

# On the expression of duration and temporal location through adverbials containing predicates of amounts of time<sup>(\*)</sup>

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## SHORT VERSION

I will discuss in this text aspects of the semantic analysis of non-punctual adverbials headed by a preposition (or comparable expression) that may have predicates of amounts of times as complements, or as part of their complements. I will concentrate on English *for-*, *during-* and *in-* adverbials (henceforth, FDI-adverbials), but make some occasional references to their counterparts in German (*-lang*, *während-* and *in-*adverbials) and Portuguese (*durante-* and *em-*adverbials), to which the essential of what is said for English also applies. Examples: {*for / in / during*} {*two years / the last two years / the two years Mary lived in Amsterdam / those two years*}.

The main issue I will be concerned with is whether a clearcut typology of these adverbials can be defined, taking into consideration the fact that some instances of them are referred to in the literature as examples of (at least apparent) overlapping of functions in one single expression: location and temporal measurement of a given situation (e.g. Bennett & Partee (1978: 29) and Kamp & Reyle (1993: 650)). Kamp and Reyle, for instance, discuss prepositional phrases containing a combination of a deictic adjective and a predicate of amounts of time – *for the last three years* –, and conclude: “their ambivalence seems to be unresolvable: they are locating phrases and measure phrases all in one”; more generally, these authors assume that “there are (...) adverbs which *simultaneously serve as location and as measure of the described eventuality*. So it is not easy to draw a sharp dividing line between locating adverbs and measure adverbs.” (Kamp & Reyle, *op.cit.*: 612-613, emphasis mine).

I will try to show that the most economic and revealing typological classification of the adverbials in question is the one that distinguishes just two basic categories – “temporal measure adverbials” and

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“temporal locating adverbials” (which is in fact a much wider class including also adverbials that do not contain predicates of amounts of time) – and places the so-called “ambivalent adverbials” in the second category (cf. Kamp & Reyle, 1993, for the basic concepts of temporal measure and temporal location, which I assume here). These two categories are essentially told apart by the fact that – in the latter, but not in the former – the predicates of amounts of time contained in the adverbials are combined with an expression that defines an interval of the time axis. Given that this combination results normally in a definite expression (at least when the predicate of amounts of time is in a nuclear position) – e.g. *the last ten days* –, the definiteness of the complement of the preposition ends up playing a crucial role in determining what the (basic) function of the adverbial is. Accordingly, I am inclined to think that the following two basic categories constitute an appropriate partition of the class of FDI-adverbials containing predicates of amounts of time:

#### **A. (strictly) temporal measure adverbials**

They may express solely the duration of a situation, without locating it. This class contains the adverbials with indefinite complements of the form [QN], where “QN” is a predicate of amounts of time – e.g. *seven hours, two months*. In DRT terms, they contribute to the DRS’s of the sentences in which they occur a discourse referent **mt** (representing an amount of time) and the conditions [QN (mt)] and [dur ( $\psi$ ) R mt] (where – here and henceforth –  $y$  represents the situation described in the clause to which the adverbial applies and  $\mathbf{R} \in \{=, >, \geq, <, \leq\}$ ).

#### **B. temporal locating adverbials**

This class includes all other FDI-adverbials that contain predicates of amounts of time. Among them are the adverbials with definite complements of the form [(*the*) P QN] or [(*the*) QN P], where “QN” is as above and contains the head of the complement and “P” represents properties of an interval of time, directly or indirectly (through reference to a situation); “P” may be instantiated by a deictic adjective, a relative clause, a situational or temporal PP, or a demonstrative – e.g. *the last two years, the two years Mary lived in Amsterdam, the two years of Mary’s training course, the two years between March 1980 and March 1982, those two years*. These expressions are always locating adverbials, although they contain an expression – the [QN] part of the complement – that represents an amount of time; the crucial thing to notice is that *this amount of time represents the size of the location time, not the duration of the situation represented in the main clause*. In DRT terms, they contribute to the DRS’s of the sentences in which they occur the discourse referents **mt** (representing an

amount of time) and  $\mathbf{t}$  (representing the interval that serves as “location time” for  $\mathbf{y}$ ), and the conditions (i) [QN (mt)], (ii) [dur (t) R mt] (a condition defining the size of the location time), (iii) [P (t)] (one or more conditions imposing restrictions on the location time, which are associated with the adjectives, relative clauses, etc., they contain), and (iv) [ $\psi \subseteq \mathbf{t}$ ], [ $\mathbf{t} \subseteq \psi$ ] or a similar condition (temporal location condition, varying according to the preposition and the aktionsart of  $\mathbf{y}$ ).

This second class also includes FDI-adverbials that contain predicates of amounts of time in a non-nuclear position, i.e. with complements of the form [(Det) P QN] or [(Det) QN P], where “QN” is as before and occupies a subordinate position within the NP and “P” is a nominal expression containing the head of the complement – e.g. *the two-hour (history) exam*. These adverbials are on a par with those referred in the previous paragraph in the aspects which are relevant to this discussion (cf. (1)c), but need be distinguished, since they may also occur with indefinite complements (*a two-hour exam, two-hour exams*).

Note that I included in class B the adverbials referred in the literature as involving overlapping of functions – location and temporal measure –, and therefore as ambivalent temporal adverbials. I assume, therefore, that they should be regarded as basically locating (or frame) adverbials. An important piece of evidence pointing in this direction will be obtained by the proof that the information these adverbials convey about the duration of the described eventuality ( $\mathbf{y}$ ) is not directly asserted. An argument in favour of this view is, hopefully among others, the effect of negation with sentences exhibiting the so-called ambivalent operators at stake, which shows that, given a true negative sentence, the falsity of the positive counterpart necessarily carries over to the temporal location predication, but not to the temporal measurement, which can still apply (cf. *Mary hasn't lived in Amsterdam for the last three years, but she has lived in Amsterdam for at least three years*). If this trend can be pursued, the obvious resort to treat the information about duration that has been acknowledged in the literature lies in well-known inferential mechanisms, that impregnate numerous domains of natural language semantics. The required inferential reasoning is based on the (locating) relation between  $\mathbf{y}$  and  $\mathbf{t}$  and on the explicit definition of the size of the location time  $\mathbf{t}$  (by the predicates of amounts of time contained in the adverbials). In these terms, the measure function of these adverbials is “subsidiary” (cf. opposite view in Kamp & Reyle, *op. cit.*: 650) since it is directly related to – and dependent on – the locating conditions they are associated with. The following two types of location seem particularly relevant with respect to inferences about the duration of  $\mathbf{y}$ :

**I. durative location of states or activities:**  $[t \subseteq \psi] \rightarrow [\text{dur}(\psi) \geq \text{dur}(t)]$

(NB: if the location is exact – i.e.  $[\text{loc}(\psi) = t]$  –, which, for Gricean reasons, is in many cases the preferred reading, then an inference about the *exact* duration of the situation described in the main sentence is obtained:  $[\text{loc}(\psi) = t] \rightarrow [\text{dur}(\psi) = \text{dur}(t)]$ )

- (1) a. Mary was ill for the last two months.  $\rightarrow$  Mary was ill for (at least) two months.  
b. Mary was in Paris for the two years John lived in Amsterdam.  $\rightarrow$   
Mary was in Paris for (at least) two years.  
c. Mary was in a bad state during the whole two-hour exam.  $\rightarrow$   
Mary was in a bad state for (at least) two hours.

**II. inclusive location of events:**  $[\psi \subseteq t] \rightarrow [\text{dur}(\psi) \leq \text{dur}(t)]$

- (2) Mary wrote this book in the last two months.  $\rightarrow$   
Mary wrote this book in (at most) two months.

In sum, I hypothesize that inferentially extracted information about the duration of the located situation is what makes these adverbials look like ambivalent operators, but, as far as assertion is concerned, they are merely locating adverbials.

I take it that some positive consequences can be drawn for an interpreted grammar from the typology proposed here. The first is the possibility of classifying all the expressions referred to in B in the same category, regardless of the types of sentences in which they occur, rather than in different categories according to some characteristics of those sentences. This has to do with the existence of structures where (some of) these expressions clearly do not contribute information about the temporal size of the situation they locate (although, in other contexts, they may behave as ambivalent operators), namely:

**I.** structures involving non-durative location of states and activities (i.e. the situation is taken to have occurred through part of the location time  $t$ , but not throughout this time:  $[\psi \circ t]$  and  $[\neg[t \subseteq \psi]]$ ); mainly *during*-adverbials occur in these structures (in Portuguese and German, *durante*- and *während*-adverbials, respectively, are used)

- (3) Mary was ill {during the two months she was travelling through Europe / during the last two months}. (possible non-durative reading)

In these structures, the located situations may exceed one of the borders of the location time (cf. *Mary was ill during the two months she was travelling through Europe. In fact, she fell ill in the last week of her vacation and it took her several months to recover*; cf. also Kamp & Reyle, 1993: 513-514) and, consequently, no inference about the duration of the situation represented in the main clause can in principle be drawn.

II. structures involving (inclusive) location of punctual situations; *in-* and *during-*adverbials occur in these structures (in Portuguese and German, *em-/durante-* and *in-/während-*adverbials, respectively, are used)

(4) Mary accidentally found a coin in/during the two hours she was walking on the beach.

When the event located is punctual, the (possible) inferences about the (maximal) duration of *y* are totally irrelevant, since punctual events are conceived of as having no duration (note that descriptions of these events do not allow combination with strictly temporal measure phrases: *\*Mary accidentally found a coin in (at most) two hours*).

Another favourable result of placing definite FDI-adverbials containing predicates of amounts of time in a category that is clearly distinct from that of temporal measure adverbials is the possibility of better accounting for the differences between these two groups of adverbials. These involve (i) the set of prepositions (or expressions) that may head them and (ii) the aktionsart restrictions related to the use of each preposition (or heading expression). To offer a broader view of this question, I present also the Portuguese and German data:

(5) Mary was ill {for / \*during / \*in} five days // {for / during / ?in} the last five days.

A Mary esteve doente {durante / \*em} cinco dias // {durante / em} os últimos cinco dias.

Mary war {fünf Tage lang / während fünf Tagen / \*in fünf Tagen} krank // {\*die letzten fünf Tage lang / während der letzten fünf Tage / in den letzten fünf Tagen} krank.

(6) Mary wrote two essays {\*for /\*during / in} five days // {\*for/ during / in} the last five days.

A Mary escreveu dois artigos {\*durante / em} cinco dias // {durante / em} os últimos cinco dias.

Mary hat {\*fünf Tage lang / \*während fünf Tagen / in fünf Tagen} zwei Aufsätze geschrieben // {\*die letzten fünf Tage lang / während der letzten fünf Tage / in den letzten fünf Tagen} zwei Aufsätze geschrieben.

Finally, another possible advantage of the categorization proposed here is the possibility of a unified analysis – as members of the same class – of adverbials that differ only with respect to the presence of a predicate of amounts of time explicitly defining the size of the location time, as those in the following sentences (note that the adverbials in *b* – contrary to those in *a* – cannot be taken as ambivalent operators, since no information about the duration of *y* is conveyed):

(7) a. I was in Paris for/during the two years Mary lived in Amsterdam.

b. I was in Paris ?for/during the period Mary lived in Amsterdam

(8) a. I was in a bad state during the (whole) two-hour exam.

b. I was in a bad state during the (whole) exam.

In sum, I have claimed that the best typology of FDI-adverbials is the one that considers just two basic categories: (strictly) temporal measure adverbials, including those that merely contain a predicate of amounts of time as complement, and locating adverbials, including all the others. I have tried to show that a postulated third subclass of ambivalent adverbials – simultaneously temporal measure and temporal locating – is not only unnecessary – once some general inferential patterns are acknowledged – but also disadvantageous – inasmuch as it precludes a homogeneous categorization of closely related groups of adverbials, and may therefore lead to a decrease of the generalization power of the system.

## REFERENCES

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