

On temporal measure quantification over eventualities

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This paper discusses the main syntactic and semantic properties of complex NPs where a predicate of amounts of time – acting as a temporal measure quantifier – is applied to an eventuality-denoting expression, as in the following:

- (1) *three decades* of hard work, *many hours* of travelling,
three weeks waiting for payment, *two months* in London

I will start by observing, in section 1, that the construction at stake, though comparable to others that have received a great deal of attention in the literature – namely, so-called pseudopartitive constructions, like *two litres of water* or *six metres of cloth* –, exhibits a wider syntactic variety and distinctive properties that call for an independent analysis. In section 2, I will address the denotational issue, and show that the eventuality-description – not the predicate of amounts of time – is the semantic nucleus of the whole quantified NP. In section 3, I will concentrate on the Aktionsart matter, providing evidence that the quantification at issue may only operate on atelic eventualities, i.e. states and activities. In section 4 (which is in fact an excursus), I will distinguish the construction under analysis from others similar to it in some respects. Finally, in section 5, I will compare the type of temporal measure quantification illustrated in (1) with duration, as expressed by adverbial and adnominal adjuncts, and offer a simplified account within the framework of Discourse Representation Theory (cf. Kamp & Reyle 1993) which underlines their common properties. In this work, Portuguese will be the main object language, but English will often be used for comparative purposes.

1. Temporal measure quantification in pseudopartitives

The structures under scrutiny in this paper can be regarded as a subset – involving the temporal extent of eventualities – of a wider group of constructions, well studied in the literature (cf. among many others Parsons 1970, Lønning 1987, Gillon 1992,

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Higginbotham 1994, Schwarzschild 2002, and, for Portuguese, Peres 1992), which some authors have classified as *pseudopartitives* (cf. Selkirk 1977). Here are some examples, involving quantification over ordinary massive entities – in (2a) – or over eventualities (either in their temporal dimension – which is the case on focus here – or in the spatial one, a subtype I will not take into consideration) – in (2b):

- (2) a. *a ton* of sand [WEIGHT]; *two litres* of water [CAPACITY]; *six metres* of cloth [LENGTH]; *several acres* of land [AREA]; *many cubic metres* of debris [VOLUME]
 b. *three months* of fighting [TEMPORAL EXTENT / DURATION]; *fifty kilometres* of fast driving [SPATIAL EXTENT / DISTANCE]

These structures are distinguished by several properties. In particular, they involve *measurement*, a major quantification system, which is often contrasted with the system of counting (of discrete entities); in the more often mentioned variety, such kind of quantification is described as operating on massive or mass-like entities (represented by bare nominals), and identifying a value on a scale – an amount of the relevant stuff – defined through independent conventional units of measurement (cf. notion of *absolute measurement* in Peres 1992).

To my knowledge, the structures involving measurement of eventualities (rather than measurement of massive entities) have received little independent attention, even if they are frequently mentioned (mainly the temporal variant). However, despite their similarity, these structures exhibit several specific syntactic and semantic properties that I will try to underline in this presentation (though restricting myself, as said, to the temporal cases; obviously, a more comprehensive analysis of the issue of measurement of eventualities should also crucially take the spatial instances into account).

The first thing to note is that the structures involving temporal measurement are syntactically more varied than those involving measurement of massive entities. In fact, while the quantifiers that express weight, capacity, length, volume or area, for instance, apply essentially to bare nominals, since ordinary substances are typically represented by such constituents, temporal measure quantifiers may apply to a wider range of constituents, since temporal quantification operates on the domain of eventualities, and these may be expressed by more numerous means. In Portuguese and English, at least three types of (relevant) structures need be distinguished. More precisely, the temporal quantifiers at stake may apply to: **A** – bare nominal expressions (just like all other measure quantification structures); **B** – sentential constituents; **C** – elliptical propositional constituents, either adjectival or prepositional. The examples below – taken from Portuguese and English written corpora (cf. references at the end of the text) – illustrate the various instances.

A. Quantification over bare nominal expressions

PORTUGUESE

- (3) “Regra geral são *dois meses de espera* até chegar o dinheiro.” (CETEMPúblico, Ext 16371 (soc, 93b))
 ... *two months of wait-NOUN*... (‘two months of waiting’)

- (4) “Nesta república, em *seis meses de guerra*, morreram pelo menos seis mil croatas.” (CETEMPúblico, Ext 22913 (pol, 92a))
... *six months of war*... (‘six months of war / fighting’)

ENGLISH

- (5) “For John, this meant *hours of excavation work*.” (BNC, C96 1298)
(6) “the country's armed forces (...) assumed power (...) after *two months of continuous mass protest*” (BNC, HKR 2613)

B. Quantification over sentential structures²

(including nominalised sentential structures in English)

PORTUGUESE

- (7) “Depois de *meses a desejar a chegada do bom tempo*, (...) queixam-se do excesso de calor (...).” (CETEMPúblico, Ext 110618 (clt, 94b))
... *months at wish-INF the arrival of-the good weather*... (‘months wishing for the arrival of the good weather’)
(8) “Aos 55 anos, (...) Brickman volta a dirigir, depois de *muitos anos escrevendo roteiros*.” (NILC/SC, par 8061)
... *many years writing scripts*... (‘many years writing scripts’)

ENGLISH

- (9) “After *two months of rehearsing* he fired me.” (BNC, CH5 171)
(10) “the usual thing (...) after *five months waiting for payment* is to find out the bloody solicitor that told them this” (BNC, KNC 863)

C. Quantification over (possibly elliptical) prepositional or adjectival phrases with propositional content

PORTUGUESE

- (11) “Rapariga recupera consciência depois de *quinze meses em estado vegetativo*” (CETEMPúblico, Ext 38243 (clt, 96a))
... *fifteen months in state vegetative*... (‘fifteen months in a vegetative state’)
(12) “«(...) estou contente com o resultado da minha primeira volta depois de *três meses ausente de competições*», disse o australiano.” (CETEMPúblico, Ext 1074027 (des, 97a))
... *three months absent of competitions*... (‘three months out of competition’)

ENGLISH

- (13) “Kenneth Matiba received a hero’s welcome (...) when he returned to Kenya on May 2 after *10 months in London*.” (BNC, HLK 513)

2 In Modern European Portuguese (EP), the measure quantifiers typically apply to infinitive sentences, preceded by the preposition *a*, as in (7); in Brazilian Portuguese (BP), they often apply to gerundive clauses, as in (8). The English counterparts of these structures can integrate either nominalised *of* *V-ing* phrases, as in (9) or – in apparently less frequent structures – simple sentential *V-ing* phrases, as in (10). I will not try to assess here possible differences in distribution or in semantic interpretation between the mentioned two subtypes of English structures.

2. The semantic nucleus of NPs with temporal measure quantification

The second point to be stressed regarding the complex NPs under analysis concerns their semantic nucleus. Notice that, since these NPs involve a predicate of amounts of time and an eventuality-denoting expression, the question naturally arises as to which of these two elements is the semantic nucleus of the whole NP. Considering the common analyses of comparable phrases like *two litres of water* or *two meters of cloth*, where the substance-identifying noun – *water* and *cloth* – is taken to be the semantic nucleus (cf. e.g. Parsons 1970 or Schwarzschild 2002), one is led to predict that NPs with temporal measurement have the eventuality-denoting constituents as their semantic nuclei. Unsurprisingly, this seems to be the case. The arguments in favour of this view are linguistically worthy of note, for which reason I will subsequently present some of them.

First, as regards selection restrictions, NPs with temporal measurement behave as eventuality-denoting phrases, not as predicates of amounts of time. This statement is substantiated by two sorts of facts. On the one hand, the predicates selecting these NPs are compatible with phrases without the temporal quantifier, but not without the eventuality description:

- (14) A erupção causou {vários meses de instabilidade climática / instabilidade climática / *vários meses}.
the eruption caused several months of instability climatic / instability climatic / several months
 The eruption caused {several months of climatic instability / climatic instability / *several months}.

Moreover, clearly the semantic restrictions of the predicate act on the eventuality description, as shown by the following data (where “#” marks semantic anomaly):

- (15) A erupção causou vários meses de {instabilidade climática / # amizade}.
the eruption caused several months of {instability climatic / friendship}
 The eruption caused several months of {climatic instability / # friendship}.

On the other hand, NPs with temporal measurement do not occur in the typical contexts of predicates of amounts of time, namely as arguments of duration predicates, or as complements of duration connectives:

- (16) A entrevista durou meia hora (*de nervosismo).
the interview lasted half hour of nervousness
 The interview lasted half an hour (*of nervousness).
- (17) A Ana morou em Londres durante seis meses (*de ensaios da peça).
the Ana lived in London for six months of rehearsals of-the play
 Ana has lived in London for six months (*of rehearsals of the play).
- (18) A Ana está a estudar há uma semana (*de preocupação).
the Ana is at study there-is one week of concern
 Ana has been studying for one week (*of concern).

Secondly, and quite significantly, NPs with temporal measurement can be coordinated with eventuality-denoting expressions (arguably forming representations of complex eventualities), but not with amount-of-time-denoting expressions (even if

the main predicate is compatible with both types of expressions, like *custar a passar* / *seem like a long time*):

- (19) Cinco horas de entrevistas e uma conversa com o director deixaram-me arrasado.
five hours of interviews and a conversation with the director left-me exhausted
 Five hours of interviews and a conversation with the director left me exhausted.
- (20) ??Cinco horas de entrevistas e uma semana custam a passar.
five hours of interviews and one week cost to pass
 ??Five hours of interviews and one week seem like a long time.

Thirdly, NPs with temporal measurement act as time-denoting expressions in temporal subordinate contexts, i.e. they behave like other situational NPs in the same context. As is well known from the literature (cf. e.g. Rohrer 1977, Hamann 1989, Kamp & Reyle 1993), in temporal subordination contexts, nominal expressions representing eventualities seem to undergo a referential shift and are taken to denote time intervals (e.g. in *since [the war]*). Now, we observe that the same happens with the quantified NPs under analysis (which often occur in such subordinate contexts). One of the linguistic consequences of this shift is that NPs with temporal measure quantification can create anaphoric links with common time-denoting expressions, as exemplified in (21), and (again) can be coordinated with uncontroversial eventuality-denoting phrases, as exemplified in (22):

- (21) O Paulo regressou a Portugal após [seis meses de viagem pelo Brasil]_i.
 Aconteceram-lhe muitas coisas durante {[esse período]_i / [esses seis meses]_i}.
the Paulo returned to Portugal after six months of trip by-the Brazil. Happened-to-him many things during {that period / those six months}.
 Paulo returned to Portugal after [six months of travelling in Brazil]_i. Many things happened to him during {[that period]_i / [those six months]_i}.
- (22) “Os deputados (...) decidiram (...) discutir a hipótese de demitirem (...) Boris Ieltsin, que se encontra hospitalizado com uma dupla pneumonia, *depois de uma operação cardíaca e quase seis meses de internamento*.” (CETEMPúblico, Ext 30084 (pol, 97a))
... after of an operation cardiac and almost six months of internment... (‘[the MPs decided to discuss the possibility of dismissing Boris Ieltsin, who is hospitalised with double pneumonia,] after heart surgery and almost six months in the hospital’)

3. Aktionsart restrictions regarding temporal measure quantification

This section addresses a central issue in this presentation: the already-mentioned aktionsart restrictions regarding temporally quantified structures. In fact, one of the main things to note about the semantic characterisation of the structures under analysis is that the temporal quantifier seems to apply only to expressions that represent *atelic, or homogeneous, eventualities* (for which – quite significantly – Vlach 1993 uses the term «mass eventualities»).

First, we should observe that, if telic descriptions are involved in these structures, an Aktionsart shift (cf. Moens 1987) seems to occur systematically, with either an accomplishment being reinterpreted as an activity, by stripping off the culmination, as in (23)-(24), or an instantaneous event being interpreted as an activity, by iteration,

as in (25). The first case applies to a nominal structure, the other two to a sentential embedded one.³

- (23) Após três meses de construção, a ponte estava quase pronta.
after three months of construction, the bridge was almost ready
 After three months of construction, the bridge was almost ready.
- (24) Após três semanas a ler este livro enorme, desisti.
after three weeks at read-INF this book huge, [I] gave-up
 After three weeks (of) reading this huge book, I gave up.
- (25) Após três anos a ganhar a corrida, o atleta retirou-se.
after three years at win-INF the race, the athlete retired
 After three years (of) winning the race, the athlete retired.

Furthermore, one may note that telic descriptions that do not easily undergo Aktionsart shifts are very odd in a similar context:

- (26) ??Após dez minutos de morte, o cadáver estava gelado.
after ten minutes of death, the corpse was frozen
 ??After ten minutes of death, the corpse was frozen.
- (27) ??Após dois minutos a correr 5000 metros, o Paulo desistiu.
after two minutes at run 5000 metres, the Paulo gave-up
 ??After two minutes (of) running 5000 metres, Paulo gave up.

In intuitive terms, an explanation for these facts can be devised as follows. Temporal measure quantification involves summing up bits of undifferentiated parts of eventualities: five hours of study, for instance, may be the result of three plus two hours of study (or any other suitable combination). In other words, the measure quantifier identifies a (possibly discontinuous) lump of the mentioned kind of eventuality, which is nonetheless of the same substance of its parts. Now, if telic eventualities are being measured, this type of summation is not possible, given the relevance of a distinct instantaneous element – the culmination. More formally, we can say that the aspectual restrictions in structures with temporal measure quantification derive from a general property of homogeneous expressions, namely the fact that they are *additive*, i.e. can be summed up and yield eventualities of the same ontological type (cf. e.g. Bach 1981, 1986) – e.g. two separate situations of an individual studying for x and y time intervals can be summed up to yield a (complex) situation of that same individual studying for $x+y$ time.

4. Constructions not to be confused with pseudopartitives

At this point, a brief digression is due about some (syntactically similar) constructions that should not be confused with those under analysis here. In the constructions to be mentioned, either the aspectual constraint mentioned in section 3 does not apply, or the denotational properties identified in section 2 are different.

³ According to my informants, English seems to prefer the use of nominalised *of*-sequences in these contexts.

It must be stressed that this paper only deals with structures with bare predicates of amounts of time and bare complements (nominals or other type of phrases), i.e. structures with *no determiners* in either the higher predicate of amounts of time or the embedded eventuality-denoting constituent. This means that at least two types of apparently similar constructions are not being taken into account here. First, those like (28)-(29), where there is definite or indefinite determination in the description of the quantified eventuality (and which have been termed *partitives*, rather than pseudopartitives in the literature):

- (28) duas horas da minha última viagem a Londres
two hours of-the my last trip to London
 two hours of my last trip to London
- (29) três meses de um combate ocorrido o ano passado
three months of a combat occurred the year past
 three months of a combat that occurred last year

These structures appear to identify a partial span of a contextually defined eventuality, rather than a sum of undifferentiated parts of eventualities, and have very different semantic properties, namely, no restriction on atelicity. Observe the following example, with the description of a telic event and no Aktionsart shift:

- (30) Dois anos da construção da ponte, que demorou quatro, foram gastos com os pilares principais.
two years of-the construction of-the bridge which took four were spent with the pillars main
 Two years of the construction of the bridge, which took four years, were spent with the main pillars.

Second, I will not consider structures like (31)-(32), where there is definite determination in the (higher) predicate of amounts of time:

- (31) os primeiros cinco minutos de espera
the first five minutes of waiting
 the first five minutes of waiting
- (32) esses dois meses a viajar
those two months at travel-INF
 those two months of travelling

Note that structures with definite determination in the predicate of amounts of time (but no determination in the eventuality-denoting expression) do seem to involve the same aspectual restriction as the structures analysed in this paper. The Aktionsart shift (involving the noun *construção / construction*) in the following sentence illustrates this fact:

- (33) As três semanas de construção que já passaram adiantaram muito pouco.
the three weeks of construction that already passed advanced very little
 The three weeks of construction that have already passed produced very little progress.

The reason why these structures need be considered separately (and therefore remain unanalysed here) is that they appear to have very different denotational properties. In particular, they seem to behave as time-denoting expressions rather than as

eventuality-descriptions, as witnessed by the compatibility with a predicate like *ser um período terrível / to be a terrible period*, in (34):

- (34) *Esses dois meses de guerra foram um período terrível*
those two months of war were a period terrible
 Those two months of fighting were a terrible period.
- (35) *vs. ??Dois meses de guerra foram um período terrível.*
two months of war were a period terrible
 ??Two months of fighting were a terrible period.

Structures with modified predicates of amounts of times (e.g. predicates modified by restrictive relative clauses) behave similarly like time-denoting expressions (cf. Móia 2000: chapter 5, for a formal analysis of these structures):

- (36) *Os dois meses que estive no Brasil foram um período feliz.*
the two months that [I] was in-the Brazil were a period happy
 The two months that I spent in Brazil were a happy time (for me).

Finally, one should not mix up the constructions under analysis in this paper – in particular those with (shifted) accomplishment descriptions, exemplified in (24)-(25), or in (38) below – with constructions like (37), which are of a rather different type (and involve unshifted telic descriptions):

- (37) *Três semanas para ler este livro é muito.*
three weeks to read-INF this book is much
 Three weeks to read this book is a long time.
- (38) *vs. Três semanas a ler este livro é muito.*
three weeks at read-INF this book is much
 Three weeks (of) reading this book is a long time.

Note that, in Portuguese, the two constructions differ only (superficially) in the preposition being used – *para* vs. *a*; in English, they are relatively more dissimilar, involving either the preposition *to* plus infinitive or an *-ing* verb form.

5. Temporal measure quantification and duration

In order to grasp the essentials of the semantics of the construction under analysis, it is very useful to compare *temporal measure quantification* – as exemplified in the examples observed so far or in (39) below – with the similar, though not identical, domain of *duration* – as exemplified in (40)-(43) (with either an adverbial duration adjunct, or a combination of a duration predicate and an argument):

TEMPORAL MEASURE QUANTIFICATION – ATELIC EVENTUALITIES:

- (39) *two months* of travelling

DURATION – ATELIC EVENTUALITIES:

- (40) to travel *for two months*
 (41) to *spend two months* travelling

DURATION – TELIC EVENTUALITIES:

- (42) to build a bridge *in two months*
 (43) to *take two months* to build a bridge

It is crucial to underline that the aspectual restrictions concerning *temporal measure quantification* are parallel to differences observed in many languages, Portuguese and English included, with respect to the domain of *duration*. In fact, as has been often stressed in the literature, there are remarkable differences between atelic and telic eventualities with respect to the linguistic expression of their duration. Among the most striking, we could mention the following four:

- (i) atelic and telic eventualities are compatible with different duration predicates (e.g. *spend* or *last* vs. *take*, in English; *passar* or *durar* vs. *demorar* or *levar*, in Portuguese);
- (ii) atelic and telic eventualities are compatible with different duration adverbials (e.g. *for* vs. *in*-phrases, in English; *durante*- vs. *em*-phrases, in Portuguese);
- (iii) a subtype of duration is exclusive to atelic eventualities, viz. *time-anchored (imperfective) duration* (cf. Mória 2006b):

- (44) A Ana está doente *há três meses*. [Portuguese]
 Anne est malade *il y a trois mois*. [French]
 Ana está enferma *hace tres meses*. [Spanish]
 Ana has been sick *for three months now*.⁴ [English]

- (iv) as stressed in Mória (2000, 2006b) atelic and telic eventualities – whose duration is quantified – behave differently in contexts with frame adverbials, with respect to entailment, a matter that will be promptly addressed.

This latter difference is illustrated in (45) and (46) (where the predicate of amounts of time is to be interpreted in all cases has meaning exactly one hundred hours:

DURATION OF ATELIC EVENTUALITIES:

- (45) a. A Ana trabalhou (durante) cem horas em Março de 2005.
the Ana worked (for) hundred hours in March of 2005
 Ana worked for one hundred hours in March 2005.
 -/→
 b. A Ana trabalhou (durante) cem horas em 2005.
the Ana worked (for) hundred hours in 2005
 Ana worked for one hundred hours in 2005.

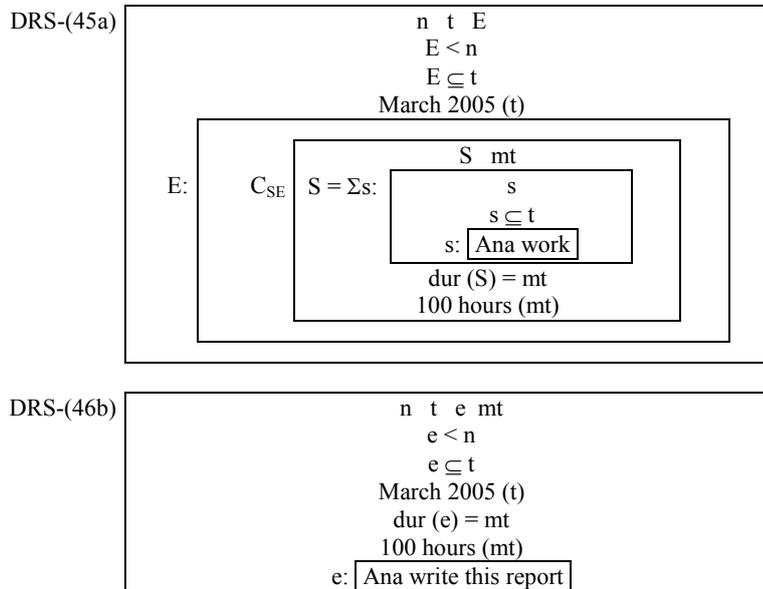
DURATION OF TELIC EVENTUALITIES:

- (46) a. A Ana escreveu este relatório em cem horas em Março de 2005.
the Ana wrote this report in hundred hours in March of 2005
 Ana wrote this report in one hundred hours in March 2005.
 →
 b. A Ana escreveu este relatório em cem horas em 2005.
the Ana wrote this report in hundred hours in 2005
 Ana wrote this report in one hundred hours in 2005.

Again, it seems quite plausible that quantified atelic eventualities are not subject to increasing monotonicity in contexts like (45) because of *additivity*. Intuitively, if the temporal frame is widened (from March 2005 to the year 2005), it is possible that, in the larger frame, more stuff is added to the atelic eventuality making its duration

⁴ Note that English uses the same connective (*for*) for anchored and non-anchored duration, but the other languages do not.

larger. On the contrary, telic eventualities are always bounded (irrespective of their duration or of their discontinuity), and include a final culmination point; even if the locating frame is widened, their overall duration remains the same. These differences can be represented in the language of DRT by associating the duration of atelic expressions – but not of telic ones – with a summation operation (assuming an algebra for eventualities, as shown in Mória 2000 and 2006a). See the following simplified DRS-representations (where **S** or **s** stand here for *any atelic eventuality* – state or activity – and **C_{SE}** stands for the aspectual shift [state or activity into event], representing the commonly assumed fact that quantified atelic eventualities have eventive properties – cf. e.g. Bach 1981, Moens 1987, Swart 1998):



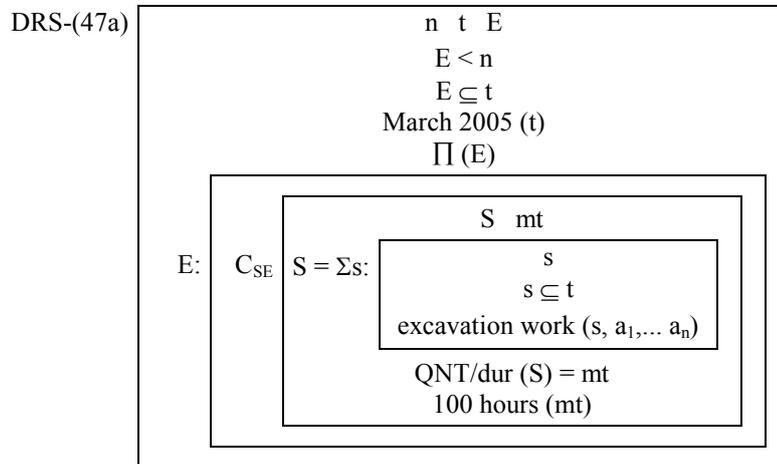
As can be seen, in the DRS-(45a), a temporal parameter (**t**) is intrinsic to the definition of the working activity (**S**), whereas the definition of the writing accomplishment (**e**), in the DRS-(46a) is independent of such a parameter.

Now, a curious – though probably not surprising – fact to note is that the temporal measure quantifiers under analysis behave like the duration adverbials applied to atelic eventualities, in that if the measurement is circumscribed by a frame adverbial and then this frame is widened, no upward monotonicity entailment is legitimate:

TEMPORAL MEASURE QUANTIFICATION OF ATELIC EVENTUALITIES:

- (47) a. Houve [cem horas de escavações em Março de 2005].
There-were hundred hours of excavation-work in March of 2005
 There were [one hundred hours of excavation work in March 2005].
 -/→
- b. Houve [cem horas de escavações em 2005].
There-were hundred hours of excavation-work in 2005
 There were [one hundred hours of excavation work in 2005].

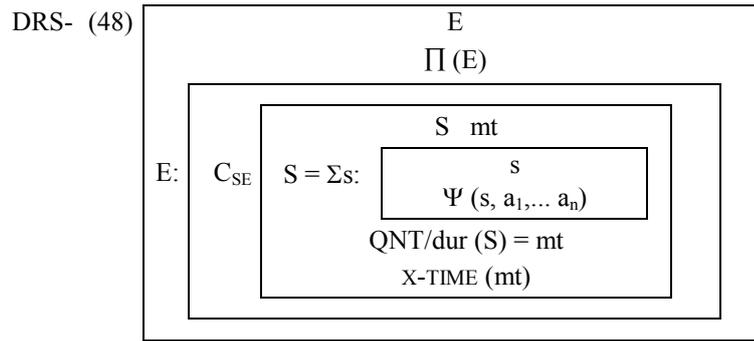
Therefore, it seems plausible to assume that a sequence like (47a) is associated with a representation similar to that in DRS-(45a), involving a summation operation of atelic (sub)eventualities. In fact, the proposal to treat measure quantification *via* summation has been already made in the literature (in particular by Higginbotham 1994). See the following DRS-representation (where Π stands for the predicate of the main clause, and $\mathbf{a}_1, \dots, \mathbf{a}_n$ stand for the relevant arguments of the eventuality – e.g. Agent, Object – which can be contextually determined):



With respect to this representation, two points should be emphasized. First, as said, Π stands for any predicate with which the whole NP in (47a) can be combined (for instance [*one hundred hours of excavation work*] *left us exhausted*, or *were very rewarding*); the fact that the main predicate applies to an eventuality discourse referent is in line with the fact, discussed in section 2, that the semantic nucleus of the whole quantified NP is the eventuality description (not the predicate of amounts of time). Secondly, the description of the quantified eventuality (be it nominal, or sentential, or other) obviously requires the consideration of relevant arguments (Agent, Object, Goal, etc.), that is, in this case, who does the excavation, what is excavated, etc.; these arguments are represented by $\mathbf{a}_1, \dots, \mathbf{a}_n$, and are often contextually determined.

In more general terms, it might be considered that sequences of the type under consideration – [X-TIME (of) Ψ] followed by a main predicate Π – can be associated with a DRS-representation along the lines of (48)⁵:

⁵ As said before, the NPs at stake behave as time-denoting expressions in temporal subordinate contexts. This fact can be formally captured in DRT by adding a condition of the form [$\tau = \text{loc}(E)$], where τ stands for the smallest (continuous or discontinuous) time interval that contains E. The function **loc** is defined in Kamp & Reyle (1993: 671) for continuous intervals, but would have to be adapted for discontinuous ones, in order to tackle the semantics of these constructions.

(48) [[X-TIME (of) Ψ] Π]

The fact that temporal measure quantification and duration of atelic eventualities involve similar summation operations explains the *similarity – or (near) equivalence – between temporal (measure) quantifiers and duration adverbials*, as witnessed if one compares data like (49) and (50):

- (49) Depois de *três horas* {*de viagem / a viajar*}, o Paulo adormeceu e não saiu na estação pretendida.
after of three hours {of trip / at travel-INFINIT}, the Paulo fell-asleep and not got-out in-the station intended
 After *three hours of travelling*, Paulo fell asleep and didn't get off the train at the intended station.
- (50) Depois de *viajar (durante) três horas*, o Paulo adormeceu e não saiu na estação pretendida.
after of travel (for) three hours, the Paulo fell-asleep and not got-out in-the station intended
 After *travelling for three hours*, Paulo fell asleep and didn't get off the train at the intended station.

However, on closer inspection, one type of duration adjuncts exhibits a somewhat distinct behaviour, namely adnominal phrases like the one underlined in (51) (an odd sequence, though):

- (51) #Depois de uma viagem de três horas, o Paulo adormeceu e não saiu na estação pretendida.
after of a trip of three hours, the Paulo fell-asleep and not got-out in-the station intended
 #After a three-hour trip, Paulo fell asleep and didn't get off the train at the intended station.

Very briefly, the difference is that (contrary to duration adverbials and to temporal measure quantifiers) duration adnominals appear to imply that the quantified eventuality is totally bound (probably due to the indefinite determiner, thus disallowing the kind of imperfectivity conveyed by the other constructions). I will skip the discussion of this issue now, just noting that adnominal duration phrases are likely to require a treatment of their own.

6. Conclusion

Overall, this presentation has tackled issues concerning different semantic though closely interrelated domains: Quantification (namely temporal measurement), Duration (as expressed by time adjuncts) and Aktionsart (in particular, atelicity, as expressed by e.g. nominal or sentential constituents). As shown, temporal measurement seems to act like the duration of atelic eventualities in that it involves summing up bits of potentially discontinuous (sub)eventualities, which are added up to make a representation of an atelic eventuality that is still of the same type. Thus, temporal measurement quite centrally requires an algebraic analysis of events. A more thorough and all-embracing cross-linguistic analysis, which involves other forms of quantification over eventualities (namely spatial), is in need of further research.

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- [NILC/SC] Corpus NILC/São Carlos, available at <http://acdc.linguateca.pt/acesso/>