Matterhorn. On the first day, he climbed up until the hut H. There he passed the night. Then he tackled the north face. Twelve hours later he reached the summit.'

In example (3), the first sentence sets the reference point. The eventualities in the following four sentences, which are presented in the passé simple, maintain this reference point. Simply put, the four eventualities are temporally all included within the reference time of the first sentence,<sup>13</sup> and within this reference time they are ordered sequentially. As Kamp and Rohrer (1983:260) state, they introduce and update “secondary reference points”.

To sum up, Kamp and Rohrer's (1983) development of Reichenbach's ([1947] 1956) model focusses on the contextually set reference point. By making it more precise, it takes a first and important step towards the discourse level. Additionally, it is able to capture a basic aspectual distinction, in the words of Kamp and colleagues the one between events and states. The distinction, however, turns out to be too rigid, as it cannot cover the whole range of readings of tenses. In more recent publications, some notions of Kamp's model are further refined. Importantly, the reference point is split up into two notions, the “reference point” proper and the point of perspective (cf. e.g., Kamp et al., 2011:199). In Kamp and Rohrer (1983:263) we already find indications of this, and it will be discussed in the following section.

### 2.3. Refining the concept of reference time and delimiting the perspective time

In Section 2.2, we showed an important first refinement in the modeling of the reference point as presented in Kamp and Rohrer (1983). In later work,<sup>14</sup> Kamp and colleagues (cf. e.g., Kamp et al., 2011:199) subdivide the concept into the “perspective time” [ . . . ] and [ . . . ] a second notion, for which the name ‘reference time’ has been retained”.<sup>15</sup> According to Kamp (2013:116), the notion of perspective time is very similar to the concept Reichenbach uses in order to describe the past perfect, although, as we have seen, Reichenbach calls it reference time. It is a point in time “from which the given information [or to be more precise: an eventuality or several eventualities in sequence, M.B. and J.E.] is viewed” (Kamp, 2013:116) (see below). By contrast, the reference time in the intended oppositive meaning is the basic concept of narrative progression (cf. Kamp, 2013:116). This is basically what we have seen in the preceding section. In a narrative sequence the reference point is said to “change[ . . . ] from one clause to the next – it moves along with the narrative” (Kamp and Reyle, 1993:594, see the updating case in Section 2.2). Therefore, it is “the time [ . . . ]<sup>16</sup> to which the story has so far advanced” (Kamp et al., 2011:199).

It must be stressed that, apart from Kamp and colleagues, other linguists, especially Partee and Hinrichs (cf. Partee, 1984; Hinrichs, 1986), have worked on the concept of reference point and its implementation in discourse analysis (cf. also Webber, 1988, who considers sub-eventual structure in a fine-grained manner). The approaches may be subdivided into two classes. The crucial difference concerns the question of where to set the reference time temporally.

As we have seen, in the model of Kamp and others, events set new reference points,<sup>17</sup> and thus update time in the narrative while states do not update the reference point (cf., e.g., Kamp and Reyle, 1993:523 ff.). Partee (1984) and Hinrichs (1986) basically share this view. However, while Kamp and colleagues claim that the reference point is introduced at the time of the event (or location time, see Section 2.4) (cf. Kamp and Reyle, 1993:523), the other line of research maintains that the reference point is set at a time point *after* the last event (cf. Hinrichs, 1986:71). Thus, in the first account, new events *follow* a given reference point (cf., e.g., Kamp and Reyle, 1993:527). In the second, however, they

<sup>13</sup> This may be described quite similarly in terms of SDRT, which will be introduced in Section 2.6, as an ELABORATION relation (cf., e.g., Asher and Lascarides, 2003).

<sup>14</sup> As Kamp (2013), which is based on an earlier version from 1999 (cf. Kamp, 2013:105, note by the editor), states, the division of concepts goes back to Kamp and Rohrer (1984/86) (cf. Kamp, 2013:116, footnote 14).

<sup>15</sup> The terminological change from reference point (see above) to reference time, however, does not change the concept referred to. The two are close to being synonymous.

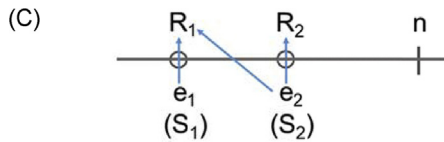
<sup>16</sup> Kamp et al. (2011:199) state that the reference point is “the time or event to which the story has [ . . . ] advanced”. We take time points/intervals to be different discourse entities as compared to events although their situation in time may coincide. Most probably, Kamp and colleagues share this opinion. We do not want to cast doubt on this. The divergence is simply mentioned for reasons of clarity.

<sup>17</sup> At this point, we follow Kamp (2013) and others in ignoring a further distinction that is applied, e.g., in Kamp et al. (2011), that is the “location time” (Kamp et al., 2011:200). This simplification is quite often found in the literature. We will re-integrate the concept into the whole picture in Section 2.4.



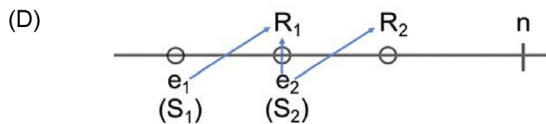
may be located at the reference point introduced by the last event (cf. Partee, 1984:254). The two accounts are sometimes referred to as pulling vs. pushing accounts, respectively (cf., e.g., Bary, 2009:140). As we will see, in sum, the arguments of the first account, the one by Kamp and colleagues, are stronger.<sup>18</sup>

A visualization of the first, i.e., the pulling account is presented below. It is in line with Kamp (2013:117).<sup>19</sup>



As the depiction shows, the first reference time ( $R_1$ ) is equal to the respective event time ( $e_1$ ). The location of the second event is specified by a backward relation<sup>20</sup> to this first reference time. Additionally, event time  $e_2$  then sets  $R_2$ .

The analysis of non-stative eventualities within the second, the pushing account by, e.g., Partee (1984) and Hinrichs (1986), may be visualized as follows (see also the summary of the approach in Kamp, 2013:117).

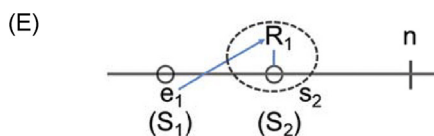


The diagram shows the rule-bound structuring that is intended by the approach. The basic idea, as formulated by Partee (1984:254 with reference to Hinrichs, 1981), is that a “new past-tense event sentence is specified to occur within the then-current reference time”. Narrative progression comes about by the property attributed to events to introduce a new reference time “located ‘just after’<sup>21</sup> that event” (Partee, 1984:254). This reference time or reference point “acts as the (default) location time for the eventuality of the next sentence” (Kamp et al., 2011:206). In this account, “[s]tative sentences do not introduce [...] a subsequent point” (Kamp et al., 2011:206).

Against this backdrop, the two accounts may be compared (cf. Kamp, 2013:117 f.). The difference becomes relevant, when states are part of the discourse, the reason being the parallel treatment we already commented on. In both accounts, states take a reference time already introduced in the discourse. Therefore, the pushing account handles post-states well (see (4) below), while the pulling account deals better with states that overlap a preceding eventuality (see (5) below) (cf. Kamp, 2013:118). Both have difficulties with the respective complementary case.

(4) *Mary lit the lamp. In the murky light a person was visible lying on the bed in the far corner.* (Kamp, 2013:117)

We can visualize this example in the vein of Partee's and Hinrichs' pushing account as follows.



That the state  $s_2$  holds after  $e_1$  is easily captured here. By contrast, the pulling approach, attributed to Kamp and colleagues, has problems with analyzing the example straightforwardly (cf. Kamp, 2013:118). A further operation needs to be added. Kamp (2013:118) states that “the first sentence introduces an additional time, viz. that of [a] resulting effect state”. The state referred to in the second sentence can then be attached to the corresponding reference time (cf. Kamp, 2013:118). This is somewhat less elegant. Additionally, as the following example shows, a simple generalization is ruled out. The corresponding prerequisites would have to be defined very well.

<sup>18</sup> By contrast, Bary (2009:140 ff.) is a rather recent proponent of the pushing account. However, her arguments do not fully solve the problems already noted in Kamp (2013:117 f., see above).

<sup>19</sup> For terminological coherence, we do not maintain  $t_0$  for the time of speech (see above, cf., e.g., Kamp and Rohrer, 1983) but use  $n$  instead, abbreviating “now”, as Kamp and colleagues do in several later publications (cf., e.g., Kamp and Reyle 1993).

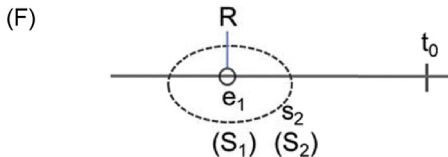
<sup>20</sup> The arrow is intended to show this back reference. The linear order of setting time intervals in discourse is maintained.

<sup>21</sup> In this view, thus, the narrative time is pushed forward, as indicated by the arrows.

Examples like (5) are, as said, handled better within the pulling account. In (5), the state in the second sentence already holds at the temporal interval which the first sentence makes reference to (cf., [Kamp, 2013:118](#), but also [Dowty's, 1986:40](#) general critique of Kamp's conception<sup>22</sup>).

(5) *Philip settled down in his carriage. He felt hot and tired.* ([Kamp, 2013:117](#))

A visualization for this case following [Kamp and Rohrer \(1985:254 f.\)](#) has been presented above and is repeated below as (F).



[Kamp \(2013\)](#) concludes his comparison of the two descriptive approaches by stating that none can fully capture the temporal complexity of “sequences of past tense sentences” ([Kamp, 2013:118](#)), let alone past tense narratives. The deficits he hints at are mainly additional factors not controlled for by the two versions of the model (cf. [Kamp, 2013:118](#)). He mentions rhetorical relations as an especially extensive way to capture interrelationships between sentences (cf. [Kamp, 2013:118](#), see Section 2.6 for a discussion). Still, the case exemplified in (5) may be seen as prototypical. This clearly favors the pulling account supported by Kamp and colleagues (cf. also the critique of the pushing account in [Kehler, 2002:186 ff.](#)).

One last point should be added concerning the application of the reference time. As [Kamp and Reyle \(1993:529\)](#) state, “the interpretation of a discourse-initial sentence never requires the choice of a reference point”. They consider this a simplification, but it also seems to be a basic condition without which the model would not be operational. Still, the first reference point in a discourse or text segment is an interesting case that we will discuss in Section 4.2.

The perspective time (PT) according to [Kamp \(2013:119\)](#) is “something like a vantage point”. Importantly, the concept of “perspective time” consists of two different phenomena. On the one hand, perspective time is linked – as a (potential) property – to tenses. On the other hand, it is a phenomenon created in discourse typically by interactions between (tensed) verbs or between one or more verbs and further contextual elements. The two phenomena play different roles in discourse. However, they are not always easily distinguished and may blend into one another. Therefore, in the literature, they are often treated as one.

The first kind of perspective time is precisely what [Reichenbach \(\[1947\] 1956\)](#) refers to with the term reference point (cf. also [Kamp and Reyle, 1993:595](#)). It is indeed attached to certain tense forms. It holds when a tense form in context expresses that an eventuality is viewed from a point in time other than the utterance time. A standard example is the following by [Reichenbach \(1956:290\)](#):

(6) *I had seen John.* ([Reichenbach, 1956:290](#))

Here, one may describe a past perspective point from which an eventuality in a more remote past is being viewed, or at which a post state holds.

Further descriptions tend to make reference also to the second part of the concept. E.g., we already quoted above that the perspective time is a time point “from which the given information is viewed” ([Kamp, 2013:116](#)). We restated that in this definition, it is at least one, and possibly several eventualities in sequence that are being viewed from that time point. [Kamp and Reyle \(1993\)](#) give the following example with what they call a past future.

(7) *Mary got to the station at 9:45. Her train would arrive at 10:05.* ([Kamp and Reyle, 1993:595](#))

In the example, the possible event of the second sentence is posterior to that of the first. As both sentences are in the past relative to speech time, the second event can only be viewed from the time of the first sentence (cf. also [Kamp and Reyle, 1993:595](#)). We would thus claim here that the first event sets the perspective time point from which the second

<sup>22</sup> [Dowty \(1986\)](#) also suggests that aspectual information is less central in the interpretation of temporal relations (cf. [Dowty, 1986:59](#)), and underlines the relevance of “world knowledge and expectation” ([Dowty, 1986:52](#)).

event is seen. Importantly, the perspective time would hardly change if there was a continuation like *She would board it quickly and take a long nap*. The example would be an instance of free indirect discourse (see below).

The examples we just mentioned may be considered to be deviations from the supposedly typical case, that is, when “the [temporal perspective point] and the utterance time coincide” (Kamp and Reyle, 1993:596). According to Kamp and Reyle (1993), “there are many tenses which locate the perspective point at the utterance time” (Kamp and Reyle, 1993:596). Importantly, they take as an example “the simple past when it is used in sentences which describe events” (Kamp and Reyle, 1993:596).<sup>23</sup> Concerning the following example, they discuss a possible back and forth positioning of the perspective time (cf. Kamp and Reyle, 1993:597 f.).

- (8) *A man entered the White Hart. He was wearing a black jacket. He sat down in the bar. Bill served him a pint of beer.*  
(Kamp and Reyle, 1993:597)

Based on what has been said, the temporal perspective point would be expected to be the speech time for the first, the third and the last sentence (cf. Kamp and Reyle, 1993:597 f.). However, for the second sentence, which has a stative feature because of the progressive, it would coincide with the time at which the event of the first sentence is located (cf. Kamp and Reyle, 1993:596). Kamp and Reyle (1993) are doubtful about this analysis (cf. Kamp and Reyle, 1993:598, footnote 52).

A further idea contributing to the whole picture is the one by Becker and Donazzan (2017) who see subjectivity as central to an update of the point of perspective. Accordingly, the perspective time is described as “un TR [i.e., temps de référence, M.B. and J.E.] subjectif calculé par rapport à l'événement de prise en charge” (Becker and Donazzan, 2017:17, freely, ‘a subjective reference point determined by the act of guaranteeing the truth of the propositional content’). Thus, via subjectivity, an update may be linked to a change of the truth value (cf. Becker and Donazzan, 2017:18). As the authors state, a possible contribution of the French *maintenant* is to make this kind of anchoring explicit (cf. Becker and Donazzan, 2017:20). This also holds for the English *now*. The authors emphasize that the adverb “a pour effet d’actualiser le [point de perspective] en l’ancrant au [temps de référence] introduit par un changement d’état” (Becker and Donazzan, 2017:18, ‘has the effect of updating the perspective point by anchoring it to the reference time introduced by a change of state’). In this way, the new, i.e., changed situation appears highlighted. As Altshuler (2010:252 f.) puts it, the respective time point serving as anchor has to be already relatively salient by itself. A reference point introduced by a change of state therefore seems to be a good candidate for serving as anchor. The following example taken from Becker and Donazzan (2017:18) shows the phenomena under discussion.

- (9) *Parce que Marie était<sub>MP</sub> en grande colère, elle n’avait<sub>UMP</sub> plus son regard de lavande mouillée. Maintenant, elle jetait<sub>IMP</sub> des yeux furibonds de côté et plumait<sub>IMP</sub> dans son tablier les cailles avec férocité [...].* (Frantex: A.-M. Garat, *Les mal famées*, Arles, Actes Sud, 2000, p. 149, cited after Becker and Donazzan, 2017:18)  
‘Because Marie was very angry, she didn’t have the look of wet lavender anymore. Now, she was throwing enraged looks sideways and was ferociously plucking quails in her apron.’

In the short passage, reference is made to an original time point (‘when Marie had the look of wet lavender’) that is situated before the moment of the described situation, when it holds that Marie is angry (cf. Becker and Donazzan, 2017:18). The whole passage is temporally located at the same reference point. Via *n(e) ... plus* (‘not anymore’) the situation is described as the consequent state of a change of state (cf. Becker and Donazzan, 2017:18). And finally, it is *maintenant* (‘now’) that updates the perspective time to the salient reference point (cf. Becker and Donazzan, 2017:18 and also the description in Guéron, 2015:278).

The example is a case in point for the special role the temporal perspective plays in what concerns the French imparfait. The temporal perspective is a factor that goes beyond the simple temporal relations within a discourse. Descriptively, it allows us to unify the temporal relations description with other levels of discourse, especially the role of the narrator. Apparently, tense choice in French is sensitive to it. The imparfait is able to mark a shift in perspective. For this reason, the level of perspective plays an important role within our account. It will be treated extensively in Section 5.

To conclude, while the reference time is supposedly part of an abstract conception of discourse, manifest as some point in time to which a narrative has advanced (cf. Kamp et al., 2011:199), the concept of perspective time is two-fold. One is to be strictly attributed to tense in context, while the other one goes beyond temporal structuring. It is the point in time within discourse where the deictic center is shifted to in certain cases. In order for this to happen, different discourse

<sup>23</sup> This is effectively another reason for the supposed incompatibility of *now* in past time contexts with the simple past (cf. Kamp and Reyle 1993:596 f.).



elements from different levels may work together. Finally, this kind of perspective time is not independent of the reference time, as it draws on the reference time to anchor itself to.

#### 2.4. The relevant types of time points/intervals

In the preceding sections, we discussed the developments of the basic notions in the model by Kamp and colleagues (cf. especially [Kamp and Rohrer, 1983](#); [Kamp and Reyle, 1993](#); [Kamp et al., 2011](#); [Kamp, 2013](#)). In what follows, we try to synthesize the main concepts in the way we adopt them. They underlie the way we propose to describe temporal discourse structure. This account will finally be introduced in Section 3 ff.

From the models of [Reichenbach \(1947 \[1956\]\)](#) and from different adaptations of Kamp and colleagues ([Kamp and Rohrer, 1983](#); [Kamp and Reyle, 1993](#); [Kamp et al., 2011](#), etc.), we take the following five types of time points to be relevant for our account: Speech time (*n*), event time (*e*), location time (*loc*), reference time (*R*) and perspective time (*PT*).

Speech time (*n*) is the time when a sentence is uttered or, in written texts, may be supposed to be uttered. This is a standard definition, and as we will be considering mainly examples of past time reference here, we will not deal with possible criticism. As [Kamp and Reyle \(1993\)](#) state, “the utterance time is conceived as punctual, just as the time denoted by the word now” ([Kamp and Reyle, 1993:539](#)). The abbreviation *n* is used in most publications by Kamp (cf., e.g., [Kamp and Reyle, 1993:510 ff.](#) and later publications). It replaces the former *t<sub>0</sub>* used, e.g., in [Kamp and Rohrer \(1983\)](#) (see also Section 2.2).<sup>24</sup>

Event time (*e*) is already used by [Reichenbach \(\[1947\] 1956\)](#).<sup>25</sup> Many following publications have adopted the term. This is, for example, the case in [Kamp and Rohrer \(1983\)](#), but also in later publications (cf., e.g., [Kamp and Reyle, 1993:510 ff.](#)). As the term “event” also denotes a specific aktionsart (cf., e.g., [de Swart, 1998](#)), “eventuality time” may be used to avoid confusion (as it is done, e.g., by [Bary, 2009](#)). Formal accounts sometimes prefer to talk about run time (cf., e.g., [Altshuler, 2016](#)), which is precisely “the time [eventualities] actually take up” ([Bary, 2009:31](#)). The time the whole eventuality is supposed to take from its beginning (left boundary) to its completion (right boundary), however, is rarely specified in actual language use and generally remains undetermined. An example with explicit specification would be *John played tennis from 2 p.m. to 2.30 p.m.*

The eventuality time needs to be distinguished from the location time (see below),<sup>26</sup> which basically is the time for which the assertion of an eventuality holds. It may easily be indicated by temporal adverbial expressions. The relation between the location time and the eventuality time corresponds to the grammatical aspect. We can distinguish two cases. First, if there is proper inclusion of the eventuality (= run) time into the location time, perfective aspect holds. And second, in the case of inclusion of the location time into the eventuality (= run) time, there is imperfective aspect (cf., e.g., [Klein, 1994](#); [Bary, 2009](#); [Kamp and Reyle, 1993:536](#), [Kamp et al., 2011:200](#), etc.).

Location time (*loc*) has only been mentioned above. Now, we want to introduce it properly in our account. The following definition by [Kamp et al. \(2011:200\)](#) is illuminating, although it is stated to be informal: “Informally, the ‘location time’ of an event is to be seen as the time when the event is said to occur and the location time of a state as the time at which the state is said to hold.” The location time is, thus, the asserted temporal reference of an eventuality.

On the one hand, a location time is contributed by an eventuality in a narrative (cf., e.g., [Kamp et al., 2011:200](#)). On the other, also adverbial expressions play an important role. First, certain adverbial expressions may appear “as explicit specifiers” ([Kamp and Reyle, 1993:611](#)) for location time. An example is the expression *at 10:30 a.m.* in *The car crash happened at 10:30 a.m. or from 2 p.m. to 2.30 p.m.* in the example presented above. Second, as [Kamp et al. \(2011:222\)](#) state, “temporal ‘locating’ adverbs [...] denote certain periods (or ‘regions’) of time”. An example is the sentence adverbial *yesterday* in *Yesterday Fred bought a lawn mower* (example taken from [Kamp et al., 2011:208](#)). We call such “temporal regions” adverbially specified location times (*loc<sub>Adv</sub>*).

A quite similar concept is the topic time as presented by [Klein \(1994\)](#) (also, e.g., [Bary, 2009:59](#) mentions the parallelism). [Klein \(1994:4\)](#) defines it as follows: The topic time “is the time span to which the speaker’s claim on this occasion [i.e., the respective speaking event, M.B. and J.E.] is confined” ([Klein, 1994:4](#)). [Klein \(1994:4\)](#) states that it may be made explicit, e.g., by a question like *What did you notice when you looked into the room?* More precisely, it is the adverbial clause in the question that sets the topic time. According to [Klein \(1994:4\)](#), the temporal reference of the

<sup>24</sup> An abbreviation *t<sub>0</sub>* could in principle be used to make reference to all time points to which other time points are related or from which other time points are viewed.

<sup>25</sup> On page 288, [Reichenbach \(\[1947\] 1956\)](#) makes reference to “the point of the event”. We take that to be synonymous or close enough to ‘event time’, and do not seek to further differentiate the two expressions.

<sup>26</sup> Note, however, that the two concepts or at least the respective terms are not always distinguished. E.g., [Kamp et al., 2011:215](#) state en passant: “Reichenbach’s [...] event time (i.e. our location time)”.

expected answer then takes up the topic time.<sup>27</sup> As in the case of what we saw concerning the location time, adverbial expressions within a clause may make the topic time explicit (cf. Klein, 1994:163).

Klein (1994) also tries to argue for the relevance of topic time when considering temporal updates in discourse. Considering the sequence, *She turned to me. She said: [ . . . ]* (example from Klein, 1994:40), he states that the topic time “is shifted”. However, he does not formalize this shifting as clearly as the DRT approach does. We suspect that the polyvalence of his concept of topic time stands in his way. The most basic part of the notion, the time that is “under discussion” is rather a time frame whose delimitations are not as rigid as the ones of a precisely assertion-based location time. As we saw in Section 2.2 vs. Section 2.3, DRT has the advantage of featuring a specialized time that captures narrative updating. This reference time is discussed again in the following.

The reference time (R) is, as cited above, “the time [ . . . ] to which the story has [ . . . ] advanced” (Kamp et al., 2011:199). It is thus the basis of narrative progression (cf. Kamp, 2013:116 f.). Importantly, it is a descriptive concept and due to that it may be subject to differences in interpretation (cf., e.g., Kamp, 2013:117 ff., see Section 2.3). A central correlation is the following. As, e.g., Kamp and Reyle (1993:523 ff.) put it, the introduction of new reference points is reserved for tensed verbs expressing events, which are therefore responsible for temporal updating in a narrative, while (the location times introduced by) states, by contrast, take reference points that are already there.

Consequently, within the account, it is reference time that differentiates between eventualities advancing narrative time and non-progression of time. At what time an eventuality is situated, is, however, spelled out by location time. Thus, from the location time we may typically deduce if we are looking at a state or an event, i.e., based on its relation to the eventuality time (see above), while reference time makes the interrelations between the respective eventualities explicit. Consequently, there is a close relationship between the reference time and the location time (cf. Kamp and Reyle, 1993:545). In this conception, it seems helpful to stipulate for reasons of simplicity that it is the location time that sets and situates reference time. This may be more precise than to state that reference points are introduced by sentences (as is the case, e.g., in Kamp, 2013:117).

Although it is sometimes suggested in the literature to discard the notion of reference time (cf. the references in Altshuler and Melkonian's, 2014:135 f., apologetic stance on reference time), we use it as an important ingredient in our approach. As we have seen, it is decisive in order to capture discourse dynamics. More specifically, we argue for its explanative potential on the basis of the following four properties: (i) It allows to pinpoint where the discourse stands at a certain “moment” of its unfolding. (ii) It does justice to the dynamic character of discourse because it shows when and how the time is updated. (iii) On its basis, we are able to grasp the interrelations between the updated time points in discourse and in this way the temporal order and structure of discourse. (iv) Reference points are discourse entities. By becoming part of the referential structure of discourse, they are available for prominence relations, and with their specific prominence values they become part of the prominence structure of discourse. To sum up, it is due to these four reasons that the concept of reference time is a core element of our dynamic semantic approach.

The perspective time (PT), finally, specifies, as we saw, a time point “from which the given information is viewed” (Kamp, 2013:116). On the one hand, it may be used as a descriptive device for tenses like the compound past and temporal uses of the conditional (cf. e.g., Kamp and Reyle, 1993:595). This is what Reichenbach ([1947] 1956) had in mind when he introduced the notion of the reference point (cf. e.g., Kamp et al., 2011:199). It is a point in time different from the moment of speech, relative to which an eventuality is situated, e.g., in the case of the compound past anterior and possibly posterior for the conditional. On the other hand, in the case of a perspective shift, it is the point in time where the text-internal origo is situated (cf. e.g., Guéron, 2015:278). Then, tense forms, adverbial expressions and other devices work together to set it at an already given (and typically salient, cf. Altshuler, 2010:252 f.) reference point. This is especially relevant in contexts of free indirect discourse and similar.

## 2.5. Limitations of the accounts discussed

The accounts discussed so far serve well to describe at least typical relations between sentences marked by many different tense forms. However, as Kamp (2013:118) already notices, narrative sequences pose additional problems too complex to be handled in that way. He emphasizes that rhetorical relations are another important factor for temporal structuring (cf. Kamp, 2013:118). We want to mention briefly two shortcomings of the accounts.

First, there may be uses of tenses that diverge from the typical ones, which are, however, taken as basis for the modeling we presented. For example, Kamp et al. (2011:197) state that “sentences in the *passé simple* or *simple past* [ . . . ] often ‘carry the story forwards’, while sentences in the *past progressive* or *imparfait* hardly ever do this”. This is too

<sup>27</sup> In Klein's (1994:4) example, the answer is as follows: *There was a book on the table. It was in Russian.*

simplistic. The French imparfait may be used narratively, i.e., appear in contexts of sequentiality (cf., e.g., Labelle, 2003 and many others). The example below shows this.

- (10) *Le lendemain, Jean donnait<sub>IMP</sub> sa démission et partait<sub>IMP</sub> pour Paris.* Labelle, 2003:165  
 ‘The next day, John handed [in] his resignation and left for Paris.’ (Labelle, 2003:165)

The two events situated within the location time introduced by the adverbial expression are presented as a sequence. The first event is that of the resignation being handed in. The second event, that of leaving for Paris, is temporally situated after it. Both events are, however, presented in the imparfait. The sentence is thus incompatible with a (simple) understanding of the imparfait as being stative. We will come back to this subject in Section 4.3.

Second, there is a property of temporal structuring which we see as a central one, and that is not taken into account. It is prominence. We suppose that the different time points in a narrative are not only in a strictly speaking temporal relation of being situated before, parallel to or after one another etc., but are also related hierarchically. Thus, a time point may be more, equally or less prominent than another. In the next sections, we will see in more detail what this means and how we account for it. Importantly, we are of the opinion that prominence is necessary for a complex temporal structuring of discourse. The consideration of prominence will also lead us to profit much more from an analysis of longer passages than those of two to three sentences typically presented in the literature.

Before introducing our account that is especially concerned with this second point, i.e., the role of prominence in temporal structuring, with which we can also solve the first difficulty mentioned above, we present a further development of DRT. SDRT (Lascarides and Asher, 1993, and others) focuses on the semantic interrelations between sentences. As we will see, this leads to different priorities in what concerns the concepts discussed in the preceding sections. Interestingly, it proposes a viable method of grasping hierarchical relations in discourse.

## 2.6. The approach of Asher/Lascarides and the role of discourse relations

The original DRT approach and its further refinements elaborated by Kamp and colleagues (Kamp and Reyle, 1993; Kamp et al., 2011 etc.) constitute crucial contributions to a theory of dynamic semantics. Yet, Asher and Lascarides (Lascarides and Asher, 1993; Asher and Lascarides, 2003) extend Kamp et al.’s approach by introducing and representing discourse relations (which they call “rhetorical relations”) in a systematic way. This allows them to go beyond the modelling of temporal relations between two or three sentences and they add an interpretive possibility to the usual temporal description of discourse (resolution of temporal anaphora and determination of relations such as precedence, overlap, etc.). Particularly, Asher and Lascarides’ account for the building of a coherent discourse structure based on its linear continuity (relations of coordination) as well as on its hierarchical organization (relations of subordination).

Discourse relations can be characterized as a limited set of basic fundamental relations which exist between sentences and confer coherence to textual segments (informally, “pieces of discourse”, see below) and to the textual unit as a holistic whole. There are two classes of discourse relations. They may be coordinative (e.g., NARRATION, OCCASION, RESULT, CONTRAST) or subordinative (e.g., ELABORATION). Discourse relations can be made explicit by connectors such as “but” (in the case of CONTRAST) or “because” for EXPLANATION. However, discourse relations are often only implicit and have to be inferred by means of commonsense and monotonic reasoning. Therefore, in the underlying process of computation, lexical and compositional semantics as well as domain knowledge have to concur (cf. Asher and Lascarides, 2003:5). For the sake of illustration, take the following pair of examples:

- (11a) *John was eager to see his friend Peter again but Peter didn’t have much time for him.*  
 (11b) *John was eager to see his friend Peter again. Peter didn’t have much time for him.*

(11a) and (11b) exemplify the discourse relation of CONTRAST, which may be made explicit by the conjunction “but” (see 11a).

Asher and Lascarides’ basic aim is to integrate the mentioned relations between sentences into the representation of the logical form of (a piece of) discourse. In this way, they expand the original format of Discourse Representation Theory (DRT) to a so-called Segmented Discourse Representation Theory (SDRT). Segmented Discourse Representation Structures (SDRSs) represent the semantics of discourse “via a structure of rhetorically connected propositions” (Asher and Lascarides, 2003:4). As Asher and Lascarides point out, a (piece of) discourse is “coherent just in case

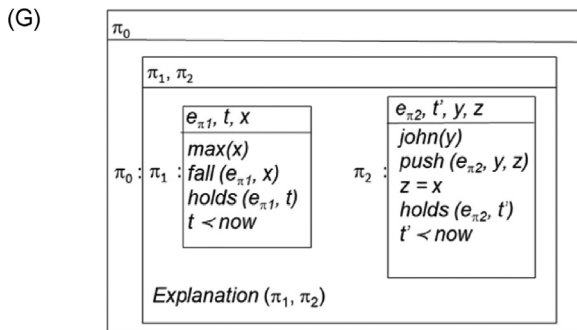
- (a) every proposition [...] introduced in the discourse is rhetorically connected to another bit of information in the discourse” (Asher and Lascarides, 2003:4), and

- (b) it is spelled out in a way that “all anaphoric expressions [tense markers included, M.B.] can be resolved” (Asher and Lascarides, 2003:4).

With the following example we illustrate how the conceptual structure of a piece of coherent discourse is represented in the SDRT format:

- (12) *Max fell. John pushed him.* (Asher and Lascarides, 2003:160)

The corresponding representation in the SDRT-format in Asher and Lascarides, 2003:160) is shown below.



The SDRS contains the typical DRT-boxes, which are composed of two main components. They are

- (a) a list of referents introduced into the discourse (the “discourse universe  $U$ ”) – in this case two events  $e_1$ ,  $e_2$ , the individuals Max ( $x$ ) and John ( $y$ ) and two time points  $t$  and  $t'$  – and
- (b) a set of specific conditions, which describe the properties and relations among the discourse referents.

In this example, there are two time points  $t$  and  $t'$  at which the events  $e_1$  and  $e_2$  hold, respectively, and they are situated before the speech time (now). Asher and Lascarides (2003) introduce labels, e.g.,  $\pi_1$ ,  $\pi_2$ , etc., which represent the logical forms and thereby the associated contents of the specific discourse constituents of a piece of discourse. These labels become part of a specific discourse (“rhetorical”) relation as its arguments. In our example,  $\pi_1$  and  $\pi_2$  are the specific constituents (as tokens or occurrences) of the particular piece of discourse in question and they are the arguments of the discourse relation of EXPLANATION (EXPLANATION ( $\pi_1$ ,  $\pi_2$ )).

Importantly, Asher and Lascarides (2003:12) point out that discourse relations are of paramount importance for the temporal interpretation of discourse given that they affect its underlying temporal structure. This can be shown with Asher and Lascarides’ (2003:6) famous example pair:

- (13a) *Max fell. John helped him up.*  
 (13b) *Max fell. John pushed him.*

In the first example, the two discourse constituents are related by the discourse relation of NARRATION. Both sentences refer to the same topic and answer the question: ‘What happened to Max?’ The events  $e_1$  and  $e_2$  are ordered in a chronological sequence ( $e_1 < e_2$ ). In the second example, the order of the eventualities is reversed and, thus, diverges from the linear textual order ( $e_2 < e_1$ ) (cf. Asher and Lascarides, 2003:6). The requirement of discourse coherence is satisfied by the rhetorical relation of EXPLANATION. The specific relation is brought about by the content of the two discourse constituents in combination with world knowledge (or “domain knowledge” in the words of Asher and Lascarides, 2003:7).

It must be stressed that Asher and Lascarides (2003) motivate the relevance of rhetorical relations by highlighting their role in the temporal interpretation of discourse.<sup>28</sup> In addition to what has been said, they point to the fact that the two sentences (13a and 13b) display the same tense form (cf. Asher and Lascarides, 2003:6). They conclude that the “compositional semantic forms [of the two short discourses, M.B. and J.E.] are insufficient for distinguishing their interpretations” (Asher and Lascarides, 2003:6). This is also supported by Kehler (2002:187) who considers the aktionsart

<sup>28</sup> A similar stance is taken by Kehler, who also highlights the central role of coherence relations (= Asher and Lascarides’ rhetorical relations) for the interpretation of temporal discourse structure (in English) (cf. Kehler, 2000). He emphasizes the role of the “interaction between tense meaning and the establishment of coherence relations” (Kehler, 2000:204).

when stating that in English, “any temporal relation can hold between accomplishments and achievements described by adjacent clauses in the simple past”.

However, this claim calls for a precision and a more detailed account: Though the observations are true for English and its simple past tense, which covers a wide range of temporal relations, the “distinguishing” power of the Romance (past) tense system is much stronger given its more elaborated and differentiated character. The French *passé simple*, for instance, only allows for the NARRATION reading of its English counterpart ( $e_1 < e_2$ ) and strongly excludes the EXPLANATION reading:

- (14) *Max tomba<sub>PS</sub> (e<sub>1</sub>). John le poussa<sub>PS</sub> (e<sub>2</sub>). (Vet, 1996:154)*  
 ‘Max fell. John pushed him.’

The verb form *poussa* (‘pushed’) triggers the interpretation  $e_1 < e_2$  and rules out the reading  $e_2 < e_1$  (cf. Vet, 1996:154).<sup>29</sup> In French, the discourse relation of EXPLANATION is available for the past tense pluperfect, i.e., the form *avait poussé* (‘had pushed’).

- (15) *Max tomba<sub>PS</sub>. John l’avait poussé<sub>POP</sub>.*  
 ‘Max fell. John had pushed him.’

This example makes it clear that the relevance of discourse relations with respect to the temporal interpretation of discourse depends on the structure and the complexity of the tense system of each language. Therefore, a language like French with a more complex tense-aspect morphology, requires a more sophisticated model of the interplay between tense-aspect categories, actionality, temporal information (adverbial expressions and/or temporal conjunctions) and discourse relations. This is exactly what our proposal of an adequate model of temporal interpretation in discourse is concerned with.

Now, how can we characterize the relation between our account of temporal interpretation and the Segmented Discourse Representation Theory? And within our account, how can we take discourse relations into consideration? Generally speaking, the SDRT is an overall theory of how speakers construct (or rather “compute”) discourse coherence on both levels, on the macrostructural level of an extended piece of discourse as well as on the local level of succeeding discourse constituents, for instance expressed by two sentences with an underspecified linguistic form. Still, SDRT does not present new contributions to a theory of tense and aspect in discourse but relies on what has already been elaborated conceptually by Kamp et al. However, its conception of rhetorical relations can be made fruitful in the framework of a theory of temporal structuring in two ways:

On a local level, rhetorical relations allow us to make explicit how we infer relevant time points in order to develop a coherent temporal interpretation whenever temporal information (i.e., coded linguistic form) remains underspecified. As we already pointed out, underspecified information may result from the specificities of the tense-aspect system of a given language or it may be due to a lack of explicit temporal information normally provided by adverbial expressions or temporal connectors. More specifically, temporal relations are a reliable basis for determining missing time points/intervals which, nevertheless, form part of a configuration of hierarchical relations, i.e., prominence relations (see below).

On a more global level, discourse relations enable us to capture the conceptual structure of a coherent piece of discourse, taking into account the interplay between its constituents (i.e., its conceptual units  $\pi_1, \pi_2, \dots, \pi_n$ ) and especially its overarching conceptual structure. This overarching conceptual structure results from a hierarchical ordering of discourse structures which entertain relations of coordination and subordination among them. In Section 4.1 we will also highlight the role of discourse relations in determining the relevant *domain of prominence relations*. In this context, the so-called *right frontier constraint* will be of special interest for our approach (cf. Asher and Lascarides, 2003:10 ff., see Section 4.1).

Finally, rhetorical relations may serve as valuable diagnostics in order to capture the specific semantic properties of a particular tense-aspect form in a given language. This allows us to refine the semantic description of a tense-aspect form but also enables us to compare differences between the tense-aspect system of two languages. A relevant divergence can be illustrated with our contrastive example, which is repeated here for convenience:

- (16a) *Max tomba<sub>PS</sub> (e<sub>1</sub>). John le poussa<sub>PS</sub> (e<sub>2</sub>). (Vet, 1996:154)*  
 (16b) ‘Max fell. John pushed him.’

<sup>29</sup> See also the example (i.a) quoted in Caenepeel and Moens (1994:7). Its translation to French (i.b) yields an incoherent discourse.

(i.a) *Annie broke her leg. She fell off her bicycle. (Caenepeel and Moens, 1994:7)*

(i.b) *#Annie se cassa<sub>PS</sub> une jambe. Elle tomba<sub>PS</sub> de sa bicyclette.*



While an interpretation that corresponds to the linear order ( $e_1 < e_2$ ) is in principle available in both languages, the more probable reverse interpretation ( $e_2 < e_1$ ) can only be realized by the English version (16b), but not by the French one (16a). Thus, as we have already underlined, contrary to the English past, the French *Passé Simple* is not available for an EXPLANATION reading. However, the French Perfect, *Passé Composé*, is perfectly suitable to do the job and expresses the EXPLANATION relation between the two discourse constituents ( $\pi_1$  and  $\pi_2$ ):

- (17) *Max est tombé<sub>PC</sub>. John l'a poussé<sub>PC</sub>.* (Vet, 1996:154)  
 'Max fell. John had pushed him.'

These differences concerning the compatibility of the past forms with particular discourse relations indicate that the French *Passé Simple* strongly favors a chronological-sequential ordering by updating the relevant time points (more specifically, the reference time, cf., e.g., Labeau, 2007 for a characterization of the French *Passé Simple*). The *Passé Composé*, on the other hand, does not necessarily update the temporal structure and displays configurational properties which are compatible with an EXPLANATION reading (cf. Molendijk and de Swart, 2000, 2002). It would be of special interest to determine the different discourse relations the French *Passé Composé* is compatible with (e.g., does it allow NARRATION?) and compare this inventory with the compatibilities of perfect forms in other languages (e.g., Germanic and Romance languages).

### 3. The three pillars of our prominence-based account

Temporal relations in discourse are manifold. Grasping them goes far beyond answering the question, what happens when? It also sheds light on the possible problem of how eventualities are grouped into episodes and sub-episodes, and how the groups of eventualities are interrelated. Finally, important insights are gained from the contribution of the view point, and where it is temporally situated. According to our approach, the three levels just sketchily outlined make up for the temporal structure of discourse. Additionally, the choice of tense and aspect forms (and also what concerns the mood category) can quite extensively be explained on the basis of what we will present in the following sections. Our account also makes explicit in what way tense and aspect contribute to the coherence of discourse.

The important additional idea, which we take as our starting point, is that prominence plays a central role in temporal discourse structure (cf., also Bittner, 2014, see below).<sup>30</sup> More specifically, we presume that times, i.e., time points and time spans, and episodes are not only ordered according to “temporal linearity”, that is, their temporal relation properties, but also in a hierarchical manner. The hierarchy is what we call relative prominence. Hierarchical properties have hardly ever been considered in temporal descriptions of discourse (cf., however, the relatively basic ideas by Kamp, 2013:113 ff. and others briefly discussed in the following section).<sup>31</sup> We set out to operationalize them within the three levels mentioned in the beginning, and which are most central to the temporal structuring of discourse and the choice of the respective formal means, i.e., especially tense. The levels themselves are not new in the field of discourse analysis. But by means of our account, on the one hand, we refine their description, and on the other hand, we bring them together and add the principle of prominence to form one integrated account, namely our prominence-based account of temporal discourse structure.

In the following sections, we will present our treatment accordingly. The different levels and how we conceive of the hierarchical structure shall be briefly summarized: (i) On the level of temporal structure, time points and time spans are related to each other. Some of them may serve as anchors for others and are in this sense more important for temporal structuring. We call these prominent time points. Apparently, an understanding of this level is somewhat basic for temporal structuring in discourse. For this reason, we first focused on publications oriented to this topic in Section 2, and we will also start with this aspect in the next section. (ii) The perspective and the phenomenon of perspective taking are also relevant for temporal structuring. They have a strong text structuring potential that interacts with the times and has an effect on the prominence of time points and time spans. (iii) Most obvious for prominence structuring, however, is the discourse level. We consider foreground and background, and also phenomena that contribute to the profiling of a primary and a

<sup>30</sup> Within our collaborative research center, prominence is shown to be a relevant property across categories (cf. Himmelmann and Primus, 2015).

<sup>31</sup> To name another exception, also Asher and Lascarides (2003) present a way of integrating hierarchies in a model that also has much to say about temporal relations. However, they place their focus on discourse relations. Our approach is more fine-grained when it comes to temporal relations (see Section 4.2 for exemplary details).

secondary story line. The prominence of time points mentioned above may diverge between story lines, but also if the story line is kept constant.

#### 4. A prominence-based account of the relations between times

Our account describes temporal structuring of texts as ruled by the relative prominence of time points in what concerns their temporal interrelation, their integration into different episode layers and a potential hosting of view points. In what follows, we keep the second and third level constant, and will only briefly mention points of interaction. This enables us to focus on the more strictly speaking temporal relation between times. This first level forms the basis of our understanding of temporal discourse structure. Only afterwards can we integrate the other two levels necessary for a comprehensive account.

As stated, in what concerns our terminology and the principles of understanding, we orient ourselves towards the theories of, e.g., Reichenbach, Kamp and colleagues, but also Partee and Hinrichs (see Section 2). They give helpful indications to capture the linear ordering of times, i.e., time points and intervals, in discourse. What seems to be nearly completely absent in the publications referred to, is the idea of a hierarchical ordering, which is the basis of our account. In the present section, we will bring the linear and the hierarchical ordering together. We will then show how to implement this pillar of our account and present our first possible deductions. The section will be completed with a brief exemplary analysis of a case of narrative use of the French imparfait. While it would pose problems for other approaches, ours handles it well and explains its properties in an intuitive fashion.

We consider several temporal relationships which we will call temporal relations *strictu sensu* to delimit them from the second relevant kind of relationship, which is that of prominence. The temporal relationships *strictu sensu* we consider are *sequence*, further specified as *indirect sequence* and *abutment*, i.e., sequence without any kind of temporal gap (for the term *abutment* see Kamp and Reyle, 1993:573), *overlap*, *complete simultaneity* and *inclusion*. The two types *sequence* and *overlap* each present two further possible orderings depending on which one of the involved time points or time spans is situated first.<sup>32</sup> The case of *overlap* may involve time spans that coincide either in what concerns their beginning or their end (see also the footnote above). Depending on the amount of related time points and time spans, the relationships may become more and more complex. The different possibilities, however, are not new. What is more interesting therefore is the second kind of relationship between time points and time spans, that of prominence.

Prominence relations between time points and time spans have hardly been considered in the literature up to now. Exceptions to this general trend are Bittner (2014)<sup>33</sup> and the insightful treatments of the concept of salience (cf., e.g., Eckardt, 2014; Altshuler, 2012; Altshuler and Melkonian, 2014 with further references). However, they are typically intended in a different manner and, to our knowledge, a more precise concept – like prominence – has not yet been operationalized. One of the few references coming close to this textual property is made by Kamp (2013:114 f.). However, he does not only use the term salience but also a definition that is too narrow. The subject Kamp treats in the relevant section is temporal reference as part of a context (cf. Kamp, 2013:113), which is indeed the level of structure we are interested in, too. He defines a context formally as follows (Kamp, 2013:114, italics are his):

“A *context* is a structure  $\langle T, <, \subseteq, \supseteq, \dots, SAL \rangle$ , where

- (i)  $T$  is a set of ‘times’ (intuitively intervals of time as well as instants)
- (ii)  $<, \subseteq, \supseteq, \dots$  are relations of complete precedence, temporal inclusion, abutment and ...
- (iii)  $SAL$  is a salience ranking among the elements of  $T$  (represented in the form of a stack)
- (iv) one of the elements of  $T$  is  $S$  (the Speech time)”

<sup>32</sup> *Inclusion* may also be subdivided into the two possibilities of perfect and partially bordering or concurring inclusion. The first subtype involves a time span clearly shorter than another, having a beginning after and an end before the other time span. The second subtype is a frontier case to simultaneity. There, the two time spans either share their beginning or their end.

<sup>33</sup> Bittner (2014) provides a comprehensive theory including temporal relations. Still, we do not include her approach centrally into ours for the following reasons. Contrary to Bittner (2014) but like many other researchers (cf. Bittner, 2014:15), we focus on intersentential relations rather than on “sentence-internal semantic composition” (Bittner, 2014:15).

Bittner (2014) also takes prominence into account (cf. Bittner, 2014:4, 42). Firstly, however, it is not her focus and she does not specifically derive her insights from it. By contrast, this is what we set out to do. Secondly, as indicated above, she tends to consider relatively small discourse chunks. And given that her list-based approach is intended as strictly dynamic, i.e., new input changes the status of preceding entities (cf. Bittner, 2014:43, 47), this may lead to counter-intuitive results. E.g., in the following example (cf. Bittner, 2014:83), she describes the last introduced time point as a topic time (cf. Bittner, 2014:83), although it is apparently included in the (extended) topic time of the first sentence and, thus, would have to be described as embedded under the first introduced time point. An analysis in terms of rhetorical relations leads to the same description (see Section 2.6).

(i) *Al played chess today. He started badly, but in the end he won. He was very proud of it.* (Bittner, 2014:83)

As the quote shows, Kamp regards the salience feature as basic for temporal structure. He shows what he means by it with an example already presented in Reichenbach ([1947] 1956:288).

- (18) *But Philip ceased to think of her a moment [ $t_1$ ] after he had settled down in his carriage [ $t_2$ ]. He thought only of the future [ $t_3$ ]. He had written to Mrs. Otter [ $t_4$ ], the massière to whom Hayward had given him an introduction [ $t_5$ ], and had in his pocket an invitation to tea on the following day [ $t_6$ ].* (Somerset Maugham, *Of Human Bondage*, quoted after Kamp, 2013:107 f.)

Firstly, Kamp considers the context represented by the first two sentences (cf. Kamp, 2013:115). The respective context C contains the time points of speech time,  $t_1$ ,  $t_2$  and  $t_3$ . As marked by the conjunction together with the past perfect form,  $t_2$  lies before  $t_1$ , while  $t_3$  is the third of the time points in the past (cf. Kamp, 2013:115). In what concerns his salience feature, Kamp states that “there is only one salient time and that [...] is  $t_3$ ” (Kamp, 2013:115). Secondly, he adds the third sentence containing another past perfect with the time point  $t_4$ . And this is when his salience feature comes into play as the past perfect takes the most salient time, i.e.,  $t_3$ , as reference time in Reichenbach's sense “and locates the event [...] to a time earlier than that time” (Kamp, 2013:115).

This description is intuitive and seems to describe the linguistic facts well. However, the generalization Kamp tries to make is not perfectly convincing. As he states, the reported description is based “on the assumption that salience is just a matter of recency [of mention, M.B. and J.E.]” (Kamp, 2013:115, footnote 13). He adds, though, that this is “in general [...] much too simple” (Kamp, 2013:115, footnote 13).<sup>34</sup> However, when we integrate the rest of the extract into our context model, the generalization proves to be already too simple for this very example. Being a matter of recency of mention,  $t_4$  is placed “at the top of the salience order” (Kamp, 2013:115). Hence, the next time point in the discourse,  $t_5$ , would be situated relative to it. Kamp doubts if that is the case, or if it should rather be  $t_3$  (cf. Kamp, 2013:116). He leaves the question open, supposing that it is a matter of “inference, based on the contents of the two clauses and [...] world knowledge” (Kamp, 2013:116). Still, there is a simple but nevertheless important structural factor which Kamp does not name at that point. The sentence introducing  $t_5$  is syntactically subordinated, referring back to an NP. We expect structures like that to behave in their proper, i.e., different, way and will not consider them in the present article.

More interesting still, but not even mentioned by Kamp is  $t_6$ . If we were to ignore  $t_5$  for the moment, we would, according to the above description, have to situate  $t_6$  relative to  $t_4$  as it would be the most recently mentioned and thus most salient time point. Obviously, this does not grasp the linguistic facts properly. Time point  $t_6$  stands in direct relation to what is mentioned before the sentence making reference to  $t_4$ . The state referred to by *had in his pocket* is temporally coincident with  $t_3$ . Based on world knowledge, we could infer that its temporal coincidence even extends to some time before  $t_3$ . Within the context that would be  $t_2$ . But as stated, this requires inference. Now, without a fixed correspondence between salient and most recently mentioned time point, it is fairly unproblematic to state that there is temporal coincidence between  $t_6$  and  $t_3$ . Firstly,  $t_4$  is an anterior temporal reference. This opens the ground for the possibility of anchoring  $t_6$  either to it or to the time point which  $t_4$  is anterior to, that is  $t_3$ . Secondly, because of its form, a simple past, the discussed stative VP *had in his pocket* does not fit into the anterior context. Having excluded  $t_4$  as a possible antecedent,  $t_3$  comes into play. That  $t_3$  serves well to attach  $t_6$  to can be underpinned lexically, too, as the thinking that is done at  $t_3$  is said to concern *the future*, and the *invitation* stated to be possessed at  $t_6$  concerns *the following day*. An analysis in terms of the right frontier constraint (see Section 4.1) leads to a similar result.

Gernsbacher et al. (1989) discuss the factor of recency within a “structure building framework” (Gernsbacher et al., 1989:1). They are interested in the comparison of “two seemingly contradictory phenomena” (Gernsbacher et al., 1989:1), namely the “advantage of the most recent clause” (Gernsbacher et al., 1989:5) with the “advantage of the first-mentioned participant” (Gernsbacher et al., 1989:2). Using experimental methods, they collect evidence that actually both tendencies are at work in language comprehension and also more generally in comprehension processes (cf. Gernsbacher et al., 1989:21). Still, they describe one as dominant (cf. Gernsbacher et al., 1989:16) and this is highly relevant within our approach, too. When considering the course of comprehension of a sentence consisting of two clauses they point out the following:

“Comprehenders [...] have the greatest access to the most recent clause. However, at some point, the first clause becomes more accessible than later clauses because the substructure representing the first clause [...] serves as a foundation for the whole sentence-level representation” (Gernsbacher et al., 1989:16).

<sup>34</sup> Kamp (2013:115, footnote 13) also states in this context that his description is not supposed to “involve an explicit formalization of a notion of salience”.

As they do not specify which point in time they refer to, we do not go into further detail here. However, due to their cognitive approach, the ideas of Gernsbacher et al. (1989) may be used as basis to argue more generally against approaches based on recency.<sup>35</sup> In Section 4.2, we return to the question of the value of a first mentioned discourse entity, in our case, the first introduced time point.

As we have seen, it is problematic to define salience in terms of strict recency. However, the concept of salience may still be relevant. As stated, we agree with Kamp that a notion of this kind has to be integrated into the very core of the temporal description of a context (cf. Kamp, 2013:114). Structures involving more than two to three sentences that may add up to more complex interrelations cannot be described solely on the basis of what we called temporal relations *strictu sensu*. However, the notion needs to be properly motivated and operationalized (cf. also the demand implied by Kamp, 2013:115, footnote 13, quoted above in our second last footnote).

As has been highlighted, our account is based on the assumption that the temporal relations *strictu sensu* are ordered in a hierarchical way. These hierarchies are spelled out as prominence relations. We prefer to use “prominence” instead of the term salience that is rooted in perception. We follow Himmelmann and Primus (2015) in defining prominence as a relational property that singles out one element from a set of elements of equal type and structure (cf. Himmelmann and Primus, 2015:38 ff. with further references). And while salience seems to imply the phenomenon of only one element sticking out in comparison to others, prominence allows for more complex structuring as there may be different values of prominence, and even a kind of contrary phenomenon, which we call prominence demotion. As stated, the entities we set out to compare are time points and time spans. Importantly, prominence is not an end in itself. Rather, from the prominence of a time point certain consequences ensue. Again, we follow Himmelmann's and Primus' reflections on prominence (Himmelmann and Primus, 2015). In their conception, “prominent units function as structural attractors in their domain” (Himmelmann and Primus, 2015:38). That means that they may “serve as anchors around which experience is organized” (Himmelmann and Primus, 2015:44) and thus license more operations (cf. Himmelmann and Primus, 2015:44 f.). Consequently, the basic questions we want to address are, first, around which time points is the temporal structure organized? This will give us the most prominent time point. Second, what prominence values do the other time points have and which ones are not relevant or less relevant for the temporal structure? By this, we will be able to describe prominence structures in discourse. Third, what is the role of the discourse level, i.e., foreground and background, and different story lines? Finally, how does perspective contribute to the temporal structure, and how does perspective taking interact with the prominence of times?

Before going into details, we need to go back to the basic modeling and choose the type of time points prominence may be attributed to. In Section 2, we discussed five kinds of time points: Speech time, eventuality time, location time, reference time and time of perspective (see Section 2.4 for an overview also including relevant references). So, which types are sensitive to prominence-based structuring? Speech time may per se be considered a very prominent time. It is the principal deictic center of a text and thus a basic anchor (cf. also Bittner, 2014:69 ff.). It is also subject to updating, a kind of updating that is rooted in the non-linguistic world and as it were real time progression (cf. de Swart, 2007:2280, 2282). The speech time is central to the temporal reference of certain tenses, not only strictly speaking present tenses but also for the compound perfect (cf. Reichenbach [1947] 1956). In what concerns the temporal development within a past (narrative) text, however, it only plays a minor role. As the examples we refer to in the article at hand mainly present such past usages, we will not be focusing on the utterance time here. According to our approach, the eventuality time itself is not a discourse referent and, thus, is not part of the discourse structure. It plays only an indirect role through its interaction with location time. Location time is the time point or time span at which one or more<sup>36</sup> eventualities are said to hold or occur (cf. Kamp et al., 2011:200; Kamp and Reyle, 1993:611). We suppose that the location time does play an important role in the structuring of narrative texts. However, one other type of time point is at least similarly relevant for prominence structuring. It is the reference time that is, as we said, the very basis of narrative progression (cf. Kamp, 2013:116) and it plays a paramount role for the “computation” of rhetorical relations. As we will see, location time and reference time may interact in this respect. Finally, the perspective time, which is a vantage point from which other events are viewed (and to which “dependent” time points may be attached), directly and indirectly (by contributing to making other time points more prominent) takes part in the prominence structure of discourse. We will come back to the subject in Section 5.

In what follows, we will first propose a way of implementing this part of our account. Then we will present two time points which seem to have a strong tendency towards being prominent. Finally, we will analyze an example that is problematic for other accounts.

<sup>35</sup> We thank an anonymous reviewer for this suggestion.

<sup>36</sup> It is foremost the location time set by an adverb (cf. Kamp and Reyle 1993:611) that may contain more than one eventuality (i.e., location times of eventualities).

#### 4.1. Implementation of the account concerning the relations between times

Having laid out the background and the basics of our prominence-based temporal account, we now want to take a closer look at how it can be implemented. For the time being, it seems most promising to set out from the concept of a prominence feature. The feature is to be attributed to the relevant time points and intervals. As we saw in Section 2.4, there are several types of time points in discourse. While any of them are to be described as part of the structure, only some are sensitive to the kind of prominence that is relevant for the temporal structure of a narrative. Above, we principally named the reference points which determine where a story has advanced to temporally (cf. Kamp et al., 2011:199). Additionally, location times play a role. To be precise, when there is a reference point, the relevant prominence feature will be attributed to it. Only when there is none or one that is shared by two or more eventualities, location times will come into play. Perspective times form part of the prominence structure but may as well influence the prominence value attributed to other time points.

Importantly, the prominence feature is of a relative nature. That means that we compare time points in what concerns their prominence. We thus initially get three possible values, i.e., more, equally or less prominent compared to another time point. To symbolize the relations, we use  $>_P$ ,  $=_P$  and  $<_P$ , respectively. The subscript  $P$  represents the classification as a prominence relation. We use it to indicate that what is compared is actually the prominence value of time points and not, e.g., the relative situation of time points on a timeline. We define equi-prominence, i.e., the value of equal prominence, as a default value. It would, e.g., hold for eventualities occurring within a neutral sequence, i.e., ones that are connected, e.g., by a NARRATION relation (see especially the last example in Section 4.2).<sup>37</sup> A question that follows from this is, which possibly relevant time points have to be compared? In the neutral sequence of events, much of the temporal structuring may be grasped by simply comparing adjacent time points (cf. the saliency as recency approach by Kamp, 2013:113 ff., see Section 4). However, for temporally more complex structures this is not enough. What prominence aims at is, as we saw above, the possibility of an anchoring, being a property of an element that enables other elements to attach themselves to it (cf. Himmelmann and Primus, 2015:44 f.). Obviously though, it is not feasible to attribute a feature that takes every other time point into account.

The solution is a domain restriction, which we want to introduce in the following. According to it we will treat relative prominence within a domain, i.e., a text segment. It enables us to add two further possible values for the feature, maximal and minimal prominence (within the relevant domain). We symbolize them as  $P^{max}$  and  $P^{min}$  (see below).

A starting point for determining the relevant domain could be Smith's (2003) idea of functional units. Smith (2003:259) partitions texts into "functional units", defined as "units each realiz[ing] a goal" within the text. They may be further subdivided (cf. Smith, 2003:259). According to her, the partitioning holds for very different kinds of texts, and is also typically the case in narratives (cf. Smith, 2003:259 f. with further references). In narratives, such functional units are episodes which she defines as follows (Smith, 2003:260):

"An episode consists of a coherent set of situations that have 'some kind of thematic unity – identical participants, time, location, global [e]vent or action' (van Dijk, 1982:[177])."

According to what has been said above, a subdivision of an episode into sub-episodes is also possible.

The notion of "functional unit" as well as the criterion of "goal realization" are intuitively appealing. However, they are vague and prone to diverging (maybe even arbitrary) interpretations. By contrast, discourse relations turn out to be an ideal device to determine the relevant domain for prominence relations. What is more, Asher and Lascarides (2003:10 ff.) even come up with a specific criterion, the so-called "right frontier constraint" originally introduced by Polanyi (1988):

"[T]he right frontier constrains where constituents with a particular discourse function can 'attach' – i.e., what constituents in the discourse context can serve as the other argument of the discourse relation" (Asher and Lascarides, 2003:11).

Thus, the constraint identifies constituents of a discourse relation. It then matches them and thereby contributes to the build of a coherent discourse structure. Importantly, as we will see in the example below, it may help in the delimitation of bigger discourse units.

Asher and Lascarides (2003) determine the right frontier as "the proposition introduced by the prior and any propositions that dominate it" (Asher and Lascarides, 2003:10). This is illustrated by the following example provided by Asher and Lascarides (2003:8):

(19a) *Max had a great evening last night.*

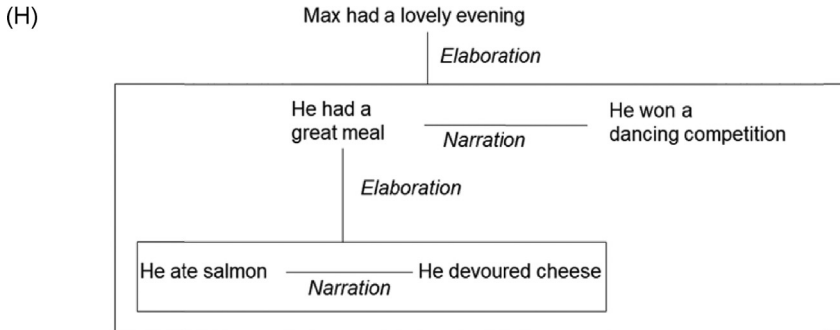
(19b) *He had a great meal.*

<sup>37</sup> Here, *within* means properly included and not equal, at least in what concerns the beginning of sequence (see below and Section 4.2).



- (19c) *He ate salmon.*  
 (19d) *He devoured lots of cheese.*  
 (19e) *He then won a dancing competition.*

According to Asher and Lascarides (2003:8), the following discourse relations hold between the propositions of the example: (b) to (e) are linked to (a) by an ELABORATION relation, i.e., they are subordinate to the first proposition (cf. Asher and Lascarides, 2003:8). (c) and (d) are embedded under (b) by another ELABORATION relation, but between the two a NARRATION relation holds (cf. Asher and Lascarides, 2003:8). Finally, (e) attaches to (b) by a NARRATION relation (cf. Asher and Lascarides, 2003:8). It thereby “closes” the ELABORATION of (b). They present the following diagram to illustrate the relations (cf. Asher and Lascarides, 2003:9, the changes with respect to the example above are theirs<sup>38</sup>).



Thus, in the example, the right frontier of the discourse structure or, as it were, the “open ends” to which a new sentence may be attached, consist of sentences (e) and (a) (cf. Asher and Lascarides, 2003:10). This is the reason why a clause like *It was a beautiful pink* (Asher and Lascarides, 2003:10) with *it* referring back to the salmon of (c) may not simply follow (e) (cf. Asher and Lascarides, 2003:10). However, it would be possible to add a new sentence to the last sentence by continuing the discourse relation of NARRATION, e.g.

- (20) *He had a great meal (b). He won a dancing competition (e). And he found the love of his life.*

Alternatively, it would also be possible to add a sentence which introduces a CONTRAST relation with (a), for instance:

- (21) *Max had a great evening last night (a). But the next morning, reality caught up with him mercilessly. He received a call and left the country.*

As we can see, both continuations are perfectly suited to continue the preceding discourse. However, they differ in the discourse relation they establish and they attach to different propositions of the discourse. Importantly, it is the right frontier that is the basis for available options of attachment. Only propositions at the right frontier are available for continuation.

We may apply this to the definition of the domain. The right frontier directly spells out the right delimiter of a domain. What is semantically necessary for the respective right frontier to be built up, is the left delimiter of the domain. If a domain is expanded by means of a further continuation, the right border is shifted forward. This leads to a new right frontier. If in an embedded structure, more preceding linguistic material is necessary for the new right frontier, then also the left delimiter may be shifted to the left until a sufficiently superordinate proposition is reached. Thus, SDRT gives us a precise tool to capture the domain in question. With these observations concerning the determination of the discourse domain, we can now proceed to define the case of a maximally prominent time point  $t^{max}$ .

Formally, the case of a maximally prominent time point  $t^{max}$  would be defined as follows.

**Definition:**

Let  $T = (t_0, \dots, t_n)$  be a finite and according to the time of the occurrence ordered set of time points, and let  $P$  be a prominence function  $P : T \rightarrow \mathbb{R}_{>0}$ , such that there is a typically unique  $t^{max} \in T$  with  $P(t) > P(t')$  for  $\forall t' \in T - \{t\}$ .

We call this  $t^{max}$  the most prominent element of the set  $T$  with respect to  $P$ .

<sup>38</sup> Asher and Lascarides (2003:8 f.) change the first and the last sentence slightly.

That means that the time point  $t^{max}$  is an element of the set of time points of a text segment, where the set is defined as temporally ordered from  $t_0$  until  $t_n$ . A prominence function  $P$  specifies a prominence value  $P$  (of the set of positive real numbers, i.e.,  $\mathbb{R}_{>0}$ ) for each time point  $t$  out of the set of time points  $T$ . Within the prominence values, the value of  $t^{max}$  is highest.

For now, we use this rather general definition that does not further specify the possible values of  $P$ . Above, we stated that we understand prominence as a relative feature, thus, the values of  $P$  are not meaningful in absolute terms, but only with respect to the other values attributed to elements of the set  $T$ . The definition is, however, restrictive in what concerns the number of possibly maximally prominent time points. This of course depends on the definition of the set  $T$  as rather small. It might be deduced that we define the set  $T$  in accordance with the appearance of only one maximally prominent time point  $t^{max}$ . This is not the case, although at this stage it seems to us that there is in fact this correlation. If, however, linguistic analyses show otherwise, this point might be subject to change. In contrast, we do not specify the number of possible minimally prominent time points which we would describe as cases of prominence demotion (cf. Egetenmeyer, in preparation). More than one equally prominence demoted time point could possibly occur in one text segment. In the present publication, though, we focus rather on the maximally prominent time point. Following Himmelmann and Primus (2015), we assume that  $t^{max}$  serves as an anchor for some other time point(s) or interval(s). Typically, we would expect this to be the case for a time point that is temporally situated after  $t^{max}$  (see also Section 4.2).

We will conclude the section with a short survey on where temporal prominence may be of relevance. There are many cases that come to mind. Among them are narratives with a hierarchically diversified story line. One may easily expect that a main story line would set time points that are more prominent than those of a secondary story line. A case in point would be when secondary episodes intervene in a primary story line, which is taken up again after the intervention (see Section 6). Phenomena of perspective taking may play a role in this kind of structuring. Within our account, they are taken on in the context of perspective time (see Section 5). The concept of foreground and background is related to the subject of diversified story lines, but prominence values may be determined independently (see, again, Section 6).

There are also clear prominence effects when the story line is not strongly hierarchically diversified. A possible case is consistently foregrounded story lines. The reason is the one we have stated before, that prominence is generally relevant for temporal structuring. This already appears in what we are about to discuss in the next section, namely the role of the first time point in a text segment.

#### 4.2. Two prominent time points per default

Having defined a prominent time point as one within a domain, i.e., a text segment, we are in a position to make an important generalization. There are two time points that make for good candidates of prominent time points. These are (i) the first time point of a sequence<sup>39</sup> and (ii) possibly time points set by adverbial expressions. Why is this so?

An explanation of (i) clearly hinges on the basis of our theory (cf. also Bittner, 2014:73 for another theoretical motivation of the correlation and Gernsbacher et al., 1989 discussed in Section 4 for an experimental study of the subject). As stated, among other things we are looking for a time point that is the basis of the structure to which it belongs. It is supposedly a time point to which other time points are anchored. If we now consider a text segment, we may state that there has to be something it builds upon. Thus, one reason to describe the first time point of a sequence as a good candidate for being prominent, is that structures take what is there to build on, and for non-first entities there necessarily is a preceding entity, at least the first one. It should be added that time is principally considered to be linear, and typically there is backward anchoring. That is, in discourse, a temporal anaphor appears supposedly more frequently and is consequently more probable than a cataphor. Thus, time points are expected to be anchored to something before them. The time point that is possibly available to the greatest number of those backward referring time points is, again, the one that is introduced first. Below, we exemplify two cases.

We can further substantiate this by means of a more precise delimitation of the domain in terms of the right frontier approach in SDRT (cf., e.g., Asher and Lascarides, 2003, see Section 4.1). Within the relevant domain of a set of propositions linked by discourse relations and delimited by a right frontier, coordinating and subordinating relations equally hinge upon a preceding proposition. Within the thereby defined domain there is necessarily a first proposition. Rhetorically, it sets the baseline for the following continuations. Typically, this first proposition may therefore be relatively prominent. It also contains a first temporal reference, more precisely, a first reference point, which we expect to be more prominent than the following ones.

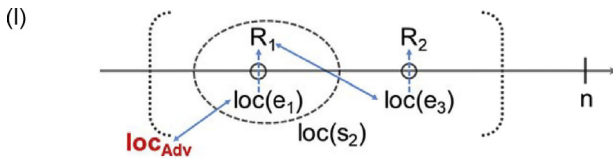
<sup>39</sup> The first time point may be interpreted in the realm of first mention. An anonymous reviewer suggests that first mention should be described as a linear factor and not as a hierarchical one. However, the point we make in the present paragraph is precisely a typical correlation between two values on the two non-identical axes.

The anonymous reviewer also underlines the salience of a last-mentioned element. In the paper at hand, we do not place emphasis on the last-mentioned element. In this first conception of the approach, said value cannot be argued for in a natural way.

The second generalization (ii) concerns adverbial expressions. There are at least two possible reasons to attribute a relatively high prominence value to time points or intervals set by them.<sup>40</sup> While time points set by verbs remain implicit, adverbs may refer to time points explicitly. This makes them conceptually prominent. Additionally, they may set location times in which more than one eventuality is temporally located. Further eventualities may be attached to the corresponding time span. In such a case, the location time set by an adverb turns out to be especially relevant for the temporal structure. The following example is a case in point.

(22) *Yesterday, John drove to town. He was hungry. He ate a hamburger.*

The example is rhetorically quite similar to the one we discussed at length in Section 4.1. The second and the third sentences may be described as standing in an ELABORATION relation to the first. They are rhetorically subordinate. A RESULT relation links the third to the second sentence (cf., for this relation, Asher and Lascarides, 2003:204 ff., 211). Thus, the right frontier is jointly conveyed by the first and the third proposition. In the example, the adverb introduces a location time before the speech time. All the other time points are situated relative to it, more precisely, within it. The following visualization shows this.



The first event introduces a location time ( $loc(e_1)$ ) that is situated relative to the location time of the adverb ( $loc_{Adv}$ ). It introduces a reference time  $R_1$  which also serves as a reference time for the location time of the state expressed in the second sentence ( $loc(s_2)$ ). Consequently, the state holds at the time the first event is realized.<sup>41</sup> The event in the third sentence is again temporally located ( $loc(e_3)$ ) relative to the first reference point ( $R_1$ ). It introduces another reference point ( $R_2$ ) that would be available for subsequent discourse. As we see here, the location time of the adverb ( $loc_{Adv}$ ) is the basis for the temporal structure. We would thus state that it is the maximally prominent time interval in the text segment. The visualization also shows how we adapted the one presented by Kamp and colleagues (see Sections 2.2 and 2.3). Importantly, it also shows that our approach is more detailed with respect to temporal relations than what we have seen when considering SDRT. While Asher and Lascarides (2003) focus on propositions, our approach also takes time points and intervals into account that are introduced by adverbial expressions and relates them to the ones conveyed on the basis of propositions, i.e., (tensed) verbs.

It is interesting to see the minor changes when the adverb is left out, as in the following variant of the example. We can thereby close the circle to what we saw above under (i).

(22') *John drove to town. He was hungry. He ate a hamburger.*

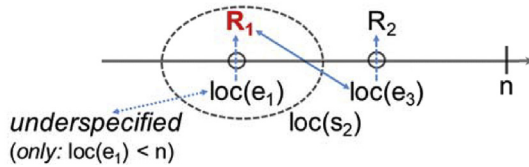
The corresponding visualization would be as follows.

<sup>40</sup> Musan (2002) discusses temporal adverbial expressions in much detail. She considers an adverb like the one in the English example below (*yesterday*) a non-quantificational, namely a position adverbial (cf. Musan, 2002:109 f.) that is topicalized (cf. Musan, 2002:242 f.) and, importantly, specifies a time frame (cf. Musan, 2002:76). She also classifies it as “contextually prominent” (Musan, 2002:76) but does not further specify the term.

She shows that an adverbial expression of this kind may even occur as “frame-setting modifier” (Musan, 2002:125 with further references), when it “receives an epistemic interpretation” (Musan, 2002:126). An example is *Und die Fledermaus gehört heute auch nicht zu den Vögeln, sondern zu den Säugetieren* (Musan, 2002:126, emphasis M.B. and J.E., literally, ‘And today, the bat also does not belong to the class of birds, but to the mammals’). The meaning can be rephrased as ‘According to what people know today, bats are not birds but mammals’ (Musan, 2002:126).

<sup>41</sup> The state does not necessarily have to hold throughout the trajectory of John driving to town. It is enough for a correct analysis if it holds at the culmination point, i.e., when John reaches town.

(J)



Here, the first event's location time ( $loc(e_1)$ ) continues to be situated before the speech time but its situation is otherwise underspecified. Again, it sets a reference point  $R_1$  relative to which not only the state  $s_2$  is situated via an inclusion relation, but also the event in the third sentence ( $loc(e_3)$ ). It follows that in the example  $R_1$  is at the heart of the temporal structure. It is thus the most prominent time point.

What holds for both examples is that it is the first time point or interval that is the most prominent one. As has been discussed above, it is generally a good candidate for a maximally prominent time point. However, it is not necessarily the case as temporal updating is a diverse phenomenon.

To complete this section, we would like to present our analysis of a slightly longer example. It also shows the role of equi-prominence, i.e., the equal prominence value, which we defined as default above.

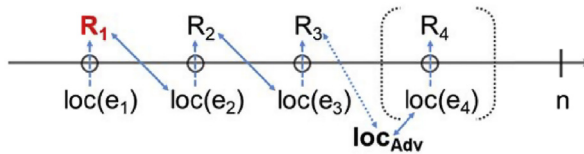
(23) [1] *Le docteur entra<sub>PS</sub> chez lui* [2] *et vit<sub>PS</sub> sa femme debout*. [3] *Il lui sourit<sub>PS</sub>*. [4] *Un moment après elle pleurait<sub>IMP</sub>* (Kamp and Rohrer, 1983:258)

'[1] The doctor got home [2] and found his wife awake. [3] He smiled at her. [4] A moment later, she was crying.'

The example presents a sequence of events. The discourse relations that hold between the propositions may all be classified as NARRATION relations. It is a coordinating relation and thus does not specify a hierarchy. The right frontier is conveyed only by the fourth proposition. The beginning of the domain is the respective beginning of the chain of propositions linked by the NARRATION relation. Again, what our account adds is a hierarchy in what concerns the time points and intervals involved in the structure.

The example can be visualized as shown below.

(K)



Like in the preceding example, there is no pre-specified location time. Thus, the first event is located ( $loc(e_1)$ ) in an underspecified manner before  $n$ . The location time  $loc(e_1)$  introduces a first reference point  $R_1$  that serves as an anchor for the location time of the following event ( $loc(e_2)$ ). This again introduces an updated reference point  $R_2$  serving as an anchor for the location time of the third event ( $loc(e_3)$ ). The reference point  $R_3$  introduced by  $loc(e_3)$  serves as an anchor for the location time of the adverbial expression *un moment après* ('a moment later') ( $loc_{Adv}$ ). However, as specified by the adverbial expression, there is a temporal gap between  $R_3$  and  $loc_{Adv}$ . Finally, a fourth event is located relative to  $loc_{Adv}$  (i.e.,  $loc(e_4)$ ), which again introduces a reference time  $R_4$  that would be available as an anchor for a following event.

The whole structure departs from the first reference point  $R_1$ , making it the most prominent time point. The following two reference points  $R_2$  and  $R_3$  are of less but equal prominence. As the location time of the adverbial expression ( $loc_{Adv}$ ) introduces not only a temporal gap but also a relatively well specified time point and additionally opens the floor for a potentially divergent episode, it is determined as more prominent than  $R_2$  and  $R_3$ . Finally,  $R_4$  is, again per default of equal prominence as  $R_2$  and  $R_3$ . Thus, in the example, the following prominence relations hold:

$$P(R_1)^{\max} > P(R_4) > P(R_2) = P(R_3) = P(R_4).$$

#### 4.3. Further evidence for the account: narrative use of the French Imparfait

In Sections 3 and 4 we presented important ingredients necessary to grasp temporal discourse structure. However, up to now, we have only discussed a few examples, partly from the literature. In the following, we will analyze an interesting literary case. It features a special use of the French imparfait, which we have already made reference to before. What is special about it is that it updates time, i.e., it advances the narration. Considering Kamp and Rohrer (1983) and many others, this is not to be expected due to the generally stated imperfective aspectual value of the imparfait. The case thus

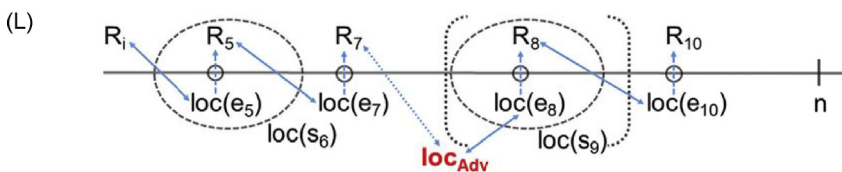
poses problems for more traditional tense models. As we will show, within our prominence-based temporal account however, the explanation is quite straight-forward.

The example we want to present is that of the well-known imparfait narratif ('narrative imparfait') (cf., e.g., Tasmowski-De Ryck, 1985; Vetters, 1996; Bres, 1999, to name a few). There, the imparfait seems to behave as if it were a simple past, i.e., a perfective past tense (cf. Vetters, 1996:128). Thus, as said, it may introduce sequences of events and advance narrative time. Typically, there is an introducing adverbial expression that sets a location time (cf., e.g., Bres, 1999:12). The verbs used in such structures are very often telic and mostly achievements (cf. Bres, 1999:5). Additionally, it may introduce an episode of its own (cf. Molendijk, 2004:293 f.). The example is taken from the French database *Frantext*.

- (24) [1] *Il reçut<sub>PS</sub> le coup de poing avant de s'en apercevoir.* [...] [2] *Il chancela<sub>PS</sub>* [3] *et tomba<sub>PS</sub> du trottoir sur la chaussée.* [4] *On ne le regardait<sub>IMP</sub> pas.* [...] [5] *Jacquemort s'éloigna<sub>IMP</sub>* [6] *Au bout de la place, une rue transversale semblait<sub>IMP</sub> comporter plusieurs échoppes.* [7] *Il se dirigea<sub>PS</sub> vers elles.* [8] *Quelques minutes plus tard, il entra<sub>IMP</sub> chez le menuisier.* [9] *Il se sentait<sub>IMP</sub> troublé, mal à l'aise.* [10] *La porte se referma<sub>PS</sub> sur lui* [11] *et il attendit<sub>PS</sub>.* (*Frantext*: Boris Vian, *L'Arrache-cœur*, 1953, p. 51)  
 '[1] He received the fist punch, before realizing it. [2] He staggered [3] and fell from the pavement on the street. [4] The people didn't look at him.  
 [5] Jacquemort walked away. [6] At the far end of the square, a side street seemed to house some shops. [7] He headed in that direction. [8] Several minutes later, he entered the carpenter's workshop. [9] He felt confused, uneasy. [10] The door closed behind him [11] and he waited.'

As we see, there is basically one main story line. A man is hit by someone else. He then walks away and enters a carpenter's workshop where he waits. The example shows the end of a chapter. The first six sentences of the little extract are structured as is to be expected. In the first sentence, there is a relatively prominent time point set by the location time of the event of receiving a fist punch. Then several events follow, the man staggers and falls, he walks away and heads in the direction of a street with shops ([2], [3], [5], [6]). They occur as a possibly neutral sequence, where every reference point is of equal prominence value. Two descriptions intervene: Nobody looks at him ([4]) and in sentence 6, the street is described. Again, the descriptions in the imparfait take the corresponding reference points that are there already.

The structure from sentence [8] on is the one of the narrative imparfait. It may be described in a quite similar way as the example with the adverb in Section 4.2. The adverbial expression introduces a new time point making explicit that it is situated not in direct sequence ("abutment", Kamp and Reyle, 1993:573) but shows a temporal gap.<sup>42</sup> This again makes the location time of the adverb relatively prominent as the following time points depend on it. This seems to enable the use of the imparfait for the event in sentence [8] (cf., relatedly, Labelle, 2003). Its location time is situated at the location time introduced by the adverb. It sets a reference point that is of equal prominence value to the ones that may be attributed to the events presented in [10] and [11]. See the visualization of the sentences [5] to [10] below.<sup>43</sup>



Thus, our prominence-based account serves well to describe cases of narrative imparfait, which other accounts that do not include prominence cannot grasp so well. Further interesting cases are ones of non-typical narrative imparfait and other imparfait uses with narrative features. In this second case, prominence demotion also comes into play, i.e., where a reference point is of minimal prominence value within a domain. The phenomenon will be dealt with in another publication (cf. Egetenmeyer, in preparation).

## 5. Adding the perspective time to the account

As has been highlighted in the preceding sections, a primary level of linear ordering in discourse can be identified. On this primary level, the linear ordering is established by time points whose location can be captured by two basic relations.

<sup>42</sup> Altshuler and Melkonian (2014:146) also mention the typical property of certain adverbial expressions to introduce a temporal gap.

<sup>43</sup> For the numbering of the reference times, we use the number of the location times that set the respective reference times. The aim is to make the correspondence more salient.



First, the location of all time points is characterized by their relation to the origo – the *hic et nunc*, “here” and “now”, of the speaker and his/her speech act. Therefore, the definition of the first realm of temporal description is rooted in the relation between the location time of eventualities and the utterance time.

The second trait of temporal description is determined by the relations the location times of the eventualities entertain between each other. These relations can be described as *sequence*, *overlap/simultaneity* and *inclusion*. In what concerns structuring on the basis of verbs, especially location times which introduce reference times are paramount for the ordering of discourse as they constitute possible anchors for the interpretation of temporal relations between eventualities in discourse. Reference times mark where the discourse stands at a certain moment of its unfolding. Inasmuch as reference times enable the interpretation of temporal relations, they contribute significantly to the construction of a prominence structure in discourse and hence to the construction of a coherent discourse (see below).

Importantly, with the PT (perspective time) a further level of ordering and structuring in discourse is introduced. The PT is inherently linked to the level of perspective and therefore represents an additional means for the structuring of discourse. More specifically, the PT marks a time point from which a certain eventuality or a sequence of eventualities are seen. It acts as a typical vantage point to which a series of time points introduced via eventualities may be related. The level of perspective implies a perspectival center from which a series of eventualities (with their location time points and respective reference points) is considered. The perspectival center is, by default, the speaker, but other perspectival centers, especially inherent to the discourse, may be highlighted. In what follows, we will illustrate that the introduction of the notion of perspective time (PT) allows for the analysis of a number of phenomena related to the roles tense can play in discourse in its interplay with other (temporal) discourse information.

Let us begin with a simple example: The pluperfect is a typical tense category which introduces a PT in discourse. In the following example (taken from [Combettes, 2008:183](#)), the source of the text segment/passage marked by the pluperfect turns out to be a protagonist of the story, *elle* ('she'), whose words are reproduced.

- (25) *Elle parla<sub>PS</sub> ensuite de son départ de Lyon. Tout le monde avait été<sub>POP</sub> parfait. Des amis l'avaient accompagnée<sub>POP</sub> à la gare. Elle avait eu<sub>POP</sub> même une couchette. A la ligne de démarcation, on avait à peine regardé<sub>POP</sub> son ausweis. Et le train n'avait été<sub>POP</sub> immobilisé que trois heures.* (E. Bove, *Le piège*, Gallimard, p.145, quoted after [Combettes, 2008:183](#))

'Then she talked about her departure from Lyon. Everyone had been perfect. Some friends had accompanied her to the train station. She had even got a berth. At the boundary line, her papers had been hardly looked at. And the train had only stopped for three hours.'

The report of the secondary source describes her positive experiences during her stay at Lyon. The moment where the speech act of the secondary source takes place can be identified as PT. It is the PT on which the interpretation of the temporal relations between the eventualities of the retrospective report hinge. All time points relevant for the location and interpretation of the eventualities are temporally preceding/previous to the PT and structurally – in terms of semantic interpretation and perspective – subordinated to it.

The example nicely shows how perspective and temporal relations interact to form a prominence structure. The time point specified as PT is the most prominent time point in the extract as the dependent structure hinges on it. Second most prominent is the first reference time set in the pre-past (*avait été*, 'had been') as it functions as an anchor for the then following eventualities *l'avaient accompagnée* ('had accompanied'), *avait eu* ('had gotten') etc. (see also Section 4.2). The reference times introduced by the sentences expressing a sequence in the pre-past are, again, of equal prominence value (see Section 4.1).

A much more complex example is the case of Free Indirect Discourse (FID). In the following excerpt, the narrator steps back and gives way to the inner thoughts of the protagonist, Madame Bovary.

- (26) *Elle se demandait<sub>IMP</sub> s'il n'y aurait pas eu<sub>CONDII</sub> moyen, par d'autres combinaisons du hasard, de rencontrer un autre homme; et elle cherchait<sub>IMP</sub> à imaginer quels eussent été<sub>POP, SUBJ</sub> ces événements non survenus, cette vie différente, ce mari qu'elle ne connaissait<sub>IMP</sub> pas. Tous, en effet, ne ressemblaient<sub>IMP</sub> pas à celui-là. Il aurait pu<sub>CONDII</sub> être beau, spirituel, distingué, attirant, tels qu'ils étaient<sub>IMP</sub> sans doute, ceux qu'avaient épousés<sub>POP</sub> ses anciennes camarades de couvent. Que faisaient<sub>IMP</sub>-elles maintenant? A la ville, avec le bruit des rues, le bourdonnement des théâtres et les clartés du bal, elles avaient<sub>IMP</sub> des existences où le cœur se dilate, où les sens s'épanouissent<sub>PRES</sub>. Mais elle, sa vie était<sub>IMP</sub> froide comme un grenier dont la lucarne est au nord, et l'ennui, araignée silencieuse, filait<sub>IMP</sub> sa toile dans l'ombre à tous les coins de son cœur.* (G. Flaubert, *Madame Bovary*, Paris, Bibliothèque de la Pléiade, 1951, p. 365 f., quoted after [Weinrich, 1982:802](#))

'She asked herself if there hadn't been a way, by any other combination of chance, of meeting another man; and she tried to imagine what those events that hadn't occurred would have been, this different life, this husband whom she didn't know. None of them, in fact, resembled this one. He could have been handsome, spiritual, distinguished, attractive, like, without a doubt, the men were, who her old friends from the convent had married. What did they do by now? In the city, with the noises of the street, the humming of the theatres and the lights of the dance halls, they had a life where the heart expands, where the senses blossom. But she, her life was cold as a loft which has its window to the north, and boredom, a silent spider, span her web in the shadow into every corner of her heart.'

In this beautiful example ("Madame Bovary" quoted in [H. Weinrich's text grammar of French, 1982:802](#)), the perspective shifts from the narrator to the internal source, Madame Bovary, whose thoughts and feelings about her mediocre husband and the consequences for her life are rendered in a very vivid way. The excerpt starts with an indirect question and continues with the unveiling of Madame Bovary's most intimate thoughts. These thoughts presuppose a mental act of awareness. This mental act of awareness represents the PT of this segment given that the described eventualities depend on it, temporally (the eventualities overlap with the PT) and structurally (they constitute the propositional content of the mental act). Finally, the PT is also the point which marks the shift of perspective from the primary (narrator) to the secondary or text-internal source (Madame Bovary). It should be mentioned that the form of the verb that introduces the structure, i.e., the verb expressing the mental act presented in the imparfait, *demandait* ('asked'), depends on other factors and could in principle appear as passé simple form, too. Importantly, however, the verbs expressing the thoughts, i.e., the ones that occur within the structure, could not be realized as passé simple forms. The imparfait fulfills the function of marking the change in perspective.<sup>44</sup>

However, we should bear in mind that not only tense forms can mark a perspective time. Also, temporal adverbials, such as *now*, are paramount for the updating and highlighting of a perspective time (PT). This is illustrated by the following example.

- (27) *Il passa<sub>PS</sub> la nuit à s'interroger, à se fouiller l'âme. Il comprenait<sub>IMP</sub> maintenant. Oui, il reconnaissait<sub>IMP</sub> les instincts et les vices qui avaient levé<sub>POP</sub> en lui: ils lui faisaient<sub>IMP</sub> horreur. Il songea<sub>PS</sub> à la veillée funèbre, auprès de son père mort, aux engagements pris, et il repassa<sub>PS</sub> en revue sa vie, depuis: il les avait tous trahis<sub>POP</sub>. Qu'avait-il fait<sub>POP</sub> depuis un an? Qu'avait-il fait<sub>POP</sub> pour son dieu, pour son art, pour son âme? Qu'avait-il fait<sub>POP</sub> pour son éternité?* (Frantext: R. Rolland, Jean-Christophe: *L'Adolescent*, 1905, p. 368)

'He spent the night questioning himself, exploring his soul. Now he understood. Yes, he admitted the instincts and the defects that had risen inside him: they made him anxious. He thought of the wake, besides his dead father, of the commitments made, and he thought back over his life, since: he had betrayed them all. What had he done for the last year? What had he done for his god, for his art, for his soul? What had he done for his eternity?'

The first sentence sums up the all-encompassing macro-event of the sequence which extends over the entire night (as the location time of the event): The protagonist spends the whole night exploring his inner self. The second sentence contains the temporal adverb *maintenant* ('now') and is marked by the imperfect tense. As [Becker and Donazzan \(2017:16–18\)](#) argue, *maintenant* is characterized by its anaphoric nature and has, therefore, to be anchored to the most prominent time point in the discourse context. This most prominent time point is the location time expressed by the verbal phrase *il passa la nuit à s'interroger* ('spent the (whole) night questioning himself'). The most conspicuous aspect of this passage is, however, the fact that the temporal adverb *maintenant* shifts the perspective from the narrator, who introduces the temporal frame of the segment, to the protagonist and that it updates, at the same time, the perspective time of the discourse (PT). So, the original perspective time, the perspective time associated with the speaker as the primary source, is superseded by the perspective time inherent to a secondary (or "internal") source. This updated perspective time corresponds to the moment at which the secondary source becomes fully aware of his instincts and vices. This amounts to saying that the new perspective time hinges on a mental act of the internal source, which is described as a sudden awareness of blatant shortcomings concerning the moral and psychological underpinnings of his acts.

This example shows that different time points introduced in discourse have different weights and that these weights change as the discourse unfolds. In this context, the adverb *maintenant* ('now') marks the point where the perspective is shifted from the speaker to a text-internal source. Thus, while the external perspective time is momentarily downgraded, the temporal perspective point of an internal source is promoted. This again augments the prominence value of the respective time point within the text.

<sup>44</sup> The statement is not supposed to include other forms that are grammatically necessary, e.g., the subjunctive pluperfect form *eussent été* ('would have been').

We have seen that the perspective time (PT) needs to be described as a further discourse structural level. It is intimately linked to the concepts of source and thus, e.g., becomes especially relevant in the contexts of free indirect discourse and the like. The PT typically is a vantage point for one or more other time points. It may, but does not have to be marked by an adverb. In the following, we introduce the third and last level of temporal prominence structure.

## 6. Prominence relations in the “tempus relief”

As we already mentioned, prominence relations are of paramount importance for the temporal structuring and ordering of the discourse based on the progression of the reference time. In the same way, they are relevant when the perspective of discourse and especially the perspective time is highlighted. However, prominence relations are also relevant for another level of structuring in discourse, which has been addressed for the first time by H. Weinrich under the label of “tempus relief” (Weinrich, 1982:168). The notion of “tempus relief” refers to the foregrounding and backgrounding of single eventualities or sequences of eventualities (cf. also the top tier vs. bottom tier in Bittner, 2014:8).

The “tempus relief” management involves particularly tense forms, but also temporal connectors such as *when* or *before/after*. It is known that the imperfect in Romance languages has the potential of backgrounding eventualities in specific contexts, which is tantamount to demoting their prominence status in discourse. Take the following example (quoted in Weinrich, 1982:170), which nicely illustrates the prominence demoting function of the French imparfait in appropriate contexts:

- (28) *Nous étions<sub>IMP</sub> à l'étude quand le Proviseur entra<sub>PS</sub>, suivi d'un « nouveau » habillé en bourgeois et d'un garçon de classe qui portait<sub>IMP</sub> un grand pupitre. Ceux qui dormaient<sub>IMP</sub> se réveillèrent<sub>PS</sub>, et chacun se leva<sub>PS</sub> comme surpris de son travail.* (G. Flaubert, *Madame Bovary*, Paris, Bibliothèque de la Pléiade, 1951, p. 327, quoted after Weinrich, 1982:170)

‘We were in the study, when the principal came in, followed by a novice dressed like middle-class and by a school servant carrying a big desk. Those who had been sleeping woke up, and everyone got up surprised from his work.’

In this example, two different relative clauses feature the imparfait, an adjective clause (*qui portait*, ‘who carried’) and a periphrastic relative (*ceux qui dormaient*, ‘those who were sleeping’) clause (see, e.g., Riegel et al., 1997:797 and 814). Both clauses marked by the imparfait are descriptive in nature, which is made evident by the fact that they answer the question “What was the situation like?” and not “What happened next?” The descriptive character of the relative clauses has the effect that they cannot update the discourse as they do not introduce an own reference point in the unfolding discourse (see Section 2.3). Therefore, the descriptive content – corresponding to eventualities with unbounded extensions – is linked to the most prominent reference point in the actual context. This most prominent reference point is the one that is introduced by the location time of the entering-event, with which the described eventualities overlap.

Another characteristic pattern can be seen in the next example (taken from the French version of Umberto Eco's novel “The name of the Rose”):

- (29) *Comme nous grimpons<sub>IMP</sub> par le sentier abrupt qui serpentait<sub>IMP</sub> autour du mont, je vis<sub>PS</sub> l'abbaye.* (U. Eco, *Le Nom de la rose*, French translation by Jean-Noël Schifano, Paris, Bernard Grasset, 1990, p. 27)

‘As we toiled up the steep path that wound around the mountain, I saw the abbey.’

The imparfait occurs in two backgrounding structures: Apart from a descriptive relative clause (*qui serpentait*, ‘that wound’), a temporal clause marked by the temporal connector *comme* (‘as’) features the imparfait. In this context, the eventuality of climbing is in progress. It is linked to the seeing-event and includes or at least overlaps it.

As mentioned at the beginning of the section, however, syntactic embedding is not necessary to background a situation. In the following example, it is only the imparfait marker that makes the backgrounding explicit.

- (30) *Florent se promenait<sub>IMP</sub> dans le portique, les deux mains derrière le dos, et son humeur aurait pu<sub>CONDII</sub> être meilleure. En apercevant Élise, il comprit<sub>PS</sub> les sentiments qui l'agitaient<sub>IMP</sub> mais se garda<sub>PS</sub> d'en rien dire. La prenant par la main, il l'entraîna<sub>PS</sub> dans une promenade qui dura<sub>PS</sub> une partie de la nuit.* (Frantext: Y. Beauchemin, *Le Matou*, 1981, p. 292)

‘Florent strolled through the columned hall, his hands behind the back, and his mood could have been better. When he noticed Élise, he understood the feelings that upset him, but he refrained from saying anything. He took her by her hand and pulled her with him on a walk that lasted part of the night.’

The imparfait in the first sentence marks the background. The sentence thus sets a common ground on the basis of which the following actions are interpretable. Important factors within the picture are apparently the location and the mood of the main character. The event of understanding (*comprit*, ‘understood’), a result of noticing Élise (*en apercevant Élise*, ‘when he noticed Élise’), is clearly marked as foreground.

The next example helps to illustrate a further constellation of backgrounding. In the following textual segment (taken from Weinrich’s book on the textual grammar of French), a typical Sunday routine of Madame Bovary’s boring life is described. In this excerpt, the perspective is shifted from the narrator, who sums up the protagonist’s state of mind, to the feelings and thoughts of the protagonist herself:

- (31) *Comme elle était<sub>IMP</sub> triste, le dimanche, quand on sonnait<sub>IMP</sub> les vêpres ! Elle écoutait<sub>IMP</sub> dans un hébètement attentif, tinter un à un les coups fêlés de la cloche. Quelque chat sur les toits, marchant lentement, bombait<sub>IMP</sub> son dos aux rayons pâles du soleil. Le vent, sur la grande route, soufflait<sub>IMP</sub> des traînées de poussière. Au loin, parfois, un chien hurlait<sub>IMP</sub> : et la cloche, à temps égaux, continuait<sub>IMP</sub> sa sonnerie monotone qui se perdait<sub>IMP</sub> dans la campagne.* (G. Flaubert, *Madame Bovary*, Paris, Bibliothèque de la Pléiade, 1951, p. 383, quoted after Weinrich, 1982:170)

‘How sad she was on Sundays, when the bells were chiming for vespers! In an attentive stupor, she listened to one cracked stroke of the bell after the other. Some cat on the roof, walking slowly, stuck its back out to the pale rays of sunshine. The wind blew clouds of dust over the main street. Far away, a dog howled from time to time: and the bell regularly continued its monotone chiming that disappeared in the countryside.’

Once again, perspective and its change are involved in this example. However, the more important aspect consists of the habitual character of the described eventualities. The imparfait signals that the eventualities exposed in the descriptive segment occur typically (though not necessarily always) on a Sunday (see Becker, 2010:98 f.). The habitual nature of the exposed eventualities disqualifies them from belonging to the primary story line characterized by its continuous updating. As is well known, “habituality” does not belong to the domain of temporality, but to another domain – the “reign” of modality. This is the reason why habitual eventualities are situated beyond the temporal level of discourse structuring and ordering, i.e., they constitute a layer apart. For the time being, we are not going to discuss the relationship between temporality and modality, nor the role of modality in the structuring of discourse. For now, it suffices to say that habitual eventualities are disconnected from the axis of temporal ordering in the unfolding discourse. They constitute, therefore, the most conspicuous manifestation of a background structure in discourse.

Taking into account the different forms of backgrounding we have established in this section, we may argue for a specific prominence hierarchy. We may establish a prominence hierarchy, which ranges – on one pole – from an eventuality in progress, which is hooked up to the most prominent point in the unfolding dynamics of discourse, to eventualities completely disconnected from the temporal axis due to their particular status (beyond the reign or dimension of temporality), on the other pole. We may attribute an intermediate status to stative eventualities marked as descriptions inasmuch as they are characterized by two properties: (1) like the eventualities in progress, they are anchored to a reference time in the unfolding discourse, however, and not so differently from habitual eventualities, (2) they exist independently beyond the dynamics of the unfolding discourse along the temporal axis given their possibly unrestricted temporal extension (e.g., *le sentier abrupt qui serpentait autour du mont*, ‘the steep path that wound around the mountain’, in the example above).

Undoubtedly, the identification of strategies and constellations of backgrounding in discourse, requires further research and should lead to a typology of background structures, ideally ranked according to their degree of prominence within a prominence hierarchy. This also holds for the last phenomenon we want to mention here. Another possible device of narrative structuring apart from backgrounding is rooted in textual segmentation. This enables the story line to be broken up into two (or more) story lines which, again, may be ordered hierarchically. Secondary story lines typically contribute indirectly to the main plot, but in principle they do not have to. In this realm, we take text segments making up story lines as basic units. The text segments and the segment structures may again be defined with reference to the episodic structure we saw in Section 4.1. An episode is a “thematic unity” (van Dijk, 1982:177). Relevant properties are “identical participants, time, location [...], action” (van Dijk, 1982:177, cf. also Smith, 2003:260). Now, there may occur such a coherent set within another, i.e., an episode within (or before or after) another episode. Obvious examples may be flashbacks, where, e.g., the uniformity of participants may be maintained while the other properties are subject to change. In other cases, “the secondary [story line] encodes actions which are performed by a secondary or minor participant” (Longacre, 1996:27). Importantly, this is independent of fore- and backgrounding. Rather, both foregrounding and backgrounding may apply in any text segment and thus in any story line.

The interrelation between text segments bringing about story lines and, e.g., temporal but also individual reference is especially interesting for an analysis within our account. We assume there to be tense effects, not only between the two or more segments as such, but also at the transient textual area. The sub-segmentation of a discourse may involve some kind of an announcement and the substructure of a segment is expected to comprise opening, development, possibly change and closure. Then again, a transition to the next text segment may follow. All these sub-structures may be relevant in the temporal make-up of a discourse.

Importantly, text segmentation according to story lines pertains to the macro structure of text, and interface phenomena play a central role. Therefore, a thorough description of it cannot leave aside factors like individual reference for instance (see above). As we do not focus on such matters here, we will leave the discussion of text segmentation for a further paper.

## 7. Conclusion: the levels of our prominence-based account and the role of tense

In this paper, we identified three different levels which are relevant for the temporal structuring of (narrative) discourse:

- (1) the temporal set-up of discourse and its dynamic interpretation in accordance with the introduction of reference times and their continuous update as discourse unfolds;
- (2) the highlighting of perspective times from which eventualities are seen, accessed and presented with respect to a source or perspectival center, be it a primary (narrator) or a secondary/internal source (one of the protagonists or a “medium”);
- (3) the management of a “tempus relief” consisting of foreground and background structures, with different degrees of connectedness to or detachedness from the primary story line of the unfolding discourse.

We have seen that the levels in themselves can be fruitfully described when we consider prominence. This structural property also enables us to coherently combine the dimensions to form a complete account. Future work should be able to extend it towards a rule-based model that can be put at use to make predictions for discourse structure and meaning. As we have discussed, with the presented ingredients we are able to consider a whole array of linguistic categories that all contribute to the temporal make-up of discourse.

One question that is very central in analyses of temporal structure concerns the role of tense. With our account in mind, we can now tackle this question. The discussion is two-fold. First, it has to be considered what effect tense has or may have on discourse. Especially interesting are effects that have a direct influence on the prominence status of a structure or element – in this case, we are dealing with “prominence-lending properties” of tense (cf. [Himmelman and Primus, 2015:41](#)). A case in point would be a French passé simple in a sentence that summarizes a situation which is then elaborated. An example was discussed in Section 2.2 and is repeated below.

- (32) *L'année dernière Jean escalada<sub>PS</sub> le Cervin. Le premier jour il monta<sub>PS</sub> jusqu'à la cabane H. Il y passa<sub>PS</sub> la nuit. Ensuite il attaqua<sub>PS</sub> la face nord. Douze heures plus tard il arriva<sub>PS</sub> au sommet.* ([Kamp and Rohrer, 1983:260](#))  
'Last year, Jean climbed the Matterhorn. On the first day, he climbed up until the hut H. There he passed the night. Then he tackled the north face. Twelve hours later he reached the summit.'

There are many more examples. However, it is often the case that tense then interacts with another category. This may sometimes blur the divergence from our second point below. A good example which we have seen already is the combination of an adverb with the French imparfait. We repeat our example from Section 5 below, where an imparfait co-occurs with *maintenant* ('now').

- (33) *Il passa<sub>PS</sub> la nuit à s'interroger, à se fouiller l'âme. Il comprenait<sub>IMP</sub> maintenant. Oui, il reconnaissait<sub>IMP</sub> les instincts et les vices qui avaient levé<sub>POP</sub> en lui: ils lui faisaient<sub>IMP</sub> horreur. Il songea<sub>PS</sub> à la veillée funèbre, auprès de son père mort, aux engagements pris, et il repassa<sub>PS</sub> en revue sa vie, depuis: il les avait tous trahis<sub>POP</sub>. Qu'avait-il fait<sub>POP</sub> depuis un an? Qu'avait-il fait<sub>POP</sub> pour son dieu, pour son art, pour son âme? Qu'avait-il fait<sub>POP</sub> pour son éternité?* ([Frantext](#): R. Rolland, *Jean-Christophe: L'Adolescent*, 1905, p. 368)  
'He spent the night questioning himself, exploring his soul. Now he understood. Yes, he admitted the instincts and the defects that had risen inside him: they made him anxious. He thought of the wake, besides his dead father, of the commitments made, and he thought back over his life, since: he had betrayed them all. What had he done for the last year? What had he done for God, for his art, for his soul? What had he done for his eternity?'



Second, tense choice may be triggered by certain factors. If such a factor is relevant within a prominence structure, we might want to call the result a prominence-dependent operation. A case in point would be that in French, in a backgrounded structure, the use of a passé simple form is basically ruled out. Below, we repeat our example from Section 6. If the verb marked by the imparfait were substituted by one with passé simple marking, its reading would be different, i. e., foregrounded.

- (34) Florent *se promenait*<sub>IMP</sub> dans le portique, les deux mains derrière le dos, et son humeur *aurait pu*<sub>CONDII</sub> être meilleure. En apercevant Élise, il *comprit*<sub>PS</sub> les sentiments qui l'*agitaient*<sub>IMP</sub> mais *se garda*<sub>PS</sub> d'en rien dire. La prenant par la main, il l'*entraîna*<sub>PS</sub> dans une promenade qui *dura*<sub>PS</sub> une partie de la nuit. (Frantext: Y. Beauchemin, *Le Matou*, 1981, p. 292)
- 'Florent strolled through the columned hall, his hands behind the back, and his mood could have been better. When he noticed Élise, he understood the feelings that upset him, but he refrained from saying anything. He took her by her hand and pulled her with him on a walk that lasted part of the night.'

Another clear-cut case with a similar effect has been discussed above. It is habituality. In habitual contexts, there is a very strong tendency for verbs to be marked by the imparfait.

Finally, as has become clear, tense plays a crucial role in the structuring and ordering of narrative discourse as well as in the shaping of a (local) prominence structure. Tense is highly context-sensitive and interacts with aspectual and structural properties of eventualities, with co-textual information, as provided by temporal expressions, such as temporal adverbs, adverbials and connectives, and with conceptual information (coherence relations and frames). However, much research remains to be done to pin down the interactions in detail. To round off our picture, the role of aspectual information (conceived of as a compositional notion in the vein of Smith, 1997) still needs to be integrated into our account. However, these tasks will have to be dealt with in further publications.

To sum up, we can say that prominence relations result from the different (and changing) weight of time points in the unfolding discourse and within a hierarchical temporal structure, from the centrality of a point and a time of perspective and their possible shift(s) in the dynamics of discourse, and finally, the foreground-background structure established on the basis of prominent time points. These prominence relations between time points are all the more important as eventualities are attached or related to these time points. Based on the prominence structure with its prominence relations, eventualities are

- (i) ordered chronologically with relations of *sequence*, *overlap* and *inclusion* along the temporal axis,
- (ii) they are ascribed to a certain perspectival center (by default, the narrator) and
- (iii) they are interpreted as constituting foreground information – as part of the primary or a secondary story line – or background information (with different degrees of detachedness from the unfolding story line).

In this article, we have presented an integrated prominence-based account of how we think temporal ordering and structuring in narrative discourse works. We considered the linear as well as the hierarchical structure of discourse, and thus the role of differently weighted time points (or time spans). We have shown that the functioning of tense is highly sensitive to other temporal information and interacts with it to form the temporal discourse structure. The paper highlights the contribution of tense and aspect in the build of a coherent discourse structure. As we have seen, it is not limited to English as the prototypical language of illustration but captures manifold peculiarities of the tense system of Romance languages (and of other languages as well) and the functioning of its temporal categories in discourse.

Still, there are further factors that may contribute to an even more fine-grained analysis of temporal discourse structuring such as discourse relations. As laid out in Section 2.6, there is a strong interaction between temporal and discursive relations. Discourse relations in the framework of SDRT also help us to better grasp what we called the relevant domain of an eventuality (see Section 4.1). However, as we also saw in Section 4.2, our account is even more fine-grained when it comes to temporal relations.

An additional mention deserve the interrelations between the three tense-related levels, which we have only mentioned in the present article. A more fine-grained discussion has to be covered in future publications. Further relations we were not able to cover properly here are those which involve other discourse entities. Especially the interaction with individual reference is expected to be an intriguing factor for temporal discourse structure. However, it has to be left as a major challenge for future work.

## Funding

No involvement of the funding source.

## Conflict of interest

None.

## Acknowledgements

The research reported in this paper was funded by the Deutsche Forschungsgemeinschaft (DFG) through the Collaborative Research Center 1252 *Prominence in Language*, which we gratefully acknowledge. We thank Sigrid Newman for proof-reading, Barbara Zeyer for practical assistance and two anonymous reviewers for helpful suggestions.

## References

- Altshuler, D., 2010. *Temporal interpretation in narrative discourse and event internal reference* (PhD dissertation). Rutgers University, New Brunswick.
- Altshuler, D., 2012. Aspectual meaning meets discourse coherence: a look at the Russian imperfective. *J. Semant.* 29, 39–108.
- Altshuler, D., 2016. *Events, States and Times: An Essay on Narrative Discourse in English*. de Gruyter, Berlin/New York.
- Altshuler, D., Melkonian, S., 2014. In defense of reference time. *Semantics-Syntax Interface* 1 (2), 133–149.
- Asher, N., Lascarides, A., 2003. *Logics of Conversation*. Cambridge University Press, Cambridge et al.
- Bach, E., 1981. On time, tense and aspect: an essay in English metaphysics. In: Cole, P. (Ed.), *Radical Pragmatics*. Academic Press, New York, pp. 63–81.
- Bary, C.L., 2009. *Aspect in Ancient Greek, A Semantic Analysis of the Aorist and Imperfective* (PhD-Disstertation).
- Becker, M., 2010. Die Ingredienzen des romanischen Imperfekts. *Linguistische Berichte* 221, 79–108.
- Becker, M., Donazzan, M., 2017. Or, ora, maintenant. Perspective temporelle et perspective argumentative. *Discours. Revue de linguistique, psycholinguistique et informatique [En ligne]* 20, 3–33.
- Bertinetto, P.M., 1986. Tempo, aspetto e azione nel verbo italiano. Il sistema dell'indicativo. *L'Accademia della Crusca*, Firenze.
- Bittner, M., 2014. *Temporality: Universals and Variation*. Wiley Blackwell, Chichester (= Explorations in semantics 6).
- Bres, J., 1999. L'imparfait dit narratif tel qu'en lui-même (le cotexte ne le change pas). *Cahiers de praxématique* 32, 87–117[2010].
- Bühler, K., 1982. *Sprachtheorie: Die Darstellungsfunktion der Sprache*. Fischer, Stuttgart [1934].
- Caenepeel, M., Moens, M., 1994. Temporal structure and discourse structure. In: Vet, C., Veters, C. (Eds.), *Tense and Aspect in Discourse*. de Gruyter, Berlin, pp. 5–20.
- Combettes, B., 2008. Cohérence discursive et faits de langue: le cas du plus-que parfait. *Verbum* XXX, 2008/2-3 181–197.
- de Swart, H., 1998. Aspect shift and coercion. *Nat. Lang. Linguist. Theory* 16 (2), 347–385.
- de Swart, H., 2007. A cross-linguistic discourse analysis of the Perfect. *J. Pragmatics* 39 (12), 2273–2307.
- Dowty, D.R., 1986. The effects of aspectual class on the temporal structure of discourse: semantics or pragmatics? *Linguist. Philos.* 9, 37–61.
- Eckardt, R., 2014. *The Semantics of Free Indirect Discourse. How Texts Allow Us to Mind-read and Eavesdrop*. Brill, Leiden.
- Egetenmeyer, Jakob. In preparation. *Temporal Prominence demotion with time updating Imparfait uses in Camus' L'Étranger*. (Also: talk held at the Congress "Autour de L'Étranger de Camus et de ses traductions: Approches linguistiques des questions de Temps, d'Aspect, de Modalité, et d'Evidentialité", 16–17 November 2017, Université Sorbonne Nouvelle Paris 3/Université Sorbonne Paris Cité.).
- Gernsbacher, M.A., Hargreaves, D.J., Beeman, M., 1989. Building and accessing clausal representation: the advantage of first mention versus the advantage of clause recency. *J. Mem. Lang.* 28, 735–755. Version at hand is authors' manuscript. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4260528/> (accessed 06.07.18)
- Guéron, J., 2015. Subjectivity and free indirect discourse. In: Guéron, J. (Ed.), *Sentence and Discourse*. Oxford University Press, Oxford. (= Oxford Studies in Theoretical Linguistics), pp. 256–286. (= Oxford Studies in Theoretical Linguistics).
- Himmelfmann, N., Primus, B., 2015. Prominence beyond prosody – a first approximation. In: De Dominicis, A. (Ed.), *pS-prominenceS: Prominences in Linguistics*. Proceedings of the International Conference. DISUCOM Press, Viterbo, pp. 38–58.
- Hinrichs, E., 1981. *Temporale Anaphora im Englischen*. (unpublished Zulassungsarbeit, University of Tübingen). [Not at hand.]
- Hinrichs, E., 1986. Temporal anaphora in discourses of English. *Linguist. Philos.* 9 (1), 63–82.
- Kamp, H., 2013. Deixis in discourse. Reichenbach on temporal reference. In: von Heusinger, K., ter Meulen, A. (Eds.), *Meaning and the Dynamics of Interpretation*. Brill, Leiden. (= Current Research in the Semantics/Pragmatics Interface 29), pp. 105–159. (= Current Research in the Semantics/Pragmatics Interface 29).
- Kamp, H., Reyle, U., 1993. *From Discourse to Logic. Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*, Pt. 2 Kluwer Academic Publishers, Dordrecht et al. (= Studies in Linguistics and Philosophy 42).
- Kamp, H., Rohrer, C., 1983. Tense in texts. In: Bäuerle, R., Schwarze, C., von Stechow, A. (Eds.), *Meaning, Use, and Interpretation of Language*. de Gruyter, Berlin/New York, pp. 250–269.
- Kamp, H. and Rohrer C., 1984/1986. *Temporal reference in French*, unpublished manuscript, London: Bedford College/Stanford: CSLI, Stanford University/Stuttgart: University of Stuttgart. To be published with CSLI Publications, Stanford, 2013/14. [Supposed to be available at: <http://www.ims.uni-stuttgart.de/archiv/kamp/>, not available however on 4.10.17].
- Kamp, H., van Genabith, J., Reyle, U., 2011. Discourse representation theory. In: Gabbay, D.M., Guenther, F. (Eds.), *Handbook of Philosophical Logic*, 2nd ed., vol. 15. Springer, Dordrecht et al., pp. 125–394.
- Kehler, A., 2000. Resolving temporal relations using tense meaning and discourse interpretation. In: Faller, M., Kaufmann, S., Pauly, M. (Eds.), *Formalizing the Dynamics of Information*. CSLI Publications, Stanford, pp. 189–205.
- Kehler, A., 2002. *Coherence, Reference, and the Theory of Grammar*. CSLI Publications, Stanford.
- Klein, W., 1994. *Time in Language*. Routledge, London.

- Labeau, E., 2007. Reçu à l'épreuve orale? Le cas du passé simple dans la narration. In: Abecassis, M., Ayosso, L., Vialleton, E. (Eds.), *Le français parlé au 21ème siècle: Normes et variations dans les discours et en interaction*, vol. 2. L'Harmattan, Paris. pp. 75–86 (= Annales du Colloque d'Oxford, juin 2005).
- Labelle, M., 2003. Events, states and the French imparfait. In: Roberge, Y., Pérez Leroux, A.T. (Eds.), *Romance Linguistics: Theory and Acquisition: Selected Papers from the 32nd Linguistic Symposium on Romance Languages (LSRL)*. Toronto, April 2002. Benjamins, Amsterdam/Philadelphia, pp. 165–180.
- Lascares, A., Asher, N., 1993. Temporal interpretation, discourse relations and common sense entailment. *Linguist. Philos.* 16 (5), 437–493.
- Longacre, R.E., 1996. *The Grammar of Discourse* Plenum Press, New York/London (= Topics in language and linguistics).
- Molendijk, A., et al., 2004. Meaning and use of past tenses in discourse. In: Corblin, F., de Swart, H. (Eds.), *Handbook of French Semantics*. CSLI Publications, Stanford, pp. 271–308.
- Molendijk, A., de Swart, H., 2000. Le passé composé narratif: Une analyse discursive de *L'Étranger* de Camus. *Recherches de linguistique française et romane* 19, 45–60.
- Molendijk, A., de Swart, H., 2002. Le passé composé narratif: Une analyse discursive de *L'Étranger* de Camus. In: Laca, B. (Ed.), *Temps et aspect. De la morphologie à l'interprétation* (Coll. "Sciences du Langage") Presses universitaires de Vincennes, Saint-Denis, pp. 193–211.
- Musan, R., 2002. *The German Perfect. Its Semantic Composition and its Interactions with Temporal Adverbials*. Kluwer Academic Publishers, Dordrecht/Boston/London (= Studies in Linguistics and Philosophy 78).
- Partee, B., 1984. Nominal and temporal anaphora. *Linguist. Philos.* 7 (3), 243–286.
- Polanyi, L., 1988. A formal model of the structure of discourse. *J. Pragmatics* 12 (5–6), 601–638. [http://dx.doi.org/10.1016/0378-2166\(88\)90050-1](http://dx.doi.org/10.1016/0378-2166(88)90050-1)
- Reichenbach, H. [1947] <sup>5</sup>1956. *Elements of Symbolic Logic*. Macmillan, New York et al.
- Riegel, M., Pellat, J.-C., Rioul, R. <sup>3</sup>1997. *Grammaire méthodique du français*. PUF, Paris.
- Smith, Carlotta. <sup>2</sup>1997. *The Parameter of Aspect*. Kluwer, Dordrecht.
- Smith, C., 2003. *Modes of Discourse. The Local Structure of Texts*. Cambridge University Press, Cambridge.
- Tasmowski-De Ryck, L., 1985. L'imparfait sans et avec rupture. *Langue française* 67 (3), 59–77.
- van Dijk, T., 1982. Episodes as units of discourse analysis. In: Tannen, Deborah (Ed.), *Analyzing Discourse: Text and Talk*. Georgetown University Press, Washington, D.C. (= Georgetown University Roundtable on Languages and Linguistics 32), pp. 177–195.
- Vet, C., 1996. Anaphore et deixis dans le domaine temporel. In: de Mulder, W., Tasmowski-De Ryck, L., Vettters, C. (Eds.), *Anaphores temporelles et (in-)cohérence*. Rodopi, Amsterdam/Atlanta. (= Cahiers Chronos 1), pp. 147–163. (= Cahiers Chronos 1).
- Vettters, C., 1996. *Temps, Aspect et Narration*. Rodopi, Amsterdam/Atlanta.
- Webber, B.L., 1988. *Tense as Discourse Anaphore* (Technical Report No. MS-CIS-88-09). University of Pennsylvania, Pennsylvania.
- Weinrich, H., 1982. *Textgrammatik der französischen Sprache*. Klett, Stuttgart.

## Corpus

Base textuelle FRANTEXT, ATILF – CNRS & Université de Lorraine. <http://www.frantext.fr>. Version: December 2016.

Eco, U., 1990. *Le nom de la rose*. Traduit de l'Italien par Jean-Noël Schifano. Bernard Grasset, Paris.

Flaubert, G., 1951. *Madame Bovary*, I, 1; in: Œuvres. Bibliothèque de la Pléiade, Paris.