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Calendar expressions ordering in text corpora

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Growing interest in NLP applications such as Question-Answering asks for a thorough analysis and processing of calendar information. Several efforts for building a standardized metalanguage have been pursued, such as TimeML in GUTime[3], aiming, mainly, the calculation of temporal values of calendar expressions (CEs). In our work, we put the focus on the description of the way this calculus is encoded in natural language (French, in this case), instead of just anchoring CEs on a temporal axis. This allows us to propose another annotation scheme, much closer to the way calendar information is encoded and denoted in natural language. The scheme in question, takes aspectual features into account in an explicit way. Text annotation using this scheme allows for visualization of the qualitative calendar of a given text – or of a text corpus – (in the way shown in the first part of Figure 2). It also permits the visualization of the paths created inside the calendar respecting the syntagmatic reading of CEs in a text (shown in the second part of Figure 2). The annotation scheme used is the one provided by NaviTexte[2], a software devoted to text visualization and navigation. The annotation calendar scheme allows for taking into account of modifiers (prepositions, adjectives, ...) present in the CEs. Figure 1 illustrates the example “I’m leaving on vacation two weeks from next Tuesday” (the CE is underlined); the higher part of the figure describes the [GUTime 3] solution, while the lower part shows our proposition (UT, which corresponds to Textual Unit and Property tags).

```
[GUTime 3] proposition:
<TIMEX2 VAL="1999-08-03">two weeks from <TIMEX2 VAL="1999-07-20">next
Tuesday</TIMEX2></TIMEX2>.
-----
Our proposition :
<UT Type="Calendar expression" Nro="3">
  <Property="Grain">Day</Property>
  <Property="Calendar relation">deictic</Property>
  <Property="Vertical displacement">0 </Property>
  <Property="Horizontal displacement">+|Tuesday ;+2 weeks </Property>
  <Property="Reference">initial bound = next Tuesday</Property>
  <Property="Aspect">durative </Property>
  <String> two weeks from next Tuesday </String>
</UT>
```

Fig. 1: Comparative analysis of CEs semantics

TimeML encapsulates “next Tuesday” inside “two weeks from”. Our proposition tags the whole expression as a single CE (UT type calendar Expression).

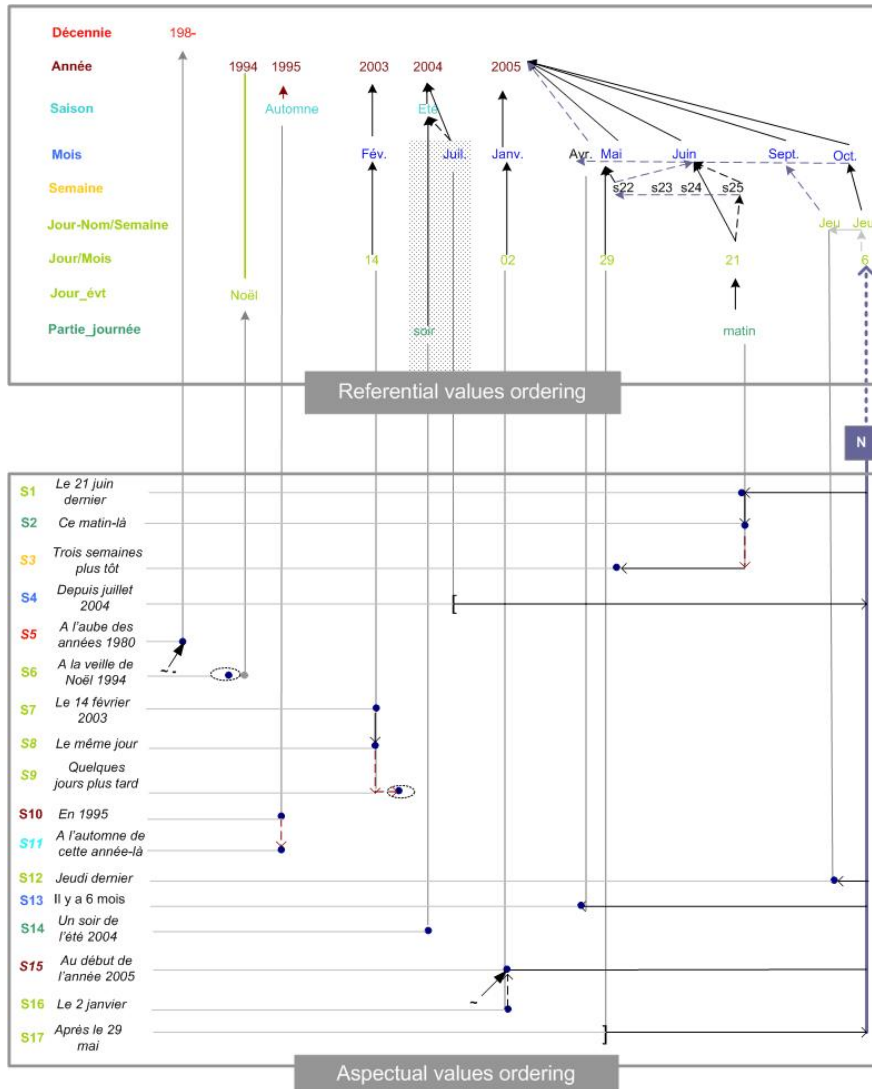


Fig. 2: representation of referential and aspectual meanings of CE in a text and their relations, revisited from [1].

References

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