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Temporal and Rhetorical Relations: the Semantics of Sentences with Adverbial Subordination in European Portuguese

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Abstract

The main goal of this dissertation is to investigate the temporal and rhetorical relations in complex sentences with adverbial subordination. We put forward a proposal for the semantic treatment of sentences with adverbial clauses within a theoretical framework which accounts for their temporal and rhetorical properties. The dissertation is organised in four chapters.

In the first chapter, we discuss the mechanisms of clause linkage and ascertain the features that distinguish the adverbial subordination from the other mechanisms. Afterwards, we present a critical revision of the main proposals for the semantic analysis of clauses which are consensually accepted as adverbials, that is, the time clauses, clauses of reason, concessive clauses, conditional clauses and clauses of purpose. In this revision, we consider the following elements: the connectors, the typologies/ classification, the tenses and aspectual classes' combinations and the discursive features.

In the second chapter, we focus our analysis on two devices of time expression in natural languages: Tense and Aspect. In addition to critically analysing some proposals for the treatment of Tense and Aspect, we present a description of the different temporal readings of European Portuguese verb tenses and their formal representation. Next, we discuss the most relevant proposals for analysis of sequence of tenses and propose a distinction between temporal anaphora and temporal subordination.

In the third chapter, we analyse the most relevant discursive theories which integrate in their principles rhetorical relations so that we can verify which is the most efficient in the data analysis. From this critical revision, we conclude that the *Segmented Discourse Representation Theory* (SDRT), from Asher e Lascarides (2003), enables us to deal quite productively with temporal and rhetorical questions. In this chapter, we also show how the temporal and rhetorical relations interact. Finally, we discuss some semantic information sources which allow the inference of temporal and rhetorical properties.

The last chapter is divided into two parts. In the first part, we deal with some theoretical questions. First, we narrow down our object of study to complex sentences with adverbial clauses introduced by the connectors *quando* ('when'), *antes de* ('before'), *depois de* ('after'), *enquanto* ('while'), *porque*, ('because') *embora* ('although'), *se* ('if') e *para* ('so that'). Second, we put forward some additional stipulations in order to deal with the specificities of complex sentences and, in particular, of complex sentences with adverbial clauses. These stipulations are related to: (i) the directionality of rhetorical and temporal relations; (ii) the fronted or final position of the adverbial clause and the implications as far as the text structuring rhetorical relations are concerned; (iii) the possibility of inferring two rhetorical relations; and (iv) temporal and aspectual properties.

In the second part of chapter four, we proceed to analyse the data bearing in mind the following parameters: (i) the verb tenses' combinations; (ii) events and states' combinations; (iii) the representations of the situations in different time spheres; (iv) mechanisms of temporal linkage between situations: creation of a new temporal domain and/or temporal subordination; and (v) rhetorical relations at the content-level and at the text structuring-level.

The investigation that we carried out allows us to conclude that an analysis which takes into account the temporal and rhetorical relations leads to a better semantic and discursive understanding of complex sentences with adverbial subordination. Furthermore, the investigation reveals that it is necessary to consider two types of rhetorical relations at the content-level: one includes in its meaning postulates temporal consequences and, thus, it is responsible for unveiling temporal relations and the other is responsible for ascertaining the causal link between the two situations. The combination of these two types of relations accounts for the different temporal and rhetorical features of the object of our study.

Resumo

O principal objectivo desta dissertação é investigar a semântica das relações temporais e as relações retóricas em frases complexas com subordinação adverbial. Desta investigação resulta uma proposta de tratamento semântico num enquadramento teórico que explica as propriedades temporais e retóricas das frases com orações adverbiais. A dissertação está organizada em quatro capítulos.

No primeiro capítulo, discutimos, num primeiro momento, os mecanismos de coesão interfrásica e verificamos quais as características que distinguem a subordinação adverbial dos restantes mecanismos. De seguida, apresentamos uma revisão crítica das principais propostas de análise semântica das orações que, de forma consensual, são classificadas como adverbiais, isto é, as orações temporais, causais, concessivas, condicionais e finais. Nesta revisão, consideramos os seguintes elementos: os conectores, as tipologias/ classificações, as combinações de tempos verbais e de classes aspectuais e as características discursivas.

No segundo capítulo, focamos a nossa análise em dois mecanismos de expressão do tempo em línguas naturais: o Tempo e o Aspecto. Para além de analisarmos criticamente algumas propostas de tratamento do Tempo e do Aspecto, apresentamos uma descrição das diferentes leituras temporais dos tempos verbais em Português Europeu seguida da sua representação formal. De seguida, discutimos as propostas mais significativas de análise do fenómeno da sequência de tempos e propomos uma distinção entre anáfora temporal e subordinação temporal.

No terceiro capítulo, reflectimos sobre as teorias discursivas mais relevantes que integram no seu dispositivo teórico as relações retóricas, de modo a verificar qual se apresenta como a mais eficaz na análise dos dados. Desta revisão crítica, concluímos que a *Segmented Discourse Representation Theory* (SDRT), de Asher e Lascarides (2003), permite lidar de uma forma produtiva com as questões temporais e retóricas. Neste capítulo, mostramos também como as relações temporais e as relações retóricas interagem. Terminamos com uma discussão sobre algumas fontes semânticas que permitem a inferência das propriedades temporais e retóricas.

O capítulo quatro está dividido em duas partes. Na primeira parte, lidamos com algumas questões teóricas. Começamos por delimitar o nosso objecto de estudo a frases complexas com orações subordinadas adverbiais introduzidas pelos conectores *quando*, *antes de*, *depois de*, *enquanto*, *porque*, *embora*, *se* e *para*. De seguida, propomos algumas estipulações adicionais no âmbito da SDRT para que seja possível lidar com especificidades próprias das frases complexas, e, em particular, das frases complexas com orações adverbiais. Estas estipulações estão relacionadas com: (i) a direccionalidade das relações temporais e das relações temporais; (ii) a posição inicial da oração adverbial e as implicações em termos de relações retóricas a um nível de estruturação textual; (iii) a possibilidade de inferência de duas, ou mais, relações retóricas; e (iv) propriedades temporais e aspectuais.

Na segunda parte do capítulo quatro, procedemos à análise dos dados, tendo em consideração os seguintes parâmetros: (i) combinações de tempos verbais; (ii) combinações de eventos e estados; (iii) representação das situações em esferas temporais diferentes; (iv) mecanismos de ligação temporal entre as situações: criação de um novo domínio temporal e/ ou subordinação temporal; e (v) relações retóricas ao nível do conteúdo e da estruturação textual.

A investigação realizada permite concluir que uma análise que tem em conta a interacção entre as relações temporais e as relações retóricas contribui para um melhor entendimento semântico e discursivo das frases complexas com subordinação adverbial. Para além disso, a investigação revela que é necessário considerar dois tipos de relações retóricas ao nível do conteúdo: um inclui consequências temporais nos respectivos postulados de significado e o outro é responsável pela determinação de um vínculo de causalidade entre as duas situações. A combinação destes dois tipos permite explicar diferentes leituras temporais e retóricas.

Introduction

The study of questions related to Tense and, in particular, to the semantics of temporal relations has been the focus of interest by many authors, such as Jespersen (1924), Reichenbach (1947), Partee (1984), Hinrichs (1986), Webber (1988), Declerck (1991), Kamp e Reyle (1993), Asher e Lascarides (2003), among others. If initially this study was more centred on the semantics of verb tenses and of time adverbials in an isolated manner, currently the investigation focuses on a dynamic semantics which analyses temporal phenomena within the sentence and the discourse.

However, this line of investigation that aims at studying linguistic phenomena within complex sentences and discourses is just beginning. In this sense, the works by Kamp and Reyle (1993), as well as those by Asher and Lascarides (2003), have been essential, because they have developed models of discursive representation which allow the systematic processing of discourse and a precise description of temporal relations. On the other hand, the work by Asher and Lascarides (2003), which puts forward the *Theory of Segmented Discourse Representation* (SDRT) whose founding texts go back to 1991 and 1993, reflects the importance of considering rhetorical relations in the study of linguistic phenomena such as temporal organisation.

As far as sentences with adverbial subordination are concerned, these have been object of semantic studies, most times, not as a class, but separately. Generally speaking, these studies are centred on the possible tenses' combinations, aspectual restrictions, the connectors and/ or the clauses' meanings (modal, for instance). In fact, the sentences with adverbial subordination as a class have not been subjected to a systematic and in-depth treatment within the semantic field and, in particular, concerning temporal properties. Furthermore, an analysis of this type of sentences in the theoretical framework of the rhetorical relations has not yet been carried out, globally or separately. However, we argue that this line of investigation is necessary for a better semantic understanding of the sentences with adverbial subordination.

So, the main objective of this work is to investigate the temporal and rhetorical relations in some types of complex sentences with adverbial clauses. This objective is manifold and includes others, namely:

- provide a semantic characterisation of complex sentences with adverbial subordination.
- investigate the set of properties and behaviours of complex sentences with adverbial subordination.
- ascertain the relation between temporal and rhetorical relations in complex sentences with adverbial subordination.
- analyse the semantics of temporal relations taking the articulation between the different verb tenses and aspectual classes into consideration.
- determine the processes of clause linkage used in sentences with adverbial subordination.
- establish the restrictions imposed by the semantic type of the adverbial clause regarding the representation of situations in different time spheres.
- establish which rhetorical relations are present in sentences with adverbial subordination.
- ascertain the impact of rhetorical relations in the temporal interpretation of sentences with adverbial subordination.
- evaluate the role of the connectors that introduce the adverbial clauses in inferring the temporal and rhetorical relations.
- determine if the principles that underlie the discursive connections in non-complex sentences can be applied to complex sentences with adverbial subordination.
- present a framework which is able to account for the temporal and rhetorical features of sentences with adverbial subordination and which can be used to represent them formally.
- provide a semantic treatment of the temporal and rhetorical relations in sentences with adverbial subordination.

In order to reach these objectives, this dissertation is organised in four chapters. The first three chapters aim at answering some questions which are necessary to determine, on the one hand, the starting point of our analysis and determine what has been done concerning the semantic treatment of adverbial subordination, tense, aspect and rhetorical relations, and, on the other hand, to gather the necessary theoretical tools to present a framework to analyse our object of study and propose a semantic treatment

for it. The last chapter includes the analysis of sentences with adverbial subordination and our proposal for their treatment.

In the first chapter, we present a critical revision of the main literature on adverbial subordination. In the first section, we give a general overview of the processes of clause linkage by identifying the processes of intersentential cohesion and by characterising the subtypes, coordination and subordination, in six grammar books from different languages (Mateus *et al.* (2003), Cunha and Cintra (1994), Bechara (2002), Quirk *et al.* (1985), Huddleston and Pullum (2002), Bosque and Demonte (1999)). Then, we discuss the criteria which underlies the distinction between coordination and subordination. We analyse different proposals which base the distinction on syntactic criteria (Lobo (2003)), syntactic and semantic criteria (Peres (1997) and Peres and Mascarenhas (2006)) and syntactic, semantic and discursive criteria (Matthiessen and Thompson (1988), Andersen (1995)).

The remaining chapter is dedicated to adverbial subordination. First, we present the syntactic properties of sentences with adverbial clauses according to Lobo (2003). Second, we examine the semantic features of time clauses, clauses of reason, concessive clauses, conditional clauses and clauses of purpose in some proposals. The critical revision takes the following elements into account: tense verbs' combinations, aspectual classes' combinations, temporal relations, main connectors, classifications/ typologies and discursive role. It is our intention to verify whether the different analyses consider, or not, these elements and to what extent they are analysed.

This chapter ends with some conclusions related to the critical analysis of the literature.

The second chapter is dedicated to questions related to Tense and Aspect. It is our aim to ascertain which theoretical instruments can be used to represent temporal and aspectual properties and how we can deal with the sequence of tenses' phenomenon. First, we begin by defining *time* in natural languages and by narrowing down our analysis to two devices used to express time, Tense and Aspect.

As far as Tense is concerned, we look into three different approaches: an instant-based theory (Prior (1968) and Montague (1970)), an interval-based theory (Bennet and Partee (1978)) and an event/ state-based theory (Kamp and Reyle (1993)). In the following section, we discuss the role of reference time in the representation of verb tenses according to Reichenbach (1947), Comrie (1985), Declerck (1991) and Kamp

and Reyle (1993). We point out the upsides and downsides of each proposal so that we can justify our choice for one of the approaches to reference time.

Since Aspect is also a relevant device for the determination of temporal relations, we have deemed it best to consider some proposals of aspectual typology to verify to which one we should resort. Therefore, we revise the following proposals: Vendler (1967), Dowty (1979), Moens (1987), Moens and Steedman (1988), Cunha (1998; 2004) and Kamp and Reyle (1993).

After establishing the primitives to take into account in the temporal relations' representation, we also present a descriptive analysis of different temporal readings conveyed by verb tenses in European Portuguese. We suggest a formal representation of the verb tenses in the Indicative mood which results from the combination of elements from Kamp and Reyle (1993), Peres (1993) and Matos (1994).

In the following sections, we discuss the different proposals for the treatment of the *consecutio temporum* (or sequences of tenses) phenomenon. We critically examine the following approaches: Reichenbach (1947), Partee (1984), Dowty (1986), Hinrichs (1986), Webber (1988), Declerck (1991), Kamp and Reyle (1993), Silvano (2002) and Smith (2004). This revision leads to clarifications/ distinctions of some concepts that will be used in the analysis in chapter 4.

Some conclusions of the analysis are presented at the end of the chapter.

In chapter 3, we begin by verifying how the different proposals define rhetorical relations, what the terms used to refer to this concept are, which discursive units the rhetorical relations link, among other questions.

We also revise some discursive theories and taxonomies of rhetorical relations: the *Theory of Discourse Representation* (Hobbs (1985)), the *Rhetorical Structure Theory* (Mann and Thompson (1988)), the *Taxonomy of Coherence Relations* (Sanders *et al.* (1992)), the *Theory of Discourse Coherence* (Kehler (2002)), the *Segmented Discourse Representation Theory* (Asher and Lascarides (2003)), the *Intrinsic and Extrinsic Rhetorical Relations* (Silvano and Cunha (2009)). Some criticism is voiced in order to validate our choice for a specific framework.

Since the process of inference of temporal and rhetorical relations is indeed quite complex, we debate how these two interact in that process and raise some questions ensuing from that interaction which are not fully solved within SDRT. We also look

into some relevant semantic sources which influence the determination of rhetorical and temporal relations, namely tense, aspect, cue-phrases and time adverbials.

Chapter four is divided into two parts: part one is dedicated to the clarification of some theoretical questions and part two consists of the analysis of sentences with adverbial subordination.

In part one of chapter four, we narrow down our object of study to sentences with adverbial clauses introduced by the connectors *quando* ('when'), *antes de* ('before'), *depois de* ('after'), *enquanto* ('while'), *porque* ('because'), *embora* ('although'), *se* ('if') and *para* ('so that').

Then, we attempt at dealing with some problems of the SDRT concerning the treatment of complex sentences, in particular, sentences with adverbial subordination. In order to overcome these problems, we propose some additional stipulations regarding (i) the directionality of temporal and rhetorical relations, (ii) the rhetorical relations at a text-structuring level; (iii) the existence of two groups of rhetorical relations which are combined to obtain the correct interpretation; (iv) the temporal and aspectual parameters.

In part two of chapter four, we analyse the sentences with adverbial clauses introduced by the aforementioned connectors. The analysis considers the following parameters: (i) tenses' and aspectual classes' combinations leading to different temporal relations; (ii) mechanisms of temporal linkage between the situations: creation of a new temporal domain and temporal subordination; (iii) representations of the situations in different time spheres; (iv) rhetorical relations.

As to the verb tenses' combinations, we analyse mainly combinations of tenses with the *Presente* ('Simple Present'), the *Pretérito Perfeito* ('Simple Past'), the *Pretérito Imperfeito* ('Simple Past *Imperfectum'*), the *Pretérito-mais-que-perfeito* ('Past Perfect') and the *Futuro* (*ir* in the *Presente* + *Infinitivo*). However, whenever the adverbial clause selects the *Infinitivo* ('Infinitive') or the *Conjuntivo* ('Subjunctive'), we combine these forms with the verb tenses mentioned above. Regarding the aspectual classes, we only analyse the combinations of situations in terms of events and states without further specification. As far as the rhetorical relations are concerned, we adduce examples which are representative of the most salient rhetorical relations.

Chapter four ends with the systematisation of the parameters concerning temporal characterisation and the systematisation of the rhetorical relations in the

sentences with the adverbial clauses analysed, the discussion of these properties and some conclusions.

The last part of this dissertation includes the main conclusions of the work and some lines of investigation for future research.

Before ending this introductory part, we would like to address some questions related to notation and other technical procedures.

(i) The examples are for the most part fabricated. There are some that are created based on the *corpus* that we have built. This method will permit us to manipulate the different variables under analysis.

(ii) The examples' translation from Portuguese into English includes in the first line a word-to-word translation and in the second line a free translation. Whenever the examples are similar and the only change concerns tense, for instance, we only present the free translation. The examples given in English are not translated.

(iii) In the first occurrences of the Portuguese designations of verb tenses under scrutiny we attach the English counterparts, or the other way around. Afterwards, when we are referring to Portuguese data, we use only the Portuguese words/ designations. The same is valid when we are referring to English data.

(iv) We use the following notation:

a. * - ungrammatical sentence

b. ?? – the grammaticality of the sentence is dubious

c. # - sentence is grammatical but has an interpretation which is not relevant

(v) Abbreviations are explained in the text.

Chapter 1

Adverbial Subordination

Introduction

In this chapter, it is our aim to present our analysis of the main literature concerning adverbial subordination. This revision will allow us not only to conclude about the state of arts and highlight the relevance of our investigation, but also to determine the starting point of our analysis and raise some relevant questions for our investigation of the data that we will carry out in chapter 4.

First, a presentation and characterisation of the different processes of clause linkage will provide a general overview of these mechanisms and determine the position occupied by adverbial subordination. The placement of adverbial subordination in these mechanisms will become clearer when coordination is distinguished from subordination. The discussion of several analytical proposals of intersentential cohesion processes intends to give different theoretical perspectives of that placement, on the one hand, and to point to the importance of considering a multi-disciplinary approach, on the other hand.

Once the adverbial subordination is located in the set of the mechanisms of interclausal connection, it will be object of a description based on syntactic tests, ensued by a (more detailed) semantic description.

The clauses that will be considered in this work are the ones that are consensually labelled as adverbial, that is, the time clauses, the clauses of reason, the concessive clauses, the conditional clauses and the clauses of purpose. The semantic value that they convey justify the division of this group of clauses into clauses that express temporality (time clauses) and clauses that express causality (clauses of reason, concessive clauses, conditional clauses and clauses of purpose).

The semantic revision will obey the following structure for each subtype of adverbial clause: main connectors, most important analyses and classifications/ typologies, temporal and aspectual properties and discursive functions. Although we

will revise the literature of Portuguese and other languages, when presenting the most frequent sequence of verb tenses, we will prefer works on European Portuguese, whenever they exist.

The revision of the relevant literature will be accompanied by some criticism, when considered necessary. The conclusions will include a general evaluation of the state of the arts with respect to the semantic treatment of the adverbial clauses, the definition of our object of study and of relevant questions that are still in need of clarification because the reviewed proposals do not consider them or do it but not in a detailed manner.

1.1. General overview of the processes of clause linkage

1.1.1. The identification of intersentential cohesion processes

A well-structured text[1] must be cohesive and coherent, that is, its production must involve linguistic processes at different levels (syntactical, semantic, lexical) and mental processes, that allow its interpretation. One of the types of textual cohesion is intersentential[2] cohesion and, in order to achieve it, one has to use certain grammatical mechanisms such as parataxis and hypotaxis. Since the distinction between the processes of sentence or clause's linkage is not consensual, we will look into the main proposals, voice some criticisms and gather the most accurate and efficient theoretical instruments to use in the description of the data in chapter 4.

Traditionally, complex sentences are classified in a two-category framework: coordination and subordination or parataxis and hypotaxis. In the literature, many are the authors that discuss the accuracy and effectiveness of such a distinction.

A brief analysis of six major grammar books of European Portuguese (Mateus *et al.* (2003)), Brazilian Portuguese (Cunha and Cintra (1994); Bechara (2002)), Spanish (Bosque and Demonte (1999)) and English (Quirk *et al.* (1985); Huddleston and Pullum

[1] The term *text* is used here according to the definition given in Halliday and Hasan (1976: 2): "A text is best regarded as a semantic unit: a unit not of form but of meaning". This means that a text can be a sentence (complex or non-complex) or a string of sentences.
[2] The designation *intersentential* refers not only to sentences, but also to the more traditional term *clauses*.

(2002))[3] will endow us with a general view of how the grammatical processes of sentential linkage are characterised.

In the European Portuguese grammar book, Duarte (2003) considers that there are two processes of intersentential cohesion, parataxis (the coordination and juxtaposition[4] being cases of parataxis), and hypotaxis (or subordination). The distinctive feature is the degree of independence of the combined constituents. Therefore, juxtaposition is featured as exhibiting more independence of the juxtaposed member than both coordination and hypotaxis. In hypotaxis, the subordinate member is the less independent member when compared to juxtaposition and coordination.

Cunha and Cintra (1994) only distinguish between coordination and subordination saying that while the coordinate clause is autonomous and does not constitute a 'term'[5] ('termo') of the other clause, the subordinate clause is dependent and constitutes a term of the clause with which it is combined. In addition to subordination and coordination, which are not distinguished from parataxis and hypotaxis, Bechara (2002) considers a third process, the juxtaposition[6], featured by the absence of a linking word between the two clauses[7].

In the Spanish grammar book, López García (1999) describes two processes, parataxis and hypotaxis, saying that usually the former is also designated as coordination and the latter as subordination[8]. According to the author, the difference

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[3] It is not our intention to undertake an exhaustive cross-linguistic analysis of the treatment of grammatical mechanisms of sentence linkage in grammar books. The choice of the six grammar books mentioned is justified by the relevance they have among linguistics.

[4] In the same grammar book but in another chapter, Matos (2003) uses the term *apposition* to designate this process.

[5] Cunha and Cintra (1994) argue that the terms that constitute a clause, that are essential terms ('essenciais') (subject and predicate), integrating terms ('integrantes') (nominal complements,…) and accessory terms ('accessórios'), can be represented by another clause.

[6] Bechara (2002: 507-508) analyses the juxtaposed clauses as being very close to the coordinated clauses due to their syntactic independence and semantic relation. Nevertheless, there are juxtaposed clauses with adverbial values. One of the examples is given in (i).

(i) Tivesse ele dito a verdade, ainda assim não lhe perdoaríamos. (Bechara (2002: 507))
Had he said the truth, still we would not forgive him.

[7] There are cases where the connector *and* links the two clauses (cf. (i)).

(i) Vencesse eu, e não me dariam o prêmio. (Bechara (2002: 508))
Had I won, and they would not give me the prize.

[8] López García (1999) goes on saying that the identification of criteria that distinguishes coordination from subordination and parataxis from hypotaxis is a very complex task. Some traditional criteria encounter problems when applied to the data. That is what happens with the criterion related to the possibility of omission of the clause associated with coordination. He shows that a sentence with a disjunctive correlative coordinate clause does not permit the omission of the second clause while a sentence with a conditional clause may permit it, at least for the Spanish. Bearing in mind this

between these two pairs, that is, parataxis *vs* hypotaxis and coordination *vs* subordination, resides on the level they operate and on the type of units that they link: the first pair operates at the level of discourse and unites clauses and the second at the level of sentence and unites clauses and sentences[9]. López García (1999) also considers a third process, juxtaposition, whenever there is a pause or absence of a linking word between the two sentences or clauses.

In one of the English grammar book, Quirk *et al.* (1985: 918) define coordination and subordination "as special cases of two types of syntactic arrangement traditionally known as parataxis ('equal arrangement') and hypotaxis ('underneath arrangement')". They also include in hypotaxis and parataxis other sorts of linkage between two units, such as embedding and juxtaposition, respectively. Nevertheless, they point out that the syntactic distinction between coordination and subordination is not a clear-cut distinction but a gradual one. For this reason, they argue in favour of a scale in which the coordinators and subordinators are more or less coordinate and subordinate.

Huddleston and Pullum (2002) describe the 'non-canonical clauses'[10] as involving three syntactic processes: subordination, coordination and supplementation. While the first is distinctive from the other two because of the different syntactic status of the constituents engaged in this process (integrated and headed), the third is singled out from the other two because the supplementive clause lacks integration in the other clause. It acts as an interpolation or an appendage, sharing with the coordination the

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complexity, the author differentiates between the possibility of syntactic omission and semantic implication. In coordination, there is not semantic implication and, in subordination, there is.

[9] Lopes (2004) follows López García (1999) bipartition between coordination *vs* subordination and parataxis *vs* hypotaxis to put forward a characterisation of complex sentences for the European Portuguese. She suggests that the relative and nominal clauses belong to the group of subordination while the adverbial to the group of hypotaxis, because the first are merely syntactic phenomena and the semantic characteristics are selected by the elements that dominate them syntactically and the latter should be analysed in terms of semantic and discursive factors in addition to the syntactic ones. Although the author stipulates these two levels of intersentential classification as an attempt to solve the hybridism that characterises the traditional typology, she still admits that some structures do not share the same features and, for that reason, they are hybrid. The clauses of reason introduced by *que* ('that') are among those structures. Furthermore, she describes parataxis and hypotaxis as discursive processes, and coordination and subordination as syntactic processes, and yet she uses syntactic criteria to distinguish between paratactic and hypotactic clauses.

[10] The authors use the term *clause* instead of *sentence* because of the treatment of coordination and because of the non-technical word sense of *sentence*. In the first case, if they were to use *sentence* they would apply it not only to each coordinator but also to the whole structure, having two very different syntactic types. The term *non-canonical* by opposition to *canonical* is used to reflect the distinction between the more complex constructions from the more basic or elementary one. Some examples of non-canonical clauses correspond to negative, interrogative, coordinate or subordinate structures.

characteristic of being non-headed, that is, the supplementive clause is not integrated in the structure and therefore it is not dependent on any head[11].

In the above-mentioned literature, the linguistic phenomenon of linking clauses or sentences is analysed as being fulfilled by two or, in some cases, three processes, each featuring typical properties. However, authors such as Lehmann (1988) and Matthiessen and Thompson (1988) assume a different perspective of this phenomenon when they describe it as a *continuum*[12], which has as the starting point the process where there is no hierarchical relation between the clauses and as the arrival point a process where there is a hierarchical relation between the clauses. In these proposals, the clauses are more or less coordinate-like or subordinate-like depending on the syntactic and semantic parameter[13] that is being considered.

Regardless of the adopted perspective, the coordinate and subordinate clauses are usually divided into different subtypes based on syntactic and semantic criteria. Like the identification of the main processes of intersentential connection, the subdivision into different subtypes of coordination and subordination is not consensual either, as we will show in the next section.

[11] Huddleston and Pullum (2002:1350-1362) describe in a detailed manner the syntactic and semantic characteristics of supplementation. Since this is not the core of our work, we limit ourselves to present a brief definition illustrated by the following examples (Huddleston and Pullum (2002: 1350)):

i) Pat – the life and soul of the party – had invited all the neighbours.
ii) The best solution, it seems to me, would be to readvertise the position.
iii) Jill sold her internet shares in January – a very astute move.

[12] For a more exhaustive analysis of the *continuum* proposal, see Cristofaro (2003). She observes that:

> "...languages vary to a large extent as far as their morphosyntactic structures are concerned. As a result, any parameter chosen to distinguish between subordination and non-subordination will combine with a number of other parameters, yielding a variety of possibly very different clause linkage (sub)types. In this respect, the distinction between subordination and non-subordination should not be regarded as a discrete one (as implied by the opposition between subordination and coordination), but rather as a syntactic *continuum* involving a number of different and quite freely combinable parameters." (Cristofaro 2003: 20)

[13] Lehmann (1988) takes into account seven parameters to analyse clause linking: hierarchical downgrading of the subordinate clause, the syntactic level at which the clause is embedded, desententialisation, the degree of grammaticalisation of the main predicate, interlacing between the two clauses and explicitness of the linking between the two clauses. For instance, as far as the second parameter is concerned, the lower the level at which the clause is integrated (verb, clause or sentence) the more integrated is the clause.

1.1.2. The subtypes of clause linkage processes

1.1.2.1. The coordinate clauses

The scrutiny of the analyses carried out by the grammar books which are being taken into consideration indicates that the subdivision as far as coordination is concerned is performed in the same way in all with the exception of Cunha & Cintra (1994) (cf. Table 1).

Mateus *et al.* (2003)	**Cunha & Cintra (1994)**	**Bechara (2002)**	**Quirk *et al.* (1985)**	**Huddleston & Pullum (2002)**	**Bosque & Demonte (1999)**
Conjunctive (‘copulativa’)	Additive (‘aditiva’)	Additive (‘aditiva’)	*and*	Conjunctive	Conjunctive (‘copulativa’)
Adversative (‘adversativa’)	Adversative (‘adversativa’)	Adversative (‘adversativa’)	*but*	Adversative	Adversative (‘adversativa’)
Disjunctive (‘disjuntiva’)	Alternative (‘alternativa’)	Alternative (‘alternativa’)	*or*	Disjunctive	Disjunctive (‘disyuntiva’)
_____	Conclusive (‘conclusiva’)	_____	_____	_____	_____
_____	Explicative (‘explicativa’)	_____	_____	_____	_____

Table 1. Subtypes of coordination in different grammar books

Cunha & Cintra (1994) include in the coordination the conclusive and explicative clauses, the first being introduced by coordinators as *logo* (‘hence’), *pois* (‘because’), *portanto* (‘so’), *por conseguinte* (‘subsequently’), *por isso* (‘thereby’), among others, and the latter by *que*, *porque*, *pois*, *porquanto* (‘because’), just to name a few. However, the other five grammars do not classify these types of clauses as coordinate because they exhibit different syntactic behaviour when compared with the conjunctive, adversative and disjunctive, as we will show in section 1.1.3..

In regards to the absence of any reference to the subtypes of coordination in Quirk *et al.* (1985), it is explained by the authors’ choice of not creating a terminological classification for the coordinate clauses. In fact, they analyse the

processes of clause linkage from the point of view of the coordinators, exploring their syntactic and semantic value, without formally naming the type of coordination.

1.1.2.2. The subordinate clauses

Traditionally, subordination is divided into three types, substantive or nominal, adjective and adverbial, because their functions are very similar to the ones fulfilled by nouns, adjectives and adverbs, respectively. The examination of table 2 shows that, generally speaking, the analysed grammar books follow more or less the traditional division. Nevertheless, there are some discrepancies as to the adopted terminology and to the structures included in each subdivision.

Mateus *et al.* (2003)	**Cunha & Cintra (1994)**	**Bechara (2002)**	**Quirk *et al.* (1985)**	**Huddleston & Pullum (2002)**	**Bosque & Demonte (1999)**
Clauses of complementation (‘completivas’)	Substantive clauses (‘orações substantivas’)	Substantive clauses (‘orações substantivas’)	Nominal clauses	Content clauses[14]	Substantive clauses (‘oraciones sustantivas’)
Relative clauses (‘orações relativas’): • Free (‘livres’) • Restrictive or determinative (‘restritivas’ or ‘determinativas’) • Appositive, explicative or non-restrictive (‘apositivas’, ‘explicativas’ or ‘não-restritivas’)	Adjective clauses (‘orações adjectivas’): • Restrictive (‘restritivas’) • Explicative (‘explicativas’)	Adjective clauses (‘orações adjectivas’): • Without antecedent (‘sem antecedente’) • Restrictive (‘restritivas’) • Explicative (‘explicativas’)	Relative clauses: • Nominal • Restrictive • Non-restrictive	Relative clauses: • Integrated • Supplementary	Adjective clauses (‘oraciones adjetivas’): • Restrictive (‘restrictivas’ or ‘especificativas’) • Explicative (‘explicativas’ or ‘incidentales’)
Adverbial clauses (‘orações adverbiais’): • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’)	Adverbial clauses (‘orações adverbiais’): • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’) • Consecutive (‘consecutivas’) • Comparative (‘comparativas’) • Of conformity (‘conformativas’) • Proportional (‘proporcionais’)	Adverbial clauses (‘orações adverbiais’) <u>Group one</u>: • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’) • Locative (‘locativas’) • Modal (‘modais’) • Of conformity (‘conformativas’) • Proportional (‘proporcionais’) <u>Group two</u>: • Consecutive (‘consecutivas’) • Comparative (‘comparativas’)	Adverbial clauses: • Of Reason • Concessive • Conditional • Of purpose • Of time • Of place • Contrastive • Of exception • Of similarity and comparison • Of proportion • Of preference • Comment • Comparative of sufficiency and excess	Content clauses (introduced by a preposition) Comparative clauses	Adverbial clauses (‘oraciones adverbiales’)[15]: • Of reason (‘causales’) • Concessive (‘concesivas’) • Conditional (‘condicionales’) • Of purpose (‘finales’) • Time (‘temporales’) • Consecutive (‘consecutivas’) • Comparative (‘comparativas’)

[14] As explained by Huddleston and Pullum (2002:n31), the term ‘content clause’ was firstly used by Jespersen and it is preferred to ‘complement clause’ because, on the one hand, content clauses do not always function as complements (they can be adjuncts) and, on the other hand, they are not the only ones to fulfil the role of complements (comparatives do, too).

[15] In this grammar, Pérez Saldanya (1999: 3316-3317) under the subtitle *Otras oraciones subordinadas adverbiales* (‘Other adverbial subordinate clauses’) refers to locative clauses (‘oraciones locativas’) introduced by *donde* (‘from where’), modal clauses (‘oraciones modales’) introduced by *como* (‘as’) and comparative (‘oraciones comparativas’) as being relative. Then she only mentions the modal clauses introduced by *sin que* (‘without’) and *como si* (‘as if’) (without saying if she considers them relative or adverbial) and no example of the supposed adverbial locative clauses. As for rest of the grammar book, there is no mention of adverbial locative or modal clauses.

Structures of gradation and comparison (‘construções de graduação e comparação’) • Consecutive (‘consecutivas’) • Comparative (‘comparativas’) • Of conformity (‘conformativas’) • Proportional (‘proporcionais’)			Comparative clauses of equivalence		

Table 2. Semantic and syntactic subtypes of subordination in different grammar books

In respect to the terminology, Cunha & Cintra (1994), Bechara (2002) and Bosque & Demonte (1999) subscribe the traditional labels, substantive, adjective and adverbial. They also agree on almost all the types of structures that integrate each subgroup. The one exception is the integration of the clauses of conformity and proportional clauses into the subgroup of the adverbial clauses by Cunha & Cintra (1994) and Bechara (2002), acting in accordance with the Brazilian tradition, and not by Bosque & Demonte (1999). Contrarily to the other two, Bechara (2002) separates the consecutive and comparative clauses from the other adverbial clauses.

Mateus *et al.* (2003) and Quirk *et al.* (1985) respect the tripartite division of the subordinate clauses though they use a different terminology for the substantive and adjective clauses when compared with three grammar books mentioned above. They name the substantive clauses of complementation and nominal clauses, and the adjective relative clauses. Furthermore, both separate certain structures of comparison from those that belong to the adverbial clauses. Moreover, while Quirk *et al.* (1985) consider that there is a type of comparative clauses, the comparative of equivalence, that do not share the same features of the adverbial clauses, Mateus *et al.* (2003) refer to another subgroup, structures of gradation and comparison, which includes not only the comparative clauses, but also the consecutive, the proportional and the clauses of conformity.

Regarding the types of clauses considered as relative, in spite of the fact that they have different tags, they correspond to the same structures.

The description provided by Huddleston and Pullum (2002) is at odds with the one given by the other grammar books, and, for that matter, with the traditional classification. They justify this approach using the following arguments:

> "We do not make use of the following categories of noun clause, adjective clause, and adverb clause. In the first place, functional analogies between subordinate clauses and word categories do not provide a satisfactory basis for classification. And secondly, a high proportion of traditional adverb (or adverbial) clauses are on our analysis PPs consisting of a preposition as head and a content clause as complement: *before* <u>*you mentioned it*</u>, *if* <u>*it rains*</u>, *because* <u>*they were tired*</u>, and so on."[16] (Huddleston and Pullum (2002:62))

To begin with, these authors criticise the fact that traditional terminology is based on functional criteria and not on structural criteria. Secondly, they adopt a broader notion of preposition, including in this category many of the traditional grammar's adverbs and most of its subordinators. They argue that if it is accepted that prepositions can take as complements not only NPs, AdvPs, PPs and AdjPs, but also clauses, it does not make any sense to call them prepositions in the first four cases and subordinating conjunction in the last case, that is, when they take as complement a clause. They exemplify with the verb *remember* that can select NP complements (*I remember the accident*) and declarative complements (*I remember you promised to help*), and nonetheless *remember* is still in both instances analysed as a verb (2002:600). According to the authors, this criterion should also be applied to similar situations with prepositions. For instance, *after* can select a NP complement (*He left after the accident*) and a declarative complement (*He left after you promised to help*) and, therefore, it should be analysed in both occurrences in the same manner.

Bearing in mind these premises, Huddleston and Pullum (2002) classify as prepositions all the words that are traditionally categorised as subordinating conjunctions except for *whether*, *if* with the meaning of *whether* and *that* when it introduces a subordinate clause. These are depicted as markers of subordination and not as heads of phrases[17].

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[16] For a more extended explanation, see Huddleston and Pullum (2002:1014-1017).

[17] Notwithstanding that, one has to be aware that this approach concerns English language, which, as observed by Lobo (2003:117-118), comprises different characteristics in relation to romance languages. For instance, while in English the words that introduce temporal clauses such as *before* and *after* cannot be followed by *that*, in Portuguese the corresponding words ('depois' and 'antes') cant introduce finite temporal clauses with *that* ('que'). Moreover, whereas in English these subordinators can take NPs, in Portuguese they cannot.

After a thorough research concerning the morphosyntactic nature of the connectors that introduce the adverbial clauses in European Portuguese, Lobo (2003) concludes that, and I quote,

> "As orações adverbiais finitas e infinitivas do português podem ser introduzidas por uma série de elementos de natureza categorial diversa. Pode admitir-se que algumas

The arguments presented before justify the absence of a sub-group of adverbial clauses and the division of subordinate clauses into relative clauses, comparative and content clauses in Huddleston and Pullum (2002). The adverbial clauses in the other grammar books correspond to content clauses in this grammar book. In fact, according to the authors, the content clauses are a default category because they do not have the special syntactic characteristics of the relative nor of the comparative.

The classification just described is based on semantic and syntactic criteria (which we will develop in the following sections), but there is a different type of classification of the subordinate clauses grounded on morphological criteria, more specifically on the feature of finiteness of the verb. Table 3 sums up the classification, established by the six grammar books, of finite and non-finite subordinate clauses.

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delas correspondem na realidade a constituintes preposicionais ou a constituintes adverbiais que integram uma oração." Lobo (2003:145)
"The finite and non-finite adverbial clauses of Portuguese can be introduced by a group of elements that belong to different categories. It can be admitted that some of them correspond in reality to prepositional constituents or to adverbial constituents that integrate a clause."

Considering all arguments with respect to the use of a different designation for the adverbial clauses, although Huddleston and Pullum (2002) analysis might work for the English language, because it does not apply to the European Portuguese and because it is our intention to use a terminology broad enough to accommodate descriptions of English and Portuguese, we will argue that the best option is to subscribe the more traditional terminology.

Furthermore, since it is more or less accepted that the adverbial subordinators constitute an heterogeneous class insofar as word category (Quirk *et al.* (1985), Kortmann (1997;1998), Brito (2003), Lobo (2003) a.o.), we choose to use in this work more neutral and less committed terms such as subordinators and connectors to refer to the words and expressions that connect the subordinate clauses.

Mateus *et al* (2003)	**Cunha & Cintra (1994)**	**Bechara (2002)**	**Quirk *et al* (1985)**	**Huddleston & Pullum (2002)**	**Bosque & Demonte (1999)**
Finite clauses (‘orações finitas’)	Finite clauses (‘orações finitas’)	Finite clauses (‘orações finitas’)	Finite clauses	Finite clauses	_____
Non-finite clauses (‘orações não finitas’): • infinitival clauses (‘orações reduzidas de infinitivo’) • gerundive clauses (‘orações reduzidas de gerúndio) • participial clauses (‘orações reduzidas de particípio)	Small clauses (‘orações reduzidas’): • infinitival small clauses (‘orações reduzidas de infinitivo’) • gerundive small clauses (‘orações reduzidas de gerúndio) • participial small clauses (‘orações reduzidas de particípio)	Small clauses (‘orações reduzidas’): • infinitival small clauses (‘orações reduzidas infinitivas’) • gerundive small clauses (‘orações reduzidas gerundivas) • participial small clauses (‘orações reduzidas participiais)	Non-finite clauses: • to-infinitive clauses • bare-infinitive clauses • *_ing* participle clauses • *_ed* participial clauses	Non-finite clauses: • infinitival clauses (to-infinitival and bare-infinitival) • gerund-participial clauses • past-participial clauses	_____ • clauses of infinitive (‘oraciones de infinitivo’) • clauses of participle (‘oraciones de participio) • infinitive clauses (‘oraciones de gerundio)
_____	_____	_____	Verbless clauses	Verbless clauses	_____

Table 3. Finite and non-finite subtypes of subordination in different grammar books

The observation of the table reveals that five of the six grammar books considered here recognise two main groups, the finite and non-finite clauses, the exception being Bosque & Demonte (1999). Although they describe the structures integrated in the two groups, they do not formally divide them. Four of the five that do distinguish the two groups employ the same terms to name them, Cunha & Cintra (1994) and Bechara (2002)being the odds out, since they favour a more traditional label, ‘small clauses’ rather than ‘non-finite clauses’.

In the subgroup of non-finite clauses, all the grammar books include the infinitive, participial and gerundive clauses, though resorting to different designations.

The English grammar books add a third subgroup of subordinate clauses, the verbless clauses, such as *With you as my friend, I don’t need enemies* (Quirk *et al.* (1984:1003)).

The finite, non-finite and verbless subordinate clauses can be found in the semantic and syntactic subgroups distinguished in table 2. However, the non-finite and verbless clauses impose more restrictions, which vary according to the language, and,

therefore, are limited to some subtypes of subordinate clauses, as it is possible to conclude from table 4.

	Non-finite subordinate clauses			
	Infinitive clauses	Participial clauses	Gerundive clauses	Verbless clauses
Mateus *et al.* (2003)	• of complementation • relative • adverbial	• adverbial	• adverbial	_____
Cunha & Cintra (1994)	• substantive • adjective • adverbial	• adjective • adverbial	• adjective • adverbial	_____
Bechara (2002)	• substantive • adjective • adverbial	• adjective • adverbial	• adjective • adverbial	
Quirk *et al.* (1985)	• nominal • relative • adverbial	• relative • adverbial	• nominal • relative • adverbial	• nominal • adverbial
Huddleston & Pullum (2002)	• content • relative	• content	• content • comparative	• content
Bosque & Demonte (1999)	• substantive • adjective • adverbial	• adverbial	• adverbial	_____

Table 4. Subtypes of non-finite subordinate clauses in different grammar books

According to the analysis carried out by the grammars, the infinitive clauses can be substantive (or nominal), adjective (or relative) and adverbial (or nominal) in European and Brazilian Portuguese, English and Spanish.

In regards to the participial clauses, while the Brazilian grammars consider that they can be adjective clauses (*As rosas brancas agrestes/ Trazidas do fim do monte* 'The white wild roses/ brought from the end of the hills' Cunha & Cintra (1994: 611)), the European Portuguese does not recognise this possibility. As to the English grammars, in spite of the fact that Quirk *et al.* (1984) consider that the adjective clause can take the form of a participial clause (*The car (being) repaired by that mechanic...* (1664)), Huddleston & Pullum (2002) do not share the same perspective.

As to the gerundive clauses, once again the Brazilian grammars describe them as being adjective (*Viu um grupo de homens conversando* 'He saw a group of men talking' Cunha & Cintra (1994:610)) and adverbial, whilst Mateus *et al.* (2003) limit its occurrence to the adverbial subgroup. Quirk *et al.* (1984) and Huddleston & Pullum

(2002) assume similar perspectives: the former accept gerundive relative clauses (*The person writing my report is my colleague.* (1623)) and the latter do not.

1.1.3. Criteria of distinction between clause linkage processes

1.1.3.1. The syntactic criteria

The distinction between coordination and subordination is mainly motivated by syntactic criteria. Based on the work already done on this topic (Quirk *et al.* (1985); Peres (1997), among others), Lobo (2003) gathers the criteria that permit setting apart the two processes of clause linkage in two groups: those that are shared by different indo-European languages (Portuguese, English, French, German, Spanish and Italian) and those that are language-specific. The first group includes the following criteria:

i) Presence or absence of an embedding structure/ the fulfilment (or not) of a syntactic-semantic function by the matrix clause;
ii) (Im)possibility of fronting;
iii) (Im)possibility of constituents' extraction;
iv) (Im)possibility of coordinating the structure;
v) (Im)possibility of the connector to link more than two constituents;
vi) (Im)possibility of the connector to link non-clausal constituents.

The second group of criteria comprises the following:

i) (Im)possibility of subject's omission (null subject languages);
ii) Position of pronouns such as *o, a, te, se,...* before or after the verb (European Portuguese)
iii) Position of the verb (German)

The application of these parameters to sentences with coordinate clauses and sentences with subordinate clauses leads to the conclusion that there is not a set of syntactic features that clearly separates coordination from subordination. Nevertheless, these syntactic tests permit to distinguish between some subtypes of subordinate clauses. The behaviour of the different clauses insofar as the tests is summarised in the table 5 drawn by Lobo (2003: 39).

	Embedding structure	Fronting	Extraction	Coordination	Placement of the pronouns before the verb	Linkage of non-clausal constituents	Linkage of more than two elements
conjunctive (and)	*	*	*	*	*	√	√
disjunctive (or)	*	*	*	*	*	√	√
adversative (but)	*	*	*	*	*	√	*
temporal	?	√	*	√	√	*	*
causal	?	√	*	√	√	*	*
of purpose	?	√	*	√	√	*	*
conditional	?	√	*	√	√	*	*
concessive	?	√	*	√	√	*	*
comparative	√	*	*	?√	√	*	*
consecutive	√	*	*	?*	√	*	*
relative (with nominal antecedent)	√	*	*	√	√	*	*
of complementation	√	√	√	√	√	*	*

Table 5. Behaviour of different types of clauses and connectors as to some syntactic tests (Lobo 2003:39)

The table presented above allow us to sketch some conclusions. Although some types of complex sentences respond in the same way to the syntactic tests, there is not a clear cut between coordination and subordination. The only three features that establish the difference between both processes in European Portuguese are the possibility of coordinating subordinate clauses *vs.* the impossibility of coordinating coordinate clauses; the impossibility of linking non-clausal constituents in subordinate clauses *vs.* the possibility of linking non-clausal constituents in coordinate clauses; and the placement of pronouns *o, a, te, se* (‘clíticos’) before the verb in subordinate clauses *vs.* the placement of pronouns *o, a, te, se* (‘clíticos’) after the verb in coordinate clauses.

In regards to coordination, in some of the more traditional descriptions (see Cunha & Cintra (1994) in table 1) the conclusive and explicative clauses are considered coordinate clauses. However, according to the syntactic tests proposed by Lobo (2003), these subtypes of clauses do not behave as coordinate, because the conclusive can be coordinated and their connectors can occupy different positions in the clause, contrarily to the other coordinating connectors; and because the explicative disallow the linkage of

more than two constituents and of non-clausal constituents. Though the adversative clauses differ from the conjunctive and disjunctive in the linkage of more than two elements, the explicative and conclusive carry more syntactic differences, and, for that reason are absent from the group of coordination.

In what concerns subordination, the syntactic criteria used by Lobo (2003: 37) distinguish very clearly the adverbial clauses from the relative and nominal clauses. While the former share all of following characteristics, the latter do not:

- the inexistence of an embedding structure of subordinate clauses;
- the possibility of fronting;
- the impossibility of extraction;
- the possibility of coordination;
- the placement of pronouns *o, a, te, se* ('clíticos') before the verb;
- the impossibility of linkage of more than two constituents;
- the impossibility of linkage of non-clausal constituents.

In the group of what is considered to be adverbial clauses by the majority of the grammar books analysed in the previous sections, the syntactic tests validate the analysis of the comparative and the consecutive as a separate group: they have an embedding structure and they cannot be fronted.

1.1.3.2. The semantic criteria combined with the syntactic

Peres (1997) and Peres and Mascarenhas (2006) put forward a proposal of intersentential connections grounded on semantic and syntactic criteria. The syntactic criteria are:

i) placement as a complement of a verb;
ii) placement as argument of a sentence adverb;
iii) placement under the scope of negation;
iv) movement within the matrix clause;
v) cleft structure.

Besides these, the authors add two more in the 2006's article: the coordinate structure constraint (CSC) and the subordinating clause anaphora (SCA). The former, used to distinguish coordination from adverbial subordination, goes back to Ross (1967)

and says that certain syntactic processes must equally affect all coordinated sentences. The latter states that "a matrix clause can never be anaphorically recovered within a subordinate clause; conversely, a subordinating clause that is not a matrix clause can be anaphorically recovered within a subordinate" (2006: 135). This criterion singles out the adverbial subordination from all the other intersentential connections.

According to the authors, the semantic criterion of truth-functionality, in other words, the possibility of assigning a truth-value regardless of the semantic content of the subordinate clause, also allows us to set adverbial subordination apart from the other subordinating clause binding mechanisms. This semantic property, in addition to the acceptance of subordinating clause anaphora, defines the group of *free subordination* constituted by the adverbial subordinate clauses. On the other hand, the impossibility of assigning a truth-value without the consideration of the semantic content of the subordinate clause and the rejection of subordinating clause anaphora characterise the group of *bound subordination* formed by the nominal, adjective, comparative and consecutive clauses. As to the *free subordination*, the authors establish another division between *outer and inner subordination* according to the negative or positive response to the cleft construction test, respectively.

In this typology all the subordinating and coordinating intersentential propositions are described as propositional connections, that is, as having propositions as their output, while the others, juxtaposition, attachment and supplementation, are depicted as non-propositional connections. The three syntactic tests that validate this distinction are: i) the placement as a complement of a verb; ii) the placement as argument of a sentence adverb; and iii) the placement under the scope of negation. According to Peres (1997: 777), when the sentences respond negatively to these tests, they do not constitute 'sentential objects' and, they are non-propositional connections.

As to the semantic properties, there are some issues that need to be addressed. Peres (1997) and Peres & Mascarenhas (2006) argue that juxtaposition, attachment and supplementation are non-propositional connections and do not intervene in the determination of the truth-value of the complex structure based on the three aforementioned syntactic tests. What's more, they characterise the explicative clauses as arguments that can only be evaluated in terms of validity. However, if we apply the tests

to a clause, such as (1) which includes an explicative clause[18] (a non-propositional connection in their analysis) and compare them to a sentence like (2) which integrates an *if*-clause (a propositional connection), the two structures seem to behave in the same way.

(1) a. O João disse que a Maria estava em casa, pois estava doente
The João said that the Maria was at home, since was ill.
João said that Maria was at home, since she was ill.

b. Infelizmente, o João disse que a Maria estava em casa, pois estava doente.
Unfortunately, the João said that the Maria was at home, since was ill.
Unfortunately, João said that Maria was at home, since she was ill.

c. O João disse que a Maria não estava a trabalhar, pois estava doente.
The João said that the Maria was working, since was ill.
João said that Maria wasn't working, since she was ill.

(2) a. O João disse que a Maria ia ao cinema se chegasse cedo a casa.
The João said that the Maria would-go to-the cinema if arrive(Subj)[19] *early at home.*
João said that Maria would go to the cinema if she arrived home early.

b. Felizmente, o João disse que a Maria ia ao cinema se chegasse cedo a casa.
Fortunately, the João said that the Maria would-go to-the cinema if arrive(Subj) early at home.
Fortunately, João said that Maria would go to the cinema if she arrived home early.

c. O João disse que a Maria não ia ao cinema se chegasse cedo a casa.
The João said that the Maria not would-go to-the cinema if arrive(Subj) early at home.
João said that Maria wouldn't go to the cinema if she arrived home early.

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[18] In spite of the fact that Peres & Mascarenhas (2006) analyse only the so-called epistemic explicative clauses, they recognise the existence of content explicative clauses in section 3 *Zooming in on explicative connections* (2006:151-152) when they criticise the description made in Mateus *et al.* (2003) of the following sentence (authors' translation):

i) Chegámos atrasados, pois está um trânsito infernal.
Arrived late, since is a traffic hellish.
We are late, due to the hellish traffic.

When we are dealing with content explicative clauses, it seems more obvious that they give rise to propositions as it happens with the adverbial causal clauses.

[19] Whenever the verb tense in European Portuguese belongs to the Subjunctive mood, we will sign it with *Subj*.

The comparison of two subtypes of clauses belonging to two different types of connections, non-propositional and propositional, respectively, leads to the observation that they behave in the same way when the tests of complementation are applied. Contrarily to what is contended by the authors, both the conditional in (2) and the explicative in (1) seem to be part of the verbal complement and in the scope of the sentential adverb. If this is so, and following the authors' reasoning, they are propositions and can be assigned a truth-value. In fact, notice that, although they convey different semantic values (a condition and a reason), both clauses can be analysed in *Statement Logic* as well formed formulae whose truth-value contribute to the value of the whole proposition.

Moreover, in compliance with the suggested tests to distinguish between propositional and non-propositional connections, there are connections included in the free subordination, labelled as propositional connections that are in reality non-propositional. We are referring to the clauses of enunciation[20] that can be found in the group of the concessive, the conditional, clauses of reason and of purpose.

Another short note to observe that the distinction between supplementation and attachment also seems precarious because the only syntactic difference is the movement test.

The application of the semantic and syntactic criteria render into the following classification ("tentative" and "incomplete" in the authors' own words)[21].

[20] The clauses of enunciation will be described in section 1.3.2..
[21] The designations of the subtypes of each clause linkage type are in European Portuguese as in the original text.

				Compl.	S-Adv	CSC	SCA	Mov.	Cleft	Neg.
NON-PROP. CONNECTIONS	**JUXTAPOSITION**			-	-			-		-
	ATTACHMENT		conclusiva	-	-			-		-
			adversativa anexa	-	-			-		-
	SUPPLEMENTATION		relativa não restritiva	-	-			±		-
			conformativa	-	-			+		-
			explicativa	-	-			±		-
PROPOSITIONAL CONNECTIONS	**COORDINATION**		copulativa	+	+	+		-	-	-
			disjuntiva	+	+	+		-	-	-
			adversativa coordenada	+	+	+		-	-	-
	SUBORDINATION	FREE	**outer** concessiva	+	+	-	+	+	-	-
			outer incondicional	+	+	-	+	+	-	(+)
			inner bicondicional	+	+	-	+	+	±	(+)
			inner condicional de antecedente marcado	+	+	-	+	+	±	(+)
			inner condicional de consequente marcado	+	+	-	+	+	+	-
			inner causal	+	+	-	+	+	+	+
			inner of purpose	+	+	-	+	+	+	+
			inner temporal	+	+	-	+	+	+	+
		BOUND	substantiva	+	+		-	±	+	+
			adjectiva	+	+		-	-	-	+
			comparativa	+	+		-	-	-	+
			consecutiva	+	+		-	-	-	+

Table 6. Overview of intersentential connections adapted from Peres & Mascarenhas (2006: 147)

We subscribe Peres & Mascarenhas' (2006: 113) assumption that "a system of well-defined semantic notions, in most cases paralleled by conspicuous syntactic properties, is needed for this (explicative connections) and other kinds of connections to be fully understood." With this proposal, the authors try to demonstrate that there is a close relation between the semantic and syntactic properties, though their criteria are mainly syntactic and the semantic criterion results precarious.

Nevertheless, the combination of syntactic and semantic criteria to define the different types of clause linkage can be quite useful and productive in the process of establishing a typology that intends to be complete, informative and multidisciplinary (or at least *bidisciplinary*).

1.1.3.3. The discursive criteria combined with the syntactic and semantic

There are some studies of processes of clause linkage that argue that it is not possible to define and characterise the clause merely at a sentence level and that the consideration of its discursive function is an important requirement. Thus, in addition to the syntactic and semantic, these proposals add the discursive criteria to establish a more accurate typology of intersentential connections.

The necessity of a discursive approach to the phenomenon of the processes of clause combining was pointed out by Matthiessen and Thompson (1988). Following Halliday's analysis, they distinguish three mechanisms of linking clauses: embedding when the embedded clause is a constituent part of another (restrictive relative clauses and subject and object complements) and clause combining which has two degrees: parataxis and hypotaxis. The former includes coordination, apposition and quoting, whilst the latter includes the non-restrictive relative clauses, clauses of reported speech and clause combinations that express circumstantial relations (temporal, conditional, reason, concessive, purpose, means and manner).

Besides agreeing with Halliday on the two degrees of clause combining, Matthiessen and Thompson (1988) also subscribe his proposal of different types of interdependence in clause combining: *projection vs expansion*, and within *expansion elaboration* (non-restrictive relative clauses) *vs extension* (clause of replacement with *instead of* and of addition with *besides*) *vs enhancement* (clauses that represent circumstantial relations).

Although focusing mainly on the discursive properties of what is traditionally named as adverbial subordination, Matthiessen and Thompson (1988)'s proposal proves that the syntactic and semantic study of processes of connecting clauses is insufficient and that a discursive account of the phenomenon is of crucial importance[22].

Another proposal that attempts at presenting a classification that merges the traditional morphosyntactic with the semantic and discursive criteria is the one of Andersen (1995). The clarification about the criteria is explained by the following quotation.

[22] We will return to this proposal in Chapter 3.

> "Les critères dont je tiendrai compte sont les suivants: introduction de la proposition, dépendance syntaxique (fonction), dépendance sémantique (ici : il y a dépendance sémantique si la proposition isolée a la même contenu sémantique que dans le contexte que lui fournit l'autre proposition) et pragmatique (fonction et valeur discursive) ,… " (Andersen (1995: 45))

The combination of these criteria leads to the following typology.

Introducteur (typologie classique)	**Dépendance sémantique**	**Dépendance syntaxique**	**Typologie morphosémantique**	**Exemples**
1. Subordination (+ conj. de sub.)	+	+	1.1. Subordination simple	Si tu fais cela, je m'en vais.(49)
	-	+	1.2. Subordination coordinative	Je trouve que c'est un très bon acteur.(52)
2. Juxtaposition (-conj.)		-	2.1. Juxtaposition coordinative	_____
	+	+	2.2. Juxtaposition subordinative	Tu fais cela je m'en vais.(46)
	+	-	2.3. Juxtaposition subordinative avec connecteur	Tu fais cela alors je m'en vais.(46)
3. Coordination (+conj. de coord.)	-	-	3.1. Coordination simple	_____
	+	-	3.2. Coordination subordinative	Tu fais cela et je m'en vais.(46)

Table 7. Typology proposed by Andersen (1995: 45)

In this analysis, besides syntactic dependence and semantic dependence, the notion of discursive subordination plays a central role. According to the author, only the context allows us to identify which is the main or secondary clause, departing from a presuppositional criterion by which a secondary proposition is presupposed in relation to the main proposition. This means that a clause that is syntactically subordinate or semantically secondary can be discursively the main proposition. Hence, as to a sentence like *Il est reparti tout de suite parce que il était pressé* ('He has departed so soon because he was in a hurry') (Andersen (1995: 47)), it is correct to state that there is semantic dependence because the morphologic element "parce que" contains a semantic element that expresses the relation between the two propositions. However, one cannot assert that the clause introduced by that element cannot be the main proposition from a discursive point of view because without the context this task becomes very hard. For instance, if the sentence constitutes the answer to a question like *Why has he departed so soon?*, then the information conveyed by the clause of reason constitutes the main proposition and it is dependent of the question. Actually, this analysis follows

Matthiessen and Thompson (1988: 275)'s premise that "in order to characterize what it is that distinguishes a 'subordinate' from a 'main' clause, one must appeal to the discourse context in which the clause in question appears".

In spite of Andersen's intention of creating a precise typology, her proposal lacks a complete and well-grounded systematisation of all the types of mechanisms of clause linkage (not all the types are presented) and a satisfactory explanation of how the combination of the different criteria operates (the role of the discursive criteria in the typology is not clear). Nonetheless, the recognition of the relevance of the discursive function of the clauses constitutes undoubtedly a positive characteristic of this proposal.

1.2. Adverbial subordination

Having described the place occupied by adverbial subordination in the linkage mechanisms that underlie the complex sentences, we will narrow the study to the syntactic and semantic features of this type of clauses in the following sections.

The circumscription of the clauses that constitute the adverbial clauses is done based on syntactic criteria. Nevertheless, the classification of the subtypes of the clauses that compose the adverbial subordination is rooted in semantic criteria. In fact, almost every grammar book analysed describes the semantic and syntactic properties of the adverbial clauses, the exception being Cunha & Cintra (1984) and Bechara (2002).

For the syntactic characterisation of the adverbial clauses, we will use the analysis made by Lobo (2003), because not only it is the most recent work but also the most complete one on adverbial subordination in European Portuguese[23]. As to the semantic description, we will revise the main literature on the subject.

1.2.1. Syntactic description: Lobo (2003)

Lobo (2003) proposes a syntactic-discursive typology for the adverbial clauses in European Portuguese. While the syntactic feature of this typology corresponds to

[23] Since our main aim is a description of the adverbial clauses in semantic and discursive terms, we will not revise the proposals of syntactic analysis of this type of clauses, forwarding all the critical observations to Lobo's work (2003).

certain syntactic behaviours that allow a distinction between two types of adverbial clauses, the discursive feature is related to different discursive properties that justify the syntactic characteristics of the two groups of adverbial clauses.

According to the author, there are the non-peripheral adverbial clauses and the peripheral adverbial clauses. The non-peripheral adverbial clauses (i) can occur in the final position of the sentence without pause; (ii) can undergo a cleft structure; (iii) be under the scope of negation and of focus operators; (iv) occur in answers to *wh*-questions and in disjunctive interrogatives and negatives, whereas the peripheral cannot. Structurally speaking, Lobo (2003) subscribes the traditional analysis according to which the adverbial clauses occupy positions of adjunction. The difference between the non-peripheral and the peripheral is the place of adjunction: the first occupy low positions of adjunction to the verbal phrase (VP or vP) and the second high positions of adjunctions to temporal phrase (TP) or complementizer phrase (CP).

The non-peripheral group includes the following adverbial clauses: of reason (*porque*, 'because'), of purpose (*para (que)*, *a fim de (que)*, 'so (that)'), time (*quando*, 'when'; *antes de,* 'before'; *depois de/ que*, 'after',...), conditional (*se*, 'if'; *caso*, 'in case of'), modal (*como*, 'as') and negative circumstance (*sem que*, 'without'). The peripheral group integrates the following: of reason (*visto que, dado que, uma vez que*, 'since'; *como*, 'as'), of purpose (*de dicto*) (*para (que)*, 'so (that)'), conditional (*se* (*de dicto*), 'if', *desde que,* 'as long as',...), concessive (*embora*, 'though'), concessive-conditional (*mesmo se*, 'even if') and conformative (*conformativa*) (*como*, 'as').

The division just presented grounded on distinct syntactic and semantic behaviours is corroborated by the different discursive function fulfilled by each syntactic type of adverbial clauses. In fact, Lobo (2003: 175) observes (as other authors do, cf. Quirk *et al.* (1985: 1476)) that the syntactic tests that allow the distinction between non-peripheral and peripheral adverbial clauses are related to focusing mechanisms of the subordinate clauses. This means that there is a connection between the structure (or the basic structural position) and the discursive interpretation (or informational structure). Accordingly, the different classes of adverbial clauses would be related to different discursive properties.

Thus, in order to explain why the peripheral adverbial clauses are incompatible with the focusing devices and the non-peripheral are not, the author puts forward the hypothesis that the latter are underspecified as to the discursive features [α

presuppositional] or [α expectable] and the former are specified as [+ presuppositional] or [+ expectable]. This means that the peripheral adverbial clauses carry a presuppositional content and disclose information that is, at least, partially expected or in accordance with the expectations. Notice, however, Lobo adopts a semantic notion of presupposition, which is the most common one. Actually, presupposition (Lobo 2003: 176, n. 46) is used in the sense of information that involves knowledge that is not necessarily linguistically formalised and is taken as an acquired true fact.

The minimal pairs taken from Lobo (2003: 176) and renumbered here exemplify the presuppositional character of the peripheral adverbial clauses (*a*, *a'*) by contrast to the non-peripheral (*b*).

(3) a. Uma vez que o João não pôde vir, acabámos a reunião mais cedo.
Since that the João not could come, ended the meeting more early.
Since João couldn't come, we ended the meeting earlier.

a'. Acabámos a reunião mais cedo, uma vez que o João não pôde vir.
Ended the meeting more early, since that the João not could come.
We ended the meeting earlier, since João couldn't come.

b. Acabámos a reunião mais cedo porque o João não pôde vir.
Ended the meeting more early because the João not could come.
We ended the meeting earlier because João couldn't come.

(4) a. Desde que haja quorum, poderemos dar início à reunião.
As-long-as that be(Subj) quorum, will be-able to-give start to-the meeting.
As long as there is quórum, we will be able to start the meeting.

a'. Poderemos dar início à reunião, desde que haja quorum.
Will be-able to-give start to-the meeting, as-long-as that be(Subj) quorum.
We will be able to start the meeting, as long as there is quorum.

b. Poderemos dar início à reunião se houver quorum.
Will be-able to-give start to-the meeting if be(Subj) quorum.
We will be able to start the meeting if there is quorum.

As claimed by Lobo's proposal, the presuppositional/ expectable feature is codified in the connectors that introduce the adverbial clauses. In the case of peripheral clauses, that feature is lexically codified in the connectors that introduce them and, in the case of the non-peripheral, the connectors are underspecified in the lexicon.

Regardless of their position, the peripheral clauses always convey a knowledge taken as acquired. The same is not true for the non-peripheral clauses and, for that

reason, these clauses have an underspecified presuppositional feature. Actually, the underspecification is solved accordingly to their position, that is, when they occupy the initial position, they carry information that is already known, presupposed, whilst, when they occupy the final position, they assume a different discursive function, that of presenting new information. The following question-answer pairs (Lobo 2003: 179) allow the distinction between the different discursive interpretations of the non-peripheral adverbial clauses.

(5) Quando é que o Pedro desmaiou?
When is that the Pedro fainted?
When did Pedro faint?

a. (O Pedro desmaiou) quando chegou a casa.
(The Pedro fainted) when arrived the home.
(Pedro fainted) when he arrived home.

b. # Quando chegou a casa, o Pedro desmaiou.
When arrived the home, the Pedro fainted.
When he arrived home, Pedro fainted.

(6) O que aconteceu ao Pedro quando chegou a casa?
What happened to-the Pedro when arrived the home?
What happened to Pedro when he arrived home?

a. (Quando chegou a casa, o Pedro) desmaiou.
(When arrived the home, the Pedro) fainted.
(when he arrived home, Pedro) fainted.

b. # O Pedro desmaiou quando chegou a casa.
The Pedro fainted when arrived the home.
Pedro fainted when he arrived home.

(7) O que aconteceu ao Pedro?
What happened to-the Pedro?
What happened to Pedro?

a. ?Quando chegou a casa, (o Pedro) desmaiou.
When arrived the home, (the Pedro) fainted.
When arrived home, (Pedro) fainted.

b. (O Pedro) desmaiou quando chegou a casa.
(The Pedro) fainted when arrived the home.
(Pedro) fainted when he arrived home.

Furthermore, Lobo (2003) observes that, although they can be placed at the beginning or at the end of the sentence, there are non-peripheral adverbial clauses for which one or the other position is more marked. Hence, the more natural position for the time and conditional clauses is the initial one, whereas for the clauses of reason and the clauses of purpose the preferable position is the final.

Lobo's thorough and intricate analysis constitutes a valuable contribution to the understanding of adverbial clauses in European Portuguese. The detailed study of the syntactic behaviour of this type of clauses as well as of the morphological characteristics of the connectors that introduce them combined with the consideration of their discursive functions leads to a well-grounded typology.

From our point of view, one of the strong points of this study is the consideration of the discursive functions of the adverbial clauses because they are quite frequently neglected by the grammars and by many authors and, even when they are taken into account, the explanations strive to give a satisfactory and global analysis. Nevertheless, though Lobo's proposal marks a step towards the right direction, we contend that, in order to give a sound semantic description of the adverbial clauses, it is necessary to go farther and not to limit the discussion of adverbial clauses discursive interpretation to the different readings depending on their position in the sentence and to the presuppositional information.

1.2.2. Semantic description

The agglutinating semantic criterion of the class *adverbial clauses* is the expression of the circumstances of a situation represented by the main clause. Each subtype describes a certain circumstance: temporal, of reason, of purpose, among others, and is named in accordance to the general semantic information it adds to the situation of the main clause.

However, not all authors, and for that matter not all the grammatical traditions, agree on the subtypes of adverbial clauses. Table 2, repeated here as table 7 only with the relevant information concerning adverbial subordination, illustrates this observation.

Mateus *et al* (2003)	**Cunha & Cintra (1994)**	**Bechara (2002)**	**Quirk *et al* (1985)**	**Huddleston & Pullum (2002)**	**Bosque & Demonte (1999)**
Adverbial clauses (‘orações adverbiais’): • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’)	Adverbial clauses (‘orações adverbiais’): • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’) • Consecutive (‘consecutivas’) • Comparative (‘comparativas’) • Of conformity (‘conformativas’) • Proportional (‘proporcionais’)	Adverbial clauses (‘orações adverbiais’): <u>Group one</u>: • Of reason (‘causais’) • Concessive (‘concessivas’) • Conditional (‘condicionais’) • Of purpose (‘finais’) • Time (‘temporais’) • Locative (‘locativas’) • Modal (‘modais’) • Of conformity (‘conformativas’) • Proportional (‘proporcionais’) <u>Group two</u>: • Consecutive (‘consecutivas’) • Comparative (‘comparativas’)	Adverbial clauses: • Of Reason • Concessive • Conditional • Of purpose • Of time • Of place • Contrastive • Of exception • Of similarity and comparison • Of proportion • Of preference • Comment • Comparative of sufficiency and excess	• Content clauses (introduced by a preposition) •Comparative clauses	Adverbial clauses (‘oraciones adverbiales’): • Of reason (‘causales’) • Concessive (‘concesivas’) • Conditional (‘condicionales’) • Of purpose (‘finales’) • Time (‘temporales’) • Consecutive (‘consecutivas’) • Comparative (‘comparativas’)

Table 8. Semantic subtypes of adverbial clauses

This table shows the existing discrepancy between typologies established by different traditions. While the Brazilian tradition integrates in the adverbial subordination the proportional clauses and the clauses of conformity, the Portuguese tradition does not. As a matter of fact, only recently in Mateus *et al.* (2003), were they analysed and described as belonging to the group of structures of comparison and gradation. Even in two grammars with the same language as object of study, there are differences: notice how Bechara (2002) includes the locative and modal clauses in the group of adverbial clauses and how Cunha & Cintra (1984) do not. Quirk *et al*. (1985) incorporates several clauses that are not found in any of the other grammars.

The semantic analysis of adverbial clauses is quite complex and, because of that, it is not consensual. For the purpose of the present study, we will follow Mateus *et al.* (2003) typology because it assembles the clauses that are considered by all the grammars and traditions to be adverbial, that is, the time clauses, clauses of reason, concessive clauses, conditional clauses and clauses of purpose. Since these clauses constitute the object of our analysis, we will revise their semantic treatment in a detailed manner.

1.3. Types of adverbial clauses

In the great majority of the classifications of the adverbial clauses, the different classes may be viewed as a semantic *continuum* or progression.

> "Se trata, pues, de una especie de red conceptual que, partiendo de la noción de temporalidad, se extiende por los de causalidad, condicionalidad y concesividad, es decir, ya se asevere (causales), hipotetice (condicionales) o se niegue (concesivas) la relación implicativa que se establece entre los miembros de que consta." (Flamenco Garcia (1999: 3811)

Nonetheless, from this explanation, it is possible to assume the existence of two large sets of adverbial clauses: the clauses featured by temporal expression and the clauses featured by causality expression. The first set subsumes the traditionally named time clauses whereas the second gathers the clauses of reason, concessive clauses, conditional clauses and clauses of purpose.

The classification just proposed is in keeping with the observation of Galán Rodriguez (1999: 3599) that the clauses from the last set "se organizan según la particular concepción que en cada una de ellas se establece entre la causa y el efecto, pues todas, aunque desde distintas perspectivas, inciden en uno u otro contenido." Therefore, while the clauses of reason, the concessive and conditional clauses are centred on the cause, the clauses of purpose are focused on the effect. Moreover, while the clauses of reason and of purpose consider the process of cause-effect globally, the other two do not.

In the following sections, we will revise the most prominent literature about the different types of adverbial clauses and voice some criticism[24]. Although it is our objective to disclose some semantic problems posed by the descriptions presented in order to address them later, this work does not undertake to solve all the problems.

[24] In the following sections, we use terminology related to tense and aspect whose concepts are explained in chapter 2. We refer namely to aspectual classes and to the verb tenses temporal and aspectual characterisation.

1.3.1. Time clauses

The time clauses, as the other adverbial subordinate clauses, are classified according to the type of circumstance that they express, in this case a temporal circumstance. So, traditionally, the clauses are named time because they relate the time interval of the situation they describe to the time interval of the situation represented by the main clause. Kamp and Reyle (1993) analyse them as locating adverbials precisely because they are used to locate the situation of the main clause in regards to the situation of the subordinate.

Notwithstanding that, temporal relation may vary depending on the choice of the connectors[25] that introduce them, on tense and aspect, on the type of predications that are represented and/ or even on the presence of adverbs and prepositional phrases.

The different analyses of this type of adverbial clauses take into consideration all, some or one of the abovementioned elements, listing the connectors and/ or describing the temporal relations and aspectual features of the represented situations. The semantic characterisation of the time clauses as a class of adverbial clauses is at its greatest extent in works as Kortmann (1997), Quirk *et al.* (1985), Garcia Fernandez (1999), Hengeveld (1998) and Lobo (2003) and to a much lesser extent in Cunha & Cintra (1994), Bechara (2002) and Brito (2003). Then, there are more specialised analyses of certain subtypes of time clauses: the *quando/when*-clauses, the most studied (Carlson (1979) for the generics and atemporal *when*, Declerck (1997; 1998), Partee (1984), Hinrichs (1986), Moens and Steedman (1988), Carecho (1996), Cunha (1999; 2000) and Oliveira (2003), Silvano (2007), Silvano and Cunha (2009), a.o.), the *antes de*/ *before* and *depois de*/ *after*-clauses (Partee (1984), Hinrichs (1986), Lopes and Morais (1999) and Cunha (2004)), the *enquanto/ while*-clauses (Lopes (2002), the *logo que/ as soon as*-clauses (Lopes (1999)[26]) and *desde que/ since* and *até que/ until*-clauses (Móia (1995)), among others.

[25] We choose to use the term 'connectors' to refer to words and expressions that introduce the adverbial clauses, instead of the more traditional term 'conjunctions' because, as we noticed earlier when discussing the proposal of Huddleston & Pullum (2002), there is some discussion concerning the word class of those words or expressions. Furthermore, there are many discrepancies inasmuch as the terminology used: Quirk *et al.* (1985) employs the term 'subordinators' and Bechara (2002) 'transposing' ('transpositores'), just to name two.

[26] Lopes and Morais' (1999) and Lopes' studies (2001; 1999) are not exclusively dedicated to the temporal clauses introduced by these connectors. Instead they investigate the semantic-pragmatic values

Taking as a starting point the accounts developed by all of these researchers, we will present a brief semantic description of some of the subtypes of time clauses.

First, it is necessary to look into the connectors that introduce them[27]. In agreement with Kortmann's proposal (1997), Lobo (2003: 113) defines as 'ideal subordinators'[28] of time clauses in European Portuguese *quando* ('when'), *antes de/que* ('before'), *depois de/que* ('after'), *ao + infinitive*, *desde que* ('since'), *até (que)* ('until, till'), *enquanto* ('while', 'whilst'), *à medida que* ('as'), *sempre que* ('whenever'), *cada vez que* ('each time that'), *todas as vezes que* ('every time that') and *assim que*, *logo que*, *mal* ('as soon as')[29].

From the perspective of the situation that is located, one can assert that these connectors establish different interclausal relations of temporal nature.

- Relations of posteriority: *depois de/que* ('after'); *quando* ('when'); *assim que*, *logo que*, *mal* ('as soon as'); *ao + infinitive*; *desde que* ('since').
- Relations of anteriority: *antes de/que* ('before'); *quando* ('when'); *até (que)* ('until, till').
- Relations of simultaneity: *enquanto* ('while', 'whilst'), *ao + infinitive; quando* ('when'); *à medida que* ('as').
- Simultaneity overlap - *quando* ('when')

In fact, many of the authors (cf. Quirk *et al.* (1985) and Garcia Fernandez (1999), for instance) follow this methodology of analysis of the time clauses.

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of the words *antes* ('before'), *depois* ('after'), *enquanto* ('while') and *logo* ('as soon') in different discursive contexts.

[27] We decided not to conduct a more complete review of the connectors that introduce adverbial clauses because of the meticulous and relevant investigation carried out by Lobo (2003). Thus, we depart from her list of the prototypical adverbial connectors to present a semantic account of the clauses they introduce.

[28] Kortmann (1998: 71-77) specifies the defining criteria of the 'ideal subordinators', that is, the prototypical members of the heterogeneous class of the connectors. For a detailed account of the semantic, syntactic and morphological characteristics of these ideal adverbial subordinators for the European Portuguese, see Lobo (2003: 109-145).

[29] In spite of the fact that Lobo (2003) includes in her list of ideal subordinators *sempre que* ('whenever'), *cada vez que* ('each time that'), *todas as vezes que* ('every time that'), we decided not to constitute them as object of study, because they are structures that involve temporal quantification and, thus, require the consideration of other semantic problems of the domain of quantification that go beyond the scope of the present work. In fact, we will not consider any of the adverbial structures with quantificational readings.

1.3.1.1. Temporal relations of posteriority

As far as time clauses go, in order to represent the main situation as occurring in an posterior time interval, one must make use of a clause introduced by *depois de/que*[30] ('after'), *assim que*, *logo que*, *mal* ('as soon as') and *desde que* ('since')[31], as exemplified by the following sentences.

(8) Depois de ir ao cinema, o João jantou num restaurante encantador.
After go to-the cinema, the João dined in-a restaurant lovely.
After João went to the cinema, he dined in a lovely restaurant.
After going to the cinema, João dined in a lovely restaurant.

(9) Depois que a Maria se licenciou, nunca mais voltei a Oxford.
After that the Maria herself graduated, never again returned to Oxford.
After Maria graduated, I have never returned to Oxford.

(10) Logo que termine o artigo, envio-to.
As soon as that finish(Subj) the article, sent it-to-you.
As soon as I finish the article, I send it to you.

(11) Ao tocar a campainha, os alunos saíram.
Ring the bell, the students left.
When the bell rang, the student left.

(12) O Pedro escreveu dois livros desde que voltou de França.
The Pedro wrote two books since that returned from France.
Peter wrote two books since he returned from France.

Although all the time adverbial clauses locate the situation of the main clause in a posterior time interval to the one where the situation of the subordinate clause occurs, the time span between the two intervals is not the same: in (8)-(9) the time interval between the two situations is longer than in (10) and in (11), and in (12) that information is not even given. Instead, this subordinate clause marks the time interval from which the situation of the matrix clause is valid, that is, it indicates the initial

[30] A *corpus* constituted from *CETEMPúblico* discloses the low frequency of clauses introduced by the connector *depois que* ('after that') in European Portuguese when compared to the ones introduced by *depois de* ('after'). This observation is validated by the investigation carried out by Lopes and Morais (1999). The analysis of the *corpus* of *Referência do Português Contemporâneo*, ('Reference of the Contemporary Portuguese'), oral sub-*corpus* renders the following frequency: *depois de* ('after + Inf') - 10,68% and *depois que* ('after that + Finite form') - 11 cases/ 0,57%. Note that the analysis carried out by the authors take into consideration all occurrences of the word *depois* ('after') even when it is not followed by a clause.

[31] Although the *when*-clauses can also establish a relation of posteriority, and, for that matter, of anteriority and of simultaneity, with the situation of the main clause, we reserve their discussion to the end of this section because of their semantic complexity and heterogeneity.

frontier of the time interval during which the situation *O Pedro escreveu dois livros* occurs.

Nonetheless, as noted by Quirk *et al.* (1985: 1084) and Lopes and Morais (1999: 26), the combination of the connector *depois de/ que* ('after') (and for that matter of the connector *antes de / que* ('before')) with modifiers such as *just*, *right*, *immediately* can denote more proximity between the situations[32].

The sentences with clauses introduced by *depois de/ que* ('after') represent a division of the temporal axle into two parts and locate the situations in a time interval, whose frontiers are not defined (cf. Lopes and Morais (1999)). The situation of the main clause is located from the reference point[33] that corresponds to the final frontier of the time interval of the situation described by the subordinate clause. The temporal sequence that it describes (the situation of the main clause is located after the situation of the subordinate clause) requires a factual reading. In other words, in order to locate a situation as posterior to another, the former must have occurred, as observed by García Fernández (1999: 3192), or must be presented as occurring in the future (Ex. *Depois de o avião aterrar, vou telefonar para casa* ('After the plane lands, I am going to call home')).

The temporal ordering of posteriority may be established in different temporal domains, that is, present, past or future. Quirk *et al.* (1985) conduct a significant study of the different possibilities of combinations of verb tenses in adverbial clauses. In regards to the sentences with *after*-clauses, they identify the following combinations: *After + Simple Present + Future*[34] (cf. (13)), to represent situations in the temporal

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[32] Lopes and Morais (1999: 26) point out that the temporal relation expressed by the *after*-clause is not always of adjacency because there may be another situation occurring in-between, as exemplified in (i) (adapted from Lopes and Morais).

(i) Depois de preenchermos estes impressos, compraremos os outros na papelaria. Mas antes disso temos de passar pelas Finanças para nos certificarmos do que nos falta.
After of fill-in these forms, will-buy the others in-the stationer's. But before that have of go by-the Exchequer to us make-sure of what us be-missing.
After filling in these forms, we will buy the others in the stationer's. But before that we have to go by the Exchequer's to make sure of what we are missing.

[33] The term *reference point* is used here according to Kamp and Reyle (1993)'s proposal, that is, a referent which represents a time or an event and which is already present in the context. For a more detailed explanation, see chapter two, section 2.2.1.2., page 101, and section 2.4.1.7., pages 156-158.

[34] When we are referring to English literature, we will use the name of the verb tenses in English and, when we refer to Portuguese literature, we will use the Portuguese terms. Whenever we consider it relevant we will translate if there is a correspondence between the verb tenses on both languages. However, when, there is not a straightforward correspondence between the verb tenses on the two languages, we will not translate them.

domain of the present; *After* + *Simple Past/ Past Perfective* + *Simple Past* (cf. (14)), to depict situations in the temporal domain of the past; and *After* + *Present Perfect*[35]/ *Simple Present* + *Simple Present* (cf. (15)), to describe habitual situations and, in this case, the temporal domain is not relevant; *After* + *Present Perfective* + *Simple Present*, to locate situations in the temporal domain of the future (cf. (16))[36].

(13) After he arrives, the band will play the National Anthem. (1985: 1008)
Depois ele chega, a banda tocará o Nacional Hino.
*Depois de ele chegar/que ele chegue/*chega, a banda tocará o Hino Nacional.*

(14) We ate our meal after we returned/had returned from the game. (1985: 1018)
Nós comemos nossa refeição depois nós voltámos/ tínhamos voltado do jogo.
*Nós comemos a nossa refeição depois de voltarmos/ termos voltado/ que voltámos/ que *tínhamos voltado do jogo.*

[35] In the tense system of European Portuguese, there is not a verb tense equivalent to the Present Perfect of the English tense system. In English, the Present Perfect is more commonly described as representing a past time with current relevance, that is, it relates a past situation to a present time orientation. In accordance with Quirk *et al.* (1985: 192-193), it is used when there is a state (i), an indefinite event (ii) or an habit (iii) in a period leading to the present.

(i) That house *has been* empty for years.
(ii) *Have* you (ever) *been* to Florence?
(iii) The province *has suffered* from disastrous floods throughout its history.

In European Portuguese, the *Presente* ('Simple Present'), the *Pretérito Perfeito* ('Simple Past') and the *Pretérito Perfeito Composto* ('Simple Present of the verb *ter* + the past participle of the main verb'), respectively, are selected in these contexts. So only in this last use of the English Present Perfect does the Portuguese tense system encounters correspondence to the English tense system as far as this tense is concerned. Notice that, in this last case, there is an iterative reading that does not emerge with states. Nonetheless, the *Pretérito Perfeito Composto* may be found with states extended until the present as it happens with the Present Perfect. In fact, this Portuguese verb tense is possible in constructions such as the one in (i), but without the adverbial phrase *durante anos* ('for years'). It can co-occur with the adverbial *há anos* ('years ago'). For a more developed analysis of this tense, see Oliveira (1995; 2003) and observations in chapter two, pages 131-132.

[36] In regards to complex sentences with time clauses in European Portuguese, besides some remarks in reference to the use of the *Conjuntivo* ('Subjunctive') in Oliveira (2003), or to some specific subtypes of time clauses (cf. Carecho (1996) and Cunha (2000)'s analysis of *when*-clauses), there is not a systematic study on the different combinations of verb tenses and the temporal interpretations that result from those combinations.

(15) Every day we eat our main meal after we have returned/ return from the game. (1985: 1019)
Todo dia nós comemos a nossa principal refeição depois nós temos voltado/ voltamos do jogo.
*Todos os dias comemos a nossa refeição principal depois de voltarmos/ que voltamos/que *temos voltado do jogo.*

(16) After they have left, we can smoke. (1985: 1019)
Depois eles têm saído, nós podemos fumar.
*Depois de eles terem saído/ que eles saiam/que *eles têm saído, podemos fumar.*

Clearly, the list of the possible combinations of verb tenses is not exhaustive and some apply only to English and not to European Portuguese, as one can deduce from the translations. In fact, in its most frequent use, this connector, in European Portuguese, is combined with the preposition *de* ('of') and it is followed by the *Infinitivo* ('Infinitive') (cf. (8)), the *Infinitivo Perfeito* ('the Perfective Infinitive') (cf. (17)) or the *Partícipio Passado* ('Past Participle') (cf. (18)), contrarily to English, where it normally co-occurs with finite forms and, in a lesser scale, with *_ing* forms.

(17) O João foi para a escola depois de ter ido ao médico.
The João went to-the school after of have gone to-the doctor.
João went to school after he had gone to the doctor.

(18) Depois de discutido, o projecto é votado.
After of discussed, the project is voted.
After being discussed, the project is voted.

Although, in all examples presented till now, the temporal ordering is of sequentiality, that is, *depois* ('after') $e_1 > e_2$, there are cases where the situation represented by the main clause applies before the situation portrayed in the subordinate clause, such as the one presented by Quirk *et al.* (1985: 1084).

(19) He was still tired (even) after he had had eight hours of sleep.
Ele estava ainda cansado (mesmo) depois ele tinha tido oito horas de sono.
*Ele estava ainda cansado (mesmo) depois de ele ter dormido/ *que ele tinha domido oito horas.*

The fact that the connector *depois de/ que* ('after') conveys the temporal information of posteriority and, in spite of that, it is possible to encounter data as the one in (19) is proof of the complexity inherent to the treatment of temporal relations. For instance, if we look into the aspectual classes that figure in sentences with clauses introduced by *depois*/ *after*, we recognise the complexity of this process. Cunha (2004: 281-287) realises that the clauses headed by *depois de* ('after') do not behave as the clauses with *antes de* ('before') insofar as the temporal relations between the two situations. He notes that while the latter establish the same type of temporal relation in all contexts, the former do not. Actually, in sentences introduced by *antes de* ('before') the situations of the main clauses are always anterior to the situations described in the subordinate clauses, despite the aspectual class[37], and the temporal localisation of the situations in sentences with *depois de* ('after') differs depending on the type of situations involved. Accordingly, when both situations are events (cf. (20)) or when the main situation is a state and the subordinate is an event (cf. (21)), there is a posteriority relation; when both situations are states (cf. ((22)) and when the main situation is an event and the subordinate is a state (cf. ((23)), then the first is included in the second.

(20) Depois de o João chegar a casa, a Maria fez o almoço. (Cunha (2004: 282))
After of the João arrive at home, the Maria cooked the lunch.
After João arrived home, Maria cooked lunch.

(21) Depois de correr, o João sentiu-se cansado. (2004: 283)
After of run, the João felt-himself tired.
After running, João felt tired.

[37] Notwithstanding, the temporal ordering of the situation is not as straightforward (and crosslinguistic) as it seems. García Fernández (1999: 3190-3191) claims that in a sentence as (i) there may be a partial overlap between the two situations.

(i) María bailó antes de que Pepe cantara.

According to the author, María may have started and finished dancing before Pepe sang or she may have started dancing before Pepe sang and continued dancing while he sang. However, in European Portuguese, this interpretation does not seem to arise in a similar context due to the terminative aspect of the *Pretérito Perfeito* ('Simple Past').

(ii) Maria dançou antes de Pepe cantar/ ter cantado.
Maria danced before of Pepe sing/ have sung.
Maria danced before Pepe sang.

(22) Depois de ser Presidente da República, Jorge Sampaio esteve em Paris. (*Ibidem*)
After of be President of the Republic, Jorge Sampaio was in Paris.
After being President of the Republic, Jorge Sampaio was in Paris.

(23) Depois de ser presidente, Jorge Sampaio inaugurou este monumento. (2004: 284)
After of be president, Jorge Sampaio inaugurated this monument.
After being president, Jorge Sampaio inaugurated this monument.

The existence of two possible temporal readings for the sentences involving clauses with *depois de* /*after* does not imply that a uniform semantic analysis of this type of clauses is not viable. Following Beaver and Condoravdi's (2003) proposal for the English, Silvano and Cunha (2009) analysis not only allows a uniform treatment of clauses introduced by *depois de*, but also of clauses introduced by *antes de*. The authors assume that the relevant reference time is provided, not by the eventuality as a whole, but, instead, by a salient part of the phase structure associated with the situation in the subordinate clause. By default, this will be the initial boundary of the eventuality[38]. Taking into account that, in European Portuguese, clauses with *depois de* and *antes de* select mainly infinitive forms, for statives and processes their initial frontier is the only available boundary, since these aspectual classes do not convey, by themselves, an intrinsic endpoint[39]. The relevant data concerning clauses with *antes de* are easily explained: since the situation represented in the main clause must be (completely) located in an interval prior to the initial boundary of the eventuality in the subordinate clause, a relation of anteriority is always required. Overlap is immediately ruled out, at least as far as situations combined with the *Pretérito Perfeito* are concerned, since they must be wholly located in an interval that precedes the beginning of the eventuality presented in the clause with *antes de*.

In the case of the clauses with *depois de*, when they integrate non-durative situations, i.e., culminations, the only possibility is a successive relation: since duration is irrelevant for this aspectual class, the consideration of its initial boundary does not

[38] Beaver & Condoravdi (2003) propose an analysis for *after* and *before* that includes some assumptions we are making here. In particular, they take the initial part of an eventuality as the evaluation point to the relation performed by the connectors. However, they do not explore extensively the aspectual factors with which Cunha and Silvano (2009) deal.

[39] For those few Portuguese speakers that find some ambiguity with culminated processes, the relevant boundary may be either the initial one or the culmination itself (see Lopes and Morais (1999) for discussion).

affect the localisation of the main clause that must occupy an interval necessarily following the whole culmination. In the case of statives, since the eventuality of the main clause must be located in an interval following the beginning of the stative in the subordinate clause, it can occur either in a period of time entirely posterior to the state, or in a period of time in which the state still holds.

In fact, taking the initial boundary of the state as the relevant reference time for the posteriority relation enables us to account for both the successive and the inclusive readings, due to the possibility of the state to persist in time beyond its reference time (inclusive relation) or to stop before the main situation occurs (successive relation).

The impossibility of a reading of inclusion with processes and culminated processes is explained by the characterisation of the relationship between aspectual classes and reference times in Kamp & Reyle's (1993) proposals. According to the authors, while statives overlap with their reference times, events (including durative ones) must be included in their respective reference points (Rpts). If an event is completely included in its reference time and this is the relevant interval for the temporal relation of posteriority established by the clauses headed by *depois de*, succession is the only possible result for processes and culminated processes: since they cannot occur beyond their reference times, events can never give rise to a relation of inclusion in sentences with these clauses. On the other hand, since states overlap with their reference times, they can extend beyond them: this fact, combined with the left-boundary assumption, explains the emergence of the two different interpretations discussed so far.

One final note concerning the aspectual features of the clauses introduced by *depois de* should be added. Although Cunha (2004) asserts that all aspectual classes are possible, Lopes and Morais (1999) argue that there is an aspectual restriction that emerges when the situation is not a temporary state and has no temporal delimitation. Thus, according to the authors, activities, accomplishments, achievements and temporary states are compatible with clauses with *depois de*, the situation represented by the main clause taking place in the consequent state of the situation described by the subordinate clause. This analysis raises a question related to the exclusion of non-temporary states from the possible aspectual classes in clauses with *depois de*. The example given is with the state *ser alta* ('being tall'), which is signalled as ungrammatical.

(24) *Depois de ser alta, fui baixa. (1999: 31)
After of be tall, was short.
**After being tall, I was short.*

However, if we interchange the predications from the two propositions, the outcome is grammatical.

(25) Depois de ser baixa, fui alta.
After of be short, was tall.
After being short, I was tall.

It is not a question of incompatibility of the non temporary states, but of semantic anomaly caused by the ordering of the states.

Another question that needs to be addressed in the semantic and discursive characterisation of the adverbial clauses is related to the ordering of the clauses. Lopes and Morais (1999) realise that, in the consulted *corpus*, the most frequent orderings are: *depois de/ que* ('after') A + B with a frequency of 7,74% and B + *depois de/ que* ('after') A with a frequency of 4,54%[40], where A represents the time interval of situation that acts as reference point. However, they do not present any semantic or discursive reason for the placement of the subordinate clause in an initial or final position. We will return to this question in chapter 4.

Other adverbial connectors that mark a relation of posteriority in the class of time clauses are *assim que*, *logo que*, *mal* ('as soon as'), used in example (10) and *ao* + *Infinitive*, illustrated in example (11). Like the clauses with *depois de*, these clauses establish a temporal ordering of sequentiality, adding the information that that sequentiality is immediate.

Although the majority of the verb tense combinations indicated in sentences with clauses introduced by *depois de* are also possible for the sentences with *assim que*, *logo que*, *mal* ('as soon as'), some produce ungrammatical results. For instance, in English the sequences *connector* + *Past Perfect* + *Simple Past* and *connector* + *Present Perfect*

[40] These numbers are merely indicative because, as we have already noted, the analysis carried out by the authors take all occurrences of the word *depois* ('after') into consideration even when it is not followed by a clause.

+ *Simple Present*, described as grammatical for clauses with *after*, are not possible for sentences with clauses introduced by *as soon as* sentence like (see (26) and (27)).

(26) *We ate our meal as soon as we had returned from the game.
Nós comemos nossa refeição logo que nós tínhamos voltado do jogo.
**Nós comemos a nossa refeição logo que tínhamos voltado do jogo.*

(27) *Every day we eat our main meal as soon as we have returned from the game.
Todos dias nós comemos nossa refeição logo que nós temos voltado do jogo.
Todos os dias comemos a nossa refeição logo que voltámos/ temos voltado do jogo.

Nevertheless, if we were to replace the Past Perfect and the Present Perfect for the Simple Past and Simple Present, respectively, the results are grammatical.

The other possibilities pointed out by Quirk *et al.* (1985) for the English language are exemplified in the following set of examples:

(28) As soon as he arrives, the band will play the National Anthem. (1985: 1008)
Logo que ele chega, a banda tocará o Nacional Hino.
*Logo que ele chegue/ *chega, a banda tocará o Hino Nacional.*

(29) As soon as I have retired, I will buy a cottage in the country. (1985: 1019)
Logo que eu tenho reformado, eu comprarei uma casa no campo.
Logo que eu me tenha reformado/ tenho reformado, comprarei uma casa de campo.*

Regarding the possible sequence of tenses in European Portuguese for this type of clauses, to our knowledge there is not any study and, as we can observe not all the combinations that work in English work in European Portuguese. The only observation we came across with is related to the conditional reading that surfaces when the Conjuntivo ('Subjunctive') is used (see Lopes (1999: footnote 8)) and to aspectual restrictions of the situations represented in the subordinate clause in Lobo (2003: 87). This author claims that both situations from the subordinate and main clauses are not normally durative and adds that when the situation that follows the connector *assim que* ('as soon as') is a state or a process it denotes its beginning (cf. (30) e (31)).

(30) Assim que estiveres em Paris, telefona-me. (Lobo (2003: 87))
As soon as be(Subj) in Paris, call-me.
As soon as you are in Paris, call me.

(31) Logo que o João esteja em casa, poderemos começar a jantar. (Lobo (2003: 87))
As soon as the João be(Subj)in home, could start to dine.
As soon as João is home, we could start dining.

As to the clauses introduced by *ao* and followed by *Infinitivo* ('Infinitive')[41], they can establish two different temporal orderings, the immediate posteriority and simultaneity duration. This subtype of time clauses has not been object of an especially thorough investigation as far as we know. A survey of the literature reveals a few notes concerning the aspectual restrictions and different semantic readings (cf. García Fernández (1999) and Lobo (2003)). It is said that the stative situations are excluded and that if they are accepted they acquire a causal interpretation as it happens when the situation is represented by the *Infinitivo Perfeito* ('Infinitive Perfect').

The time clause introduced by the connector *desde que* ('since') marks the initial frontier or the limit *a quo* (García Fernández (1999: 3193)) of a larger time interval occupied by a situation or during which a situation occurs. The time interval established by *desde que* and occupied by the situation of the main clause may extend to the moment of utterance, as in (32) and (33), or to a past time (34) (Quirk *et al.* (1985:1084-1085)), in English as well as in European Portuguese (Móia (1999: 302)).

(32) He feels much more relaxed since he left school. (Quirk *et al.* (1985:1084))
Ele sente-se muito mais relaxado desde que abandonou escola.
Ele sente-se muito mais relaxado desde que abandonou a escola.

(33) Since I last saw you, I have given birth to a beautiful daughter. (*Ibidem*)
Desde que eu última vi te, eu tenho dado à-luz uma bonita rapariga.
*Desde que te vi pela última vez, dei/*tenho dado à luz uma bonita rapariga.*

(34) They had not read any books since they left school. (*Ibidem*)
Eles tinham não lido nenhuns livros desde que eles abandonaram escola.
Eles não tinham lido nenhum livro desde que abandonaram a escola.

[41] These time clauses used in European Portuguese and Castilian (i), but not in English.
(i) Al terminar la partitura, se la mandó a Toscanini.(García Fernández 1999: 3187)
To end the score, it it send to Toscanini.
When the score was finished, it was sent to Toscanini.

The examples above illustrate the most frequent combination in the clauses with *desde que* ('since') as far as aspectual classes are concerned. In fact, achievements are very common. Nonetheless, the other aspectual classes are doable and, when this happens, the relevant time interval is the initial frontier, in the case of the states (cf. (35)) and activities (cf. (36)), and the final frontier, in the case of the accomplishments (cf. (37)). According to Móia (1994: 356), they are subjected to a similar process of aspectual commutation being (re)interpreted as achievements. There are also contexts where the connector *desde que* ('since') co-occurs with habitual states as in (cf. (38)).

(35) A Ana sente-se sozinha desde que o João vive em Londres.
The Ana feels-herself lonely since the João lives in London.
Ana feels lonely since João lives in London.

(36) O João tem menos resistência desde que fuma.
The João has less stamina since that smokes.
João has less stamina since he smokes.

(37) A Maria viaja muito desde que escreveu o romance.
The Maria travels a-lot since that wrote the novel.
Maria travels a lot since she wrote the novel.

(38) Tiene medo desde que María se desmaya tan a menudo. (García Fernández (1999: 3196))
Tem medo desde que Maria se desmaia tão frequentemente.
Tem medo desde que a Maria desmaia tão frequentemente.
She/ He is scared since Maria faints so often.

As to the situations of the matrix clause, although they are preferentially durative, they can be non-durative leading up to different temporal relations. While, for instance in (32), the state *feeling much more relaxed* is durative and, thus, stretches up to the moment of utterance, in (33), the achievement is punctual and is included in the time interval whose lower bound is the time interval expressed by the subordinate clause and whose upper bound is the moment of utterance. The first context illustrates a durative interpretation and the second an inclusive interpretation[42].

In accordance with Quirk *et al.*'s analysis (1985), as far as tense is concerned, the two most frequent alternatives are the Simple Past, when the clause represents a

[42] For a more detailed account of the two types readings with *desde* ('since') and *até* ('until') adverbials, see Móia (1994; 1999).

point of time that corresponds to the lower bound of the situation of the main clause (cf. (39)), and the Present Perfect, when the clause describes a period of time which stretches up to the moment of utterance (cf. (40)).

(39) Since I saw her last, she has dyed her hair. (1985: 1017)
Desde eu vi a última-vez, ela tem pintado dela cabelo.
Desde que eu a vi pela última vez, ela pintou o cabelo.

(40) Since I have been here, I haven't left my seat. (1985: 1018)
Desde eu tenho estado aqui, eu tenho-não abandonado meu lugar.
Desde que estou/ ??tenho estado aqui, não abandonei/ ??tenho abandonado o meu lugar.

When, however, the intention is to represent a past period of time, the *since*-clause demands the Simple Past or the Past Perfect.

(41) Since he had known/ knew her, she had been/ was a journalist.
Desde ele tinha conhecido/ conheceu a-ela, ela tinha sido/ era uma jornalista.
*Desde que ele a conheceu/ *tinha conhecido, ela era/ *tinha sido uma jornalista.*

For the European Portuguese, the translations reveal that not all the verb tenses that are grammatical in English are possible. The Present Perfect, that can be ambiguous between a durative and non-durative interpretation in English, is interchangeable with the *Pretérito Perfeito Composto* only if we interpret it as depicting durative situations. What's more, even when this is the case, the Present Perfect's counterpart in European Portuguese can be the Simple Present. The Past Perfect, which corresponds to the *Pretérito-mais-que-perfeito Composto* in European Portuguese, is ruled out from the Portuguese version in example (41).

In the matrix clauses in English, the Present Perfect is used more frequently when the situations have as it upper bound the utterance time (cf. (42)), though informally the Simple Past can also be used (cf. (43)).

(42) I have lost ten pounds since I started swimming. (1985: 1015)
Eu tenho perdido dez libras desde que eu comecei nadando.
*Eu perdi/ *tenho perdido dez libras desde que comecei a nadar.*

(43) I lost ten pounds since I started swimming. (1985: 1016)
Eu perdi dez libras desde que eu comecei nadando.
Eu perdi dez libras desde que comecei a nadar.

The exceptions to the use of the Present Perfect in the main clause are limited to the following contexts: verbs used statively as *be* and *seem* can surface in non-perfective forms (cf. (44)); modal auxiliaries as *can* and *could* take non-perfective forms (cf. (45)); habitual situations are described in the Simple Present and Present Progressive (cf. (46)); the situation located in a distant time represented in the Past Perfect or the Simple Past (cf. (47)); the situation located in a future time or a future time in the past makes use of the modal perfective *will have* (cf. (48)) and *would have*, respectively.

(44) Since Pat left, it seems dull here. (1985: 1016)
Desde Pat foi-embora, ele parece aborrecido aqui.
Desde que a Pat foi embora, isto está aborrecido.

(45) Since my teeth were pulled out I can't eat anything solid. (Ibidem)
Desde meus dentes foram arrancados fora eu posso-não comer nada sólido.
Desde que os dentes foram arrancados não posso comer nada sólido.

(46) Since we bought that car we go camping every weekend. (1985: 1017)
Desde nós comprámos aquele carro nós vamos acampar todos fins-de-semana.
Desde que comprámos aquele carro vamos acampar todos fins-de-semana.

(47) Since the country has achieved independence, it had revised its constitution twice. (*Ibidem*)
Desde o país tem conseguido independência, ele tinha revisto a-sua constituição duas-vezes.
*Desde que o país conseguiu a independência, *tinha revisto/ reviu a sua constituição duas vezes.*

(48) If the promotion is confirmed, you will have been promoted three times since you joined the company. (*Ibidem*)
Se a promoção é confirmada, tu terás sido promovido três vezes desde tu juntaste a companhia.
Se a promoção é confirmada, tu terás sido promovido três vezes desde que te juntaste à companhia.

In these contexts, in European Portuguese, one of the equivalent verb tenses of the Present Perfect, the *Pretérito Perfeito Composto*, can only be selected in this context when the situation is a state (cf. (49)) or when there is an iterative reading (cf. (50)), otherwise the *Pretérito Perfeito* ('Simple Past') is chosen. As to the other verb tenses, the only one that renders ungrammatical results is the Portuguese counterpart of the Past Perfect, the *Pretérito-mais-que-perfeito*, (cf. (47)).

(49) A Ana tem estado doente desde que começou o Inverno.
The Ana has been sick since that started the Winter.
Ana has been sick since the winter started.

(50) A Maria tem comido muitos chocolates desde que vive na Bélgica.
The Maria has eaten many chocolates since that lives in Belgium.
Maria has eaten many chocolates since she lives/ has been living in Belgium.

1.3.1.2. Temporal relations of anteriority

The time clauses that locate the situations of the main clauses in an anterior time interval are most frequently introduced by the connectors *antes de/que* ('before') and *até (que)* ('until, till'), as exemplified from (51) to (54).

(51) A Maria foi para casa antes que chovesse.
The Maria went to home before that rain(Subj).
Maria went home before it rained.

(52) Antes de ir para casa, a Maria foi ao supermercado.
Before of go to home, the Maria went to-the supermarket.
*Before going home/ *to go home, Maria went to the supermarket.*

(53) A Maria não saiu de casa até que a chuva parasse.
The Maria not left from home until that the rain stop(Subj).
Maria didn't leave home until the rain stopped.

(54) A Maria não saiu de casa até a chuva parar.
The Maria not left from home until the rain stop.
Maria didn't leave home until the rain stopped.

Like *depois de/ que* ('after'), *antes de/ que*[43] ('before') presupposes a division of the time axle into two halves from a reference point. This connector locates the situations in a time interval of undefined frontiers located before that reference point, according to Lopes and Morais (1999: 4). However, it does not provide a precise and autonomous localisation of the time interval to which it refers.

We will consider as Cunha and Silvano (2009) that the *antes de*-clauses locate the situations of the main clause and that the relevant time interval for that localisation is the initial boundary of the subordinate situation. Thus, the situation represented in the main clause is completely located in an interval prior to the initial boundary of the eventuality in the subordinate clause and the temporal relation is always of anteriority, regardless of the aspectual class (cf. (55)-(59) from Cunha and Silvano (2009)).

(55) Depois de fechar a loja, a Teresa arrumou os livros. (culmination)
After of close the shop, the Teresa arranged the books.
After closing the shop, Teresa arranged the books

(56) Depois de escrever o artigo, o Luís comeu um chocolate. (culminated process)
After of write the paper, the Luís ate a chocolate.
After writing the paper, Luís ate a chocolate.

(57) Depois de viajar, o João encontrou-se com a Maria. (process)
After of travel, the João met with the Maria.
After travelling, João met with Maria.

(58) Depois de viver em Londres, o Pedro trabalhou na IBM. (state)
After of live in London, the Pedro work in-the IBM.
After living in London, Pedro worked for IBM.

(59) Depois de ser futobolista, o Rui estudou filosofia. (state)
After of be football-player, the Rui studied philosophy.
After being a football player, Rui studied philosophy.

In opposition to the *depois de*-clauses, the *antes*-clauses may have a non-factual reading[44], that is, the situations they represent may not happen, and this interpretation

[43] Like *depois que* ('after' + finite form), *antes que* ('before' + finite form) is not very used in European Portuguese.

[44] García Fernández (1999: 3190-3191) distinguishes between the factual, the non-factual and the contrafactual readings of *before*-clauses, exemplifying with the following sentences:
(i) Juan se fue de la fiesta antes de pegarle a nadie. (1999: 3190)
(ii) Juan passará hambre antes que pedirle dinero al monstruo de su tío. (*Ibidem*)
(iii) Lloverán quesos de bola antes de que Pedro apruebe las oposiciones. (*Ibidem*)

surfaces more often with finite constructions where, besides the unreality of the situation, it is implicit an intentionality, as exemplified by Lobo (2003: 79-80).

(60) Arruma os brinquedos antes que o pai se zangue!
Tidy-away the toys before that the father himself get-mad(Subj)!
Tidy the toys away before dad gets mad!

(61) *Arruma os brinquedos antes de o pai se zangar!
Tidy-away the toys before of the father himself get-mad!
*Tidy the toys away before dad gets/ *get mad!*

Moreover, Lopes and Morais (1999: 9) realise that, when the verb tense of the main clause is past, while *antes de* ('before' + Infinitive) activates a presupposition that the situation took place, *antes que* ('before' + Subjunctive) cancels that presupposition and it only represents the possibility of the situation happening.

(62) (...) viemos embora antes que aquilo acabasse. (1999: 8)
(...) *came away before that that end(Subj).*
(...) *we came before that ended/* end.*

(63) (...) viemos embora antes de aquilo acabar. (1999: 9)
(...) *came away before of that end(Inf).*
(...) *we came before that ended/ end.*

In English, the non-factual reading is also possible when the verb tense of the subordinate clause is the Past Perfect like in (64) and (65), taken from Quirk *et al.* (1985: 1020).

(64) I saw him before he had seen me.
Eu vi o antes ele tinha visto me.
*Eu vi-o antes de ele me ter visto/ que ele me tivesse visto/ *que ele me tinha visto.*

(65) I had seen him before he had seen me.
Eu tinha visto o antes ele tinha visto me.
*Eu tinha-o visto antes de ele me ter visto/ que ele me tivesse visto/ * que ele me tinha visto.*

For the European Portuguese, the structure *antes de* + *Infinitivo* ('before' + 'Infinitive') is more common and, when the structure *antes que* + *Conjuntivo* ('before' + 'Subjunctive') is selected, it is always followed by the Subjunctive (in these particular

cases, by the *Pretérito Perfeito Composto*. Apart from this, most of the possible tense combinations identified for the sentences with *depois de*-clauses can be also applied to those with *antes de*-clauses.

The second connector, mentioned earlier, which establishes a relation of anteriority between the situations, *até (que)* ('until, till'), is semantically the dual of *desde que* ('since'), insofar as it marks a temporal boundary for the localisation of the situation of the subordinate clause. However, contrarily to *desde que* ('since') that establishes the initial boundary, *até (que)* ('until, till') indicates the final limit of the time interval where the subordinate clause is located. So, in examples (53) and (54), repeated here as (66) and (67), the situation of A *Maria não saiu de casa* is located in a time interval whose final frontier is expressed by the subordinate clause, that is, *a chuva parar*.

(66) A Maria não saiu de casa até que a chuva parasse.
The Maria not left from home until that the rain stopped.
Maria didn't leave home until the rain stopped.

(67) A Maria não saiu de casa até a chuva parar.
The Maria not left from home until the rain stop.
Maria didn't leave home until the rain stopped.

In terms of verb tenses, there is not a study that analyses in a systematic way the different possibilities. As to the aspectual features, the remarks are also few: authors as Quirk *et al*. (1985), Garcia Fernandez (1999), Brito (2003), Lobo (2003) and Móia (1994; 1999), for example, observe that the connector *até (que)* ('until, till') demands the situation of the main clause to be durative[45] and it presupposes the truth of the proposition it introduces. Regarding the aspectual class of the situations of the subordinate clause, the analysis given for the clauses headed by *desde que* ('since') is extensible to these clauses.

Besides these considerations, there is another related to the semantic link between the predications in sentences with *até que*-clauses. Quirk *et al.* (1985: 1083) declare that, in addition to expressing time, this type of clauses can also express purpose and result, simultaneously, whenever the two clause subjects are coreferential (cf. (68)).

[45] Although the situation described by the main clause in examples (64) and (65), *Maria sair de casa*, is not in its origin durative the operator of negation allows to 'perspectivise' this non-durative situation as a durative situation. For an expanded explanation of this process, see Cunha (2003; 2007).

(68) Larry polished the table until he could see his face in it.
Larry poliu a mesa até ele conseguiu ver sua cara nela.
Larry poliu a mesa até conseguir ver a sua cara nela.

1.3.1.3. Temporal relations of simultaneity

The time clauses can represent a situation as simultaneous to another situation when they are introduced by the connector *enquanto*[46] ('while', 'whilst'), *à medida que* ('as') and *ao* + *Infinitive* ('Infinitivo')[47], exemplified in (69)–(71).

(69) Enquanto o bebé dorme, a Maria lava a roupa.
While the baby sleeps, the Maria washes the cloth.
While the baby sleeps, Maria washes the clothes.

(70) À medida que o João terminava os quadros, a Maria organizava a exposição.
As that the João finished the paintings, the Maria organised the exhibition.
As João finished the paintings, Maria organised the exhibition.

(71) Ao sair do supermercado, a Maria encontrou uma velha amiga.
To leave from-the supermarket, the Maria found an old friend.
*Leaving/ *to leave the supermarket, Maria found an old friend.*

The temporal clauses with the connector *enquanto* ('while', 'whilst')[48] represent a situation that includes (cf. (72)) or overlaps (cf.(69)) with the situation described by the main clause, depending on the verb tenses combinations, on the aspectual class of the eventualities or/ and on the presence of adverbials.

[46] The connector *enquanto* ('while', 'whilst') can also have a contrastive meaning. According to Lopes (2001), the temporal value is more frequent in *the Corpus de Referência do Português Contemporâneo* ('Corpus of Reference of the Contemporary Portuguese') with 158 occurrences (44,3%) in the oral *subcorpus* and 151 occurrences (48,6%) in the written *subcorpus*.
[47] As shown in section 1.3.1.1.1., sentences with *ao* + *Infinitive* can also have a posteriority temporal interpretation in addition to the inclusion reading (cf. *Ao tocar a campainha, os alunos saíram*.)
[48] Lobo (2003: 84-85) compares the time clauses preceded by *enquanto* ('while') to the adverbials *durante x tempo* ('during X time') and *durante x tempo em que* ('during x time that...'), uttering that in some cases they can be replaced by the former and, in others, they can only be replaced by the latter.

(72) Enquanto o bebé dormia, a Maria lavou a roupa.
While the baby slept, the Maria washed the cloth.
While the baby slept, Maria washed the clothes.

Starting our revision of this type of clauses by the aspectual characteristics, we should register that in most cases it is required that the situation of the subordinate clause be durative. Lopes (2001: 372-373) claims that states (cf. (73)), activities (cf. (74)), accomplishments (cf. (75)) and achievements (cf. (77) and (78)) are viable candidates for the *enquanto*-clauses. Nonetheless, these last two undergo an aspectual shift, since, in the first case, it is only the preparatory process that is relevant and, in the second case, they are interpreted as iterative or as being the preparatory process[49].

(73) Enquanto vivi em Coimbra, estive sempre acompanhada. (Lopes (2001: 372))
While lived in Coimbra, was always accompanied.
While I lived in Coimbra, I was always accompanied.

(74) Enquanto fumei, não tive problemas de saúde. (Lopes (2001: 373))
While smoked, not had problems of health.
While I smoked, I didn't have health problems.

(75) Enquanto o João escreveu o romance, a Ana desapareceu. (*Ibidem*)
While the João wrote the novel, the Ana disappeared.
While João wrote the novel, Ana disappeared.

(76) *Enquanto o João atingiu a meta, a Ana desmaiou. (*Ibidem*)
While the João reached the winning-post, the Ana fainted.
**While João reached the winning post, Ana fainted.*

(77) Enquanto o João bateu à porta, o cão desapareceu. (*Ibidem*)
While the João knocked on-the door, the dog disappeared.
While João knocked on the door, the dog disappeared.

(78) Juan llegó mientras Carlos salía. (García Fernández (1999: 3185))
O Juan chegou enquanto o Carlos saía.
The Juan arrived while the Carlos left.
Juan arrived while Carlos left.

[49] Whilst Lopes (2001) argues that achievements in the clauses headed by the *enquanto* ('while') only produce grammatical results when they are atelic and have an iterative interpretation, García Fernández (1999) contends that the acceptance of these types of situations depends only on the existence of a preparatory process as in (78), conveyed, in this particular case, by the *Pretérito Imperfeito* ('Simple Past Imperfective'). However, these types of situations are also possible with the *Pretérito Perfeito* ('Simple Past'), with a non-iterative interpretation, as shown in (i).

(i) Enquanto a Maria saiu, o João leu o jornal.
While Maria left, João read the newspaper.

In this case, the situation of the main clause occurs in the consequent state of the situation *Maria sair*.

The observation of the data reveals that, whenever the situation of the matrix clause is durative, as in (73) and (74), it overlaps with the situation of the subordinate clause and, whenever it is non-durative, as in (75), (77) and (78), it is included.

The research of the verb tenses that are compatible with *enquanto/ while*-clauses is solely undertaken by Quirk *et al.* (1985), as far as we know, and it is far from being extensive. The only verb tense that is explicitly said to be compatible with this type of clauses is the Simple Present (cf. (79)). There are, however, examples with verb tenses such as the Simple Past (cf. (80)), the gerund (cf. (81)) and the past participle (cf. (82)).

(79) While I am away, the children will look after the house. (1985: 1008)
Enquanto eu estou fora, as crianças cuidarão da casa.
Enquanto eu estou fora, as crianças cuidarão da casa.

(80) He looked after the dog while I was in vacation. (1985: 1070)
Ele cuidou do cão enquanto eu estava de férias.
Ele cuidou do cão enquanto eu estava de férias.

(81) He wrote his greatest novel while working on a freighter. (1985: 1078)
Ele escreveu o seu melhor romance enquanto trabalhando num cargueiro.
Ele escreveu o seu melhor romance enquanto trabalhava num cargueiro.

(82) He slept while stretched out on the floor. (1985: 1078)
Ele dormia enquanto esticado no chão.
Ele dormia enquanto estava esticado no chão.

The translations disclose that the *Presente* ('Simple Present') as well as the *Pretérito Perfeito* ('Simple Past') are feasible in European Portuguese, but not the *Gerúndio* ('gerund') or the *Particípio Passado* ('past participle').

Besides the temporal relation of inclusion and overlapping, the clause headed by *enquanto* ('while') may determine a different temporal link, at least in European Portuguese. In fact, it can establish an upper bound for the situation represented by the main clause, acting similarly to *até que* ('until').

(83) Não vou de férias enquanto não acabar a tese.
Not go on holiday while not finish the thesis.
I won't go on holiday until I finish the thesis.

Another connector that expresses a relation of simultaneity is *à medida que* ('as'), although many authors consider them to be part of a different group of adverbial

clauses, namely the clauses of proportion and comparative clauses. Still, their semantic meaning justifies their integration in the group of the time clauses.

The clauses under scrutiny convey a progressive intensification or shift of the situations involved which occur in the same time interval. Due to these features, they are most frequently built with durative situations or, whenever non-durative situations come about, the relevant time interval is the one correspondent to the preparatory process (cf. (84)).

(84) À medida que atingia a meta, o corredor sentia-se mais ansioso.
As reached the winning-post, the runner felt-himself more anxious.
As he reached the winning post, the runner felt more anxious.

As to the verb tenses, the choices explicitly presented by Quirk *et al.* (1985) are reduced to the Simple Present, but there are examples with the Simple Past. As to the European Portuguese, though the *Presente* seems viable, the *Pretérito Perfeito* is only possible when it is imperfective ('Pretérito Imperfeito').

(85) As he arrives, the band will play the National Anthem. (1985: 1008)
À medida que ele chega, a banda tocará o Nacional Hino.
À medida que ele chega, a banda tocará o Hino Nacional.

(86) As I drove away, I saw them waving goodbye. (1985. 1078)
À medida que eu guiava longe, eu vi eles acenando adeus.
À medida que me afastava, via-os a dizer adeus.

In retrospect, the time clauses have been widely studied from a semantic point of view. However, the investigation carried out has focused mainly on the semantic properties of the connectors that introduce them and on their role as locating adverbials and to a lesser extent on their temporal and aspectual properties. Moreover, very little or nothing has been said as to the discursive relations that they may establish with the situations represented by the main clauses.

1.3.1.4. The *when*-clauses

In the present work, we are only concerned with the *when*-clauses[50] that function as a time adverbial. In this class, we are only concerned with the clauses that locate the situation of the main clause (cf. (87) and (88)), and not with the ones with an habitual or quantificational interpretation (cf. (89)), because they involve other semantic questions that go beyond the scope of this work, as stated before. As it is clear from the examples, the *when*-clauses we will investigate can occupy the initial or final position.

(87) O João entrou quando a Maria saiu.
The João entered when the Maria left.
João entered when Maria left.

(88) Quando a Maria saiu, o João entrou.
When the Maria left, the João entered.
When Maria left, João entered.

(89) A Maria deita-se tarde quando tem exames.
The Maria goes to bed late when has exams.
Maria goes to bed late when she has exams.

[50] In the line of other authors, Declerck (1997; 2010) upholds the claim that *when* is a free relative which means 'at the time at which' and offers several synchronic and diachronic arguments to sustain this assertion. This description of *when* would explain the variety as well as the temporal structure (at least in Declerck's framework) of *when*-clauses.

For the European Portuguese, Móia (2001) also argue that *when*-clauses should be treated as relative clauses and deploys five sound syntactic and semantic arguments to prove the validity of this analysis. Although we agree that *quando* ('when') does exhibit in some structures the same behaviour as some relative pronouns, namely when it occurs in nominal argumental positions, as in (i), or when it modifies a temporal expression, we are not convinced that the structure in (87) and in the example presented by Móia (2001: 349), given in (ii), correspond to such cases.

(i) Este quadro data de quando Picasso viveu em Barcelona. (Móia 2000: 211)
This painting dates from when Picasso lived in Barcelona.
(ii) A ponte estremeceu quando o comboio passou por ela.
The bridge shook when the train crossed it.

Notice that while the *when*-clause in (i) cannot be fronted, the one in (ii) can, contrarily to what happens with the relative clauses. Even if we still consider the possibility of relative clause with *when* of being anteposed, the question of which its antecedent is raises some problems.

Declerck (1997; 2010) analyses the *when*-clauses such as (ii) as headless relative clauses or free relative clauses arguing that there is an implicit prepositional phrase ('at the time') or adverb ('then') on which they are dependent. He refers to the *when*-clauses as 'adverbial relative clause', at least as far as its syntactic function is concerned.

However, since our investigation is semantic, we will not develop this issue further and will assume the widespread analysis in which the *when*-clauses are syntactically taken as adverbial clauses since they exhibit the same behaviour as other clauses that belong to the same group.

The *when*-clauses are undoubtedly the most studied structures in the group of the time clauses. They have been the object of many studies because they raise relevant questions not only in terms of their discursive role, but also in terms of temporal relations with the main clause.

Regarding the first point, Partee (1984) and Hinrichs (1986) argue that in a simple linear narrative the main function of a *when*-clause is to supply a new reference time for the situation of the main clause. The authors, however, disagree on the location of the reference point. While Partee (1984) claims that the reference point is 'just after' the event and, so, the *when*-clauses must always be eventive[51], Hinrichs (1986) argues that the reference point is located inside the situations, whenever they are accomplishments or achievements, and in the proximity, whenever they are states or activities.

These proposals make more sense if they are applied to sentences headed by the *when*-clause because in this order this is the first to be processed. The fact, disputed by Hinrichs (1984), that, despite the order of the clauses, the *when*-clause is always interpreted before, is far from being consensual. Partee (1986) does not agree and limits her study to the fronted *when*-clauses. Therefore, this constitutes a problem not only for the analysis of *when*-clauses, but for the other time clauses, that requires further investigation.

Actually, Moens (1987) observes precisely that such analysis based on the reference point does not provide an explanation for all the problems involving *when*-clauses. One of those problems is related to the different temporal relations between the situations one can encounter in sentences with *when*-clauses. Like the other temporal connectors, *quando* ('when') introduces a clause that locates the situation described by the main clause, but, contrarily to the majority of the other connectors, does not convey any kind of information as to the type of temporal relation between the two situations. In fact, as observed by Moens and Steedman (1988: 15), the temporal relation between the situations of the *when*-clause and the main clause can be of anteriority (cf. (90)), of overlapping (cf. (91)) and of posteriority (cf. (92)), as shown by their own examples.

[51] According to Partee (1984), if the *when*-clause has a durative situation it must be interpreted as "inchoative". Nevertheless, some pages ahead she gives an example with a stative *when*-clause which cannot be interpreted in either way and yet it still introduces a reference point located "just after" *the room was empty*.

(i) People began to leave. When the room was empty, the janitors came in. (Partee 1984: 262)

(90) When they built the 39th bridge a local architect drew up the plans.

(91) When they built the 39th bridge they used the best materials.

(92) When they built the 39th bridge they solved most of their traffic problems.

(Moens and Steedman (1988: 15))

According to Moens and Steedman (1988), a more complex perception of meaning representation is required. First, it is mandatory to associate the structure of event to the aspectual nucleus, that is, conceive the event as integrating preparatory process, culmination and consequent state. Secondly, it is necessary to consider the existence of consequentiality or contingent relations between the events in the subordinate clause and the main clause such as causality and enablement. The terms consequentiality and contingency are used to describe the dependencies that can be established between the events and, in order to infer these dependencies, the notion of nucleus is central. These contingent relations lead to different temporal relations.

The application of these principles to examples (90)-(92) renders the following analysis: the *when*-clauses represent a nucleus (as it should always be) and the main clauses specify the different phases. In (90), the main clause describes a situation that is located in the preparatory process of the beginning of the construction, in (91), the main clause represents a situation that occurs in the preparatory process of actually building the bridge and, in (92), the situation of the main clause is in the consequent state.

Naturally, such an explanation refers only to contexts where there is an event in the main clause. If there is a state, then it functions as a background against which the situation of the *when*-clause is located. The localisation of the state in relation to the situation of the subordinate clause depends on the type of predications described in both clauses. As to states in the *when*-clauses, in Moens' (1987) proposal, either they are interpreted as events with an inchoative reading (as suggested by Partee (1984)) or maintain a stative interpretation and establish a simultaneous relation with the other situation.

In Sandström's (1993)[52] perspective, Moens' (1987) and Moens and Steedman's (1988) proposals of the *when*-clause are not without problems, the most important one being the description of *when* as an aspectual operator that commutes all the events into

[52] As Partee (1984), Sandström (1993) elects as object of scrutiny the sentences with *when*-clause in the initial position.

culminated processes. The author shows that not all the events appearing in the subordinate clause can be interpreted as having preparatory processes or consequent states. That is why she suggests that the interpretation of these sentences is dependent of two types of relations, of subevent and consequentiality, and not of the aspectual features. The relation of subevent occurs when the event of the main clause is part of the event of the *when*-clause (cf. (93)). The relation of consequentiality is divided into three types: causality when the situation expresses the result of a cause described by the subordinate clause (cf. (94)), response when the main situation is the reaction to the subordinate situation (cf. (95)) and enablement when the situation of the *when*-clause enables the second situation, that is, makes it possible (cf. (96)).

(93) When he cooked the meat, he put salt. (1993: 63)

(94) When Sue put poison in her husband's whisky, he died. (1993: 63)

(95) When he smiled at me, he began to cry. (1993: 198)

(96) When it came my turn, I drank. (1993: 198)

Carecho (1996)[53] subscribes Sandström's (1993) criticism of Moens' (1987) and Moens and Steedman's (1988) portray of *quando* ('when') as an aspectual operator that commutes every event into a culminated process and adopts her terminology of types of relations. More accurately, Carecho (1996) combines the main theoretical principles of Moens' (1987) and Moens and Steedman's (1988) analysis with those of Sandström's (1993), of the representation mechanisms of the DRT (Kamp & Reyle (1993)) and of the verb tenses for the European Portuguese of Peres (1993). Firstly, in order to avoid the description of two nuclei, and, thus, simplify the representation of this type of clauses, she proposes that the structure of the event in a *quando*-clause depends on the aspectual class of that event. This means that, for example, in *quando*-clauses with culminated processes the situations of the main clause can be located in the event itself, in the preparatory process or in the consequent state and with culminations the situations can be located in the consequent state and in the culmination[54]. Secondly, she

[53] In addition to this type of *when*-clauses, Carecho (1996) also studies the quantificational and atemporal *when*-clauses.

[54] Regarding culminations, Carecho (1996: 57) admits, however, that these can locate the situation of the main clause in the culminations' preparatory phase, whenever the situation of the main clause is a stative predication of the type *estiveram no local* ('were in the site') in the following sentence:

makes use of the concepts of subevent, distinguishing between partial, which are located in the event itself, and whole events, and of the concepts of consequentiality relations, such as response, for example, to explain the temporal succession when the event of the subordinate clause is a point (cf. (97)).

(97) Quando a pedra bateu no vidro ela veio à janela. (1996: 45)
When the rock knocked on-the glass she came to-the window.
When the rock knocked on the glass she came to the window.

Regarding some examples with situations linked by other types of relations that are not predicted either by Moens (1987) and Moens and Steedman's (1988) or by Sandström's (1993), although it is not possible to select a part of the structure of the event of the subordinate clause to locate the situation of the main clause, Carecho (1996) argues that the same analysis can be applied, which seems odd. According to her, the only difference lays on the role of each situation in relation to the other: a clause describes a situation that interferes or may interfere in the normal course of the other situation (cf. 98).

(98) Quando finalmente conseguiu arranjar emprego, chamaram-no para a tropa. (1996: 47)
When finally was-able to find job, called-up-him for the military-service.
When finally he was able to find a job, he was called up for military service.

However, an analysis that stipulates that the situation of the main situation always occurs in the complex structure of the event of the subordinate clause does not depict correctly the data, namely (98). Therefore, further stipulations are required.

Despite considering that the contingent and consequentiality relations play a relevant role in the interpretation of the *quando*-clauses, Carecho's proposal of representation in DRT framework does not include them. As it happens, whenever the situation of the subordinate clause is eventive, even the temporal relations between the situations are not explicitly represented because she chooses to represent the whole structure (preparatory process, the event itself and consequent state, or the event itself

(i) Quando a bomba explodiu eles estiveram no local.
When the bomb exploded they were in the site.

and consequent state, depending on the aspectual class of the predicate) in which the situation of the main clause can be located. Therefore, she introduces the condition of a plural entity, without specifying the exact location of the situation of the main clause and leaving that task to the world knowledge or/ and to the consequentiality relations (or other types of relations).

Besides the occurrence of two events, the combinations of aspectual classes observed by the author are diverse: from *quando* + event + state to *quando* + state + event and *when* + state + state.

Carecho's temporal characterisation of sentences with *quando*-clauses also includes the following stipulation concerning temporal properties: the presence of a state in the main clause determines that the temporal perspective point (TPpt) should be the relevant time interval of the event of the subordinate clause and not the utterance time (n) as it happens with events. Moreover, in her analysis, the reference point is always the time interval represented by the subordinate clause, at least when they occupy the initial position.

The relation between the different possibilities of combination of verb tenses and of aspectual classes observed by Carecho (1996) is summed up in the following table[55].

[55] Other authors present the possible temporal configurations in sentences with *quando/when*-clauses such as Quirk *et al.* (1985), Declerck (1997) and García Fernández (1999). Since our main concern is the European Portuguese and there are many correspondences between the three languages, we will refrain ourselves from presenting them.

Aspectual classes	Main clause and subordinate clause: two events	Main clause and subordinate clause: state + event/ event + state	Main clause and subordinate clause: two states
Verb tenses (Main clause + Subordinate clause)	• *Pretérito Perfeito* ('Simple Past') + *Pretérito Perfeito* ('Simple Past') • *Pretérito-mais-que-perfeito* ('Past Perfect') + *Pretérito-mais-que-perfeito* ('Past Perfect') • *Futuro* ('Future') + *Futuro do Conjuntivo* • *Condicional* ('Conditional')/ *Pretérito Imperfeito* (Simple Past Imperfectum') + *Pretérito Imperfeito do Conjuntivo* ('Simple Past of the Subjunctive') • *Pretérito Perfeito* ('Simple Past') + *Presente* ('Simple Present') • *Presente* (Simple Present') + *Presente* ('Simple present') • *Presente* ('Simple Present') + *Futuro do Conjuntivo*	• *Pretérito Imperfeito* ('Simple Past Imperfectum') + *Pretérito Perfeito* ('Simple Past')/ *Pretérito-mais-que perfeito* ('Past Perfect') • *Futuro* ('Future') + *Futuro do Conjuntivo* • *Condicional* ('Conditional')/ *Pretérito Imperfeito* ('Simple Past Imperfectum') + *Pretérito Imperfeito do Conjuntivo* ('Simple Past of the subjunctive ') • *Presente* ('Simple Present ') + *Presente* ('Simple Present') • *Presente* ('Simple Present ') + *Futuro do Conjuntivo* • *Pretérito-mais-que perfeito* ('Past Perfect') + *Pretérito Perfeito* ('Simple Past') • *Futuro* ('Future')/ + *Futuro Perfeito* ('Future Perfect') • *Pretérito Imperfeito* ('Simple Past Imperfectum') + *Condicional Perfeito* ('Conditional Perfect')	• *Pretérito Imperfeito* ('Simple Past Imperfectum') + *Pretérito Imperfeito* ('Simple Past Imperfectum') • *Futuro* ('Future') + *Futuro do Conjuntivo* • *Condicional* ('Conditional') + *Pretérito Imperfeito do Conjuntivo* ('Simple Past of the subjunctive ') • *Presente* ('Simple Present') + *Futuro do Conjuntivo* • *Pretérito Imperfeito* ('Simple Past Imperfectum') + *Pretérito Imperfeito do Conjuntivo* ('Simple Past of the Subjunctive')

Table 9. Combinations of verb tenses in sentences with *quando*-clauses according to Carecho (1996)

Overall, the *when*-clauses have been widely studied and many of the semantic problems have found plausible explanations. Nevertheless, some questions, related to the temporal and discursive characterisation of this type of clauses, require a more detailed account.

Furthermore, the implications of the different placements of the clauses also need deeper reflection. It is vastly recognised the description of the fronted *when*-clauses as carrying presupposed information seen as true or known and of the ones in a final position as bringing new information. According to many authors, the temporal relations are not affected since the subordinate clause is always the first one to be

represented[56]. Otherwise, the situation of the subordinate clause could not be located[57]. However, we believe that it is necessary to look into the effects of different orders as far as types of relations (temporal and discursive) between the situations are concerned. Carecho (1996) admits that the order of the clauses may influence the non-temporal relations that determine the interpretation of sentences with *when*-clauses, but does not elaborate on it. We will target these problems in chapter 4.

1.3.2. Clauses of reason

In European Portuguese, the clauses of reason are most frequently introduced by the following connectors (once again, we resort to Lobo (2001; 2003)): *porque* ('because'), *visto que* ('seeing that'), *dado que* ('given that'), *já que/ uma vez que* ('since'), *como* ('as'), *por causa de* + *Infinitivo* ('because of') and *visto/ dado* + Infinitive, exemplified in (99)-(104).

(99) A Maria gritou porque viu uma aranha.
The Maria screamed because saw a spider.
Maria screamed because she saw a spider.

(100) O João chegou atrasado, visto que/ dado que o carro avariou.
The João arrived late, seeing that/ given that the car broke-down.
João arrived late, seeing that/ given that the car broke down.

[56] Carecho (1996), nonetheless, acknowledges that there are structures in which the main clause is the first to be processed. The examples given (cf. (i)) are what Declerck (1997) calls narrative *when*-clauses.

(i) Saía o Presidente de uma das salas do museu quando, de repente, ouviu um Soares pronunciado de forma diferente. (Carecho 1996: 84)
Left the President from one of-the rooms of-the museum when, suddenly, heard a Soares pronounced in way different.
The President was leaving one of the museum's room when, suddenly, he heard a Soares pronounced differently.

Because of their specificities, namely the impossibility of being anteposed, Lobo (2003) does not include them in the group of the adverbial clauses, and we subscribe to her analysis.

[57] A brief incursion into the processing mechanisms in Chapter 3 will show that this assumption is not necessarily true.

(101) A Ana está a estudar, uma vez que/ já que o exame é amanhã.
The Ana is studying, since that the exam is tomorrow.
Ana is studying, since the exam is tomorrow.

(102) Como está a chover, fico em casa trabalhar.
As is raining, stay at home working.
As it is raining, I stay at home working.

(103) Os meninos não foram para o parque por causa de estarem de castigo.
The boys not go to the park because of be punishment.
The boys didn't go to the park because they were grounded.

(104) Dado estarem de castigo, os meninos não foram para o parque.
Given be of punishment, the boys not go to the park.
Given that they were grounded, the boys didn't go to the park.

All of the above connectors may introduce different semantic/ pragmatic types of clauses of reason. Many of the researchers acknowledge this characteristic (cf. Lobo (2003: 71), for instance). The problem resides on the definition of a semantic/ pragmatic classification of these clauses. In fact, although many have discussed the issue at length, some proposals are quite divergent.

A common ground between the proposals is the premise that structures that express reason may indeed justify different elements. That is why, though with some discrepancies as to the terminology, most authors agree at least on a bipartite classification (Quirk *et al.* (1985), Galán Rodriguez (1999), Lobo (2003), Brito (2003), Lopes (2004)) between clauses of direct reason, of content or *de re* clauses and clauses of indirect cause, of enunciation or *de dicto*.

The first type of clauses represents the reason, cause or motivation of the situation of the main clause whereas the second type describes a reason that is not related to the situation of the other clause, but to the implicit speech act of the utterance. The examples from (99)–(104) contain clauses of content and (105) illustrates the group of clauses of enunciation.

(105) A professora não vai faltar à aula, porque já a vi hoje.
The teacher not go miss to-the class, because already her saw today.
The teacher isn't going to miss class, because I have already seen her today.

The clause of reason in (105) acts an argument that validates the veracity of what is asserted in the main clause. The subordinate clause can also be a justification of what is affirmed, as in (106), or be a metalinguistic justification, as in (107).

(106) Ficarás doente, porque não te cuidas.
Will-be sick, because not yourself take.
You will be sick, because you don't take care of yourself.

(107) Os alunos preguiçosos, porque temos que se chamar as coisas pelo seu nome, não merecem aulas de apoio.
The students lazy, because have that itself to-call the things by its name, not deserve classes extra.
Lazy students, because we have to call the things as they are, don't deserve extra classes.

A slightly different approach is developed by Sweetser ((1990) referred in Noordman and Blijzer (2000)), who adds a third type of clauses of reason to the two previous ones. She advocates that the interpretation of clauses of reason is dependent on their behaviour in three different domains[58]: the domain of content, the epistemic domain and the speech act domain. In the first one, the clause describes the cause of a real world situation; in the second, it represents the cause of a belief or conclusion; and, in the third, it depicts a causal explanation of the speech act (cf. 108).

(108) What are you doing tonight, because there is a good movie on.
O-que vais tu fazer hoje-à-noite, porque há um bom filme em-exibição.
O que vais fazer hoje à noite, porque está um bom filme em exibição.

However, subscribing to other analyses[59], we argue that the last type of clauses of reason, that is, clauses that represent a causal explanation of the speech act, can be integrated in the second type, clauses that represent the cause of a belief or conclusion, because both represent the reason for the speech act performed by the main clause[60].

[58] Sweetser (1990) referred to in Noordman and Blijzer (2000) postulates the existence of three levels of meaning and then extends this premise to complex sentences, not only to the clauses of reason, but also to the concessive and conditional, for instance.
[59] See Noordman & Blijzer (2000), Lopes (2004), Peres & Mascarenhas (2006), among others.
[60] Notice, nonetheless, that this does not mean that the content clauses and epistemic clauses establish a straightforward correspondence with the two groups defined previously. In fact, Peres & Mascarenhas, while describing the explicative clauses, propose a division between referential explanation and discourse explanation (*grosso modo*, content clauses and epistemic clauses in Sweetser's terminology) and consider

As far as classifications go, it should be noted that Lopes (2004) establishes two semantic oppositions for structures that express causal relations: explicative cause *vs* non-explicative clause and *de re* cause *vs de dicto* cause. The clauses that represent an explicative cause are the explicative coordinate clauses and those that describe the non-explicative clause correspond to the subordinate clauses of reason. Both may convey a de *de re* cause and *de dicto* cause.

(109) A janela está estragada, pois a dobradiça partiu. (*a de re* explicative clause)
The window is damaged, because the hinge broke.
The window is damaged, because the hinge is broken.

(110) A janela está estragada, pois não a consigo abrir. (*a de dicto* explicative clause)
The window is damaged, because not it can open.
The window is damaged, because I cannot open it.

(111) Foi idiota por não aceitar a proposta. (*a de re* non-explicative clause)
Was idiot for not accept the proposal.
He was an idiot for not accepting the proposal.

(112) Acho-o idiota por não aceitar a proposta. (*a de dicto* non-explicative clause)
Consider him idiot for not accepting the proposal.
I consider him an idiot for not accepting the proposal.

Regarding the clauses of reason, this proposal of classification is in keeping with the bipartite typology. With respect to the explicative coordinate clauses, the matter is much more complex and controversial. Some authors as Lobo (2003) identify the explicative coordinate clauses only with *de dicto* clauses, while others such as Lopes (2004) identify them with *de dicto* and *de re* clauses. Although we tend to agree with Lopes (2004) due to a brief examination of the *corpus cetempublico*, it is of little concern for the present work to solve this dispute, since our goal is to provide an analysis for the clauses subsumed under the group of adverbial clauses.

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that some subdivisions need to be carried out, namely in the referential explanation between *de re vs. de dicto*. They must have adopted different notions for these terms, which are not clarified. Otherwise, it is very hard to explain how a clause with a referential interpretation (or of content) can represent a *de dicto* cause.

Besides discrepancies related to the terminology and to the classes, the semantic/ pragmatic classification is fraught with another problem when it is articulated with syntactic division between non-peripheral clauses and peripheral clauses. On the one hand, Galán Rodríguez (1999) maps the clauses of content ('pure causal clauses', in his terminology) onto the non-peripheral clauses (cf. 113) and the clauses of enunciation ('explicative causal clauses', in his terminology) onto the peripheral clauses (cf. 114).

(113) He escrito a María porque se lo prometí. (*Ibidem*: 3609)
I wrote to María because I promised her.

(114) Escribe a María, porque se lo has prometido. (*Ibidem*)
Write to María, because you have promised her.

On the other hand, although Lobo (2003: 70) presents examples of enunciation clauses of reason with *porque* ('because') (cf. (115)), she does not take them into account when she divides the adverbial clauses into peripheral and non-peripheral clauses.

(115) O João está cá, porque já vi o carro dele. (Lobo (2003: 70))
The João is here, because already saw the car his.
João is here, because I have already seen is car.

As far as the clauses of reason's position, all of them can occupy the initial position, but only the latter (the peripheral) require a pause when they are in the final position, with the exception of *como* ('as'), which must always be positioned at the beginning of the sentence[61].

The other semantic features of the clauses of reason such as tense and aspect are not subjected to a fine-grained analysis. One can come across some general observations spread by the specialised literature, but nothing too detailed. It is said that the finite clauses co-occur most frequently with the indicative mood, as shown by all the previous examples, and that the subjunctive can emerge in the presence of negative operators, for instance[62] (cf. (116)).

[61] For a study concerning among other variables the most frequent positions occupied by the causal connectors, see Neves (1997). It was observed, for instance, that *porque* ('because') occurs only once in the initial position.
[62] Galán Rodríguez (1999) distinguishes between the verb tenses used in the peripheral clauses and the ones in the non-peripheral. The former clauses are normally in the indicative with the exception of a

(116) O João está no Porto, não porque quisesse, mas porque tinha uma reunião.
The João is in-the Porto, not because want(Subj), but because had a meeting.
João is in Porto, not because he wanted, but because he had a meeting.

As to the infinitive clauses, the choice may be between the *Infinitivo impessoal* ('inflected Infinitive') like in (117) or *Infinitivo pessoal* ('the non-inflected infinitive'), on the one hand, and between the simple, as in (117), and compound (*Infinitivo Perfeito*), as in (118), on the other hand.

(117) Os meninos não foram para o parque por estarem de castigo.
The boys not go to the park because of be punishment.
The boys didn't go to the park because they were grounded.

(118) Os meninos estão de castigo por terem partido uma jarra.
The boys are of punishment because have broken a vase.
The boys are grounded because they have broken a vase.

Although it is often said that the temporal organisation in clauses of reason is the precedence of the cause/ motivation/ reason in relation to the effect/ result, this statement does not fully account for all the possibilities of temporal relations (see, for instance, (119)).

(119) O Pedro recusou o convite da Ana porque é tímido.
The Pedro refused the invitation of Ana because is shy.
Pedro refused Ana's invitation because he is shy.

Overall, the semantic treatment of the clauses of reason still lacks a more fine-grained analysis, namely as far as temporal and rhetorical features are concerned. We advocate that the consideration of these elements in the description of clauses of reason may result in a more comprehensive explanation of this group of adverbial clauses. Therefore, we will sight to provide such an analysis in chapter 4.

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context where they convey a hypothetic meaning, whereas the latter vary between the indicative for a real and actual situation and the subjunctive for a questioned or denied situation.

1.3.3. Concessive clauses

The concessive clauses are quite often characterised as the contradictory counterpart of clauses of reason (cf. König & Siemund (2000)[63]), association illustrated by the following pair examples.

(120) O João faltou à aula porque está doente.
The João missed to-the class because is sick.
João missed class because he is sick.

(121) O João não faltou à aula, embora esteja doente.
The João not missed to-the class, although be(Subj) sick.
João didn't miss class, although he is sick.

While in (120) the two situations are in consonance, in (121) they are not, that is, the expected cause/ effect relation ('If someone is sick, he/ she misses class') is rejected and certain incompatibility between the two situations is established[64]. So, in spite of the presupposition that *if p* $\rightarrow$ *~q* (*if p, then normally not q*), which is the negative counterpart of the presupposition implied in the *because*-sentence that *if p* $\rightarrow$ *q* (*if p, then normally q*), the speaker asserts the two propositions represented in the *although*-sentence[65].

Besides *embora* ('although'), in European Portuguese, the concessive clauses are most frequently introduced by the following connectors: *ainda que*, *se bem que*, *apesar*

[63] They go as far as advocating that the label 'concessive' is a misnomer and that the labels 'incausal', 'anticause' or 'inoperant cause' would be more appropriate.

[64] Since the concessive clauses express an obstacle to the situation represented by the main clause, they distinguish themselves from the other adverbial clauses as far as their semantic role is concerned, as observed by König (1991: 192).

> "In contrast to other adverbials, concessive adverbials do not identify an important coordinate of the main clause: a time, a place, a condition, a reason, etc. What they identify is an unfavourable circumstance for an event or state."

[65] The same analysis cannot be applied to examples as (i).

(i) Embora a casa seja muito bonita, é muito cara.
Although the house be(Subj) very beautiful, is very expensive.
Although the house is very beautiful, it is very expensive.

This example does not imply the presupposition in (ii).

(ii) Se uma casa é bonita, normalmente não é muito cara.
If a house is beautiful, normally it is not very expensive.

In fact, the type of contrast present in example (i) is quite different from that in example (121): the latter renders a direct contrast between the two propositions and the former an indirect contrast that occurs at an argumentative level (cf. Flamenco Garcia (1999))

de + infinitive ('in spite of'), *mesmo se/ que* ('even if'), among others[66/67]. It should be noted, however, that they can head different subtypes of concessive clauses. More to the point, we can subsume under concessive clauses several types. Actually, it is feasible to draw two major subclasses and, in one of these subclasses, to unravel three more types.

The first distinction to be made is between content concessive clauses and enunciation concessive clauses (cf. Quirk *et al.* (1985) and Kortmann (1996): *content disjuncts* and *style disjuncts*; Flamenco Garcia (1999): *concesivas de enuncación* and *concesivas de enunciado*; Lobo (2003) and Costa (2005): *concessivas de enunciado* and *concessivas de enunciação*[68]), illustrated by the following examples[69].

(122) Vou ajudá-la embora tenha muito trabalho para fazer. (content concessive clause)
Am-going to- help her although have lot work to do.
I am going to help her although I have a lot of work to do.

(123) Vou ajudá-la, embora não tenhas nada a ver com isso. (enunciation concessive clause)
Go help her, although not have(Subj) nothing to-do with that.
I am going to help her, although that is none of your business.

Semantically, the difference lies on the members of the relation that is established: whereas in (122) the link is between the situation expressed by the

[66] For more detailed information regarding the frequency of the concessive connectors in different *corpora*, see Varela (2000: 13) and Prada (2002).

[67] Although there are other connectors that introduce the concessive clauses, we choose to take into consideration only the ones that were discriminated above due to two reasons. First, they are the most frequent in several *corpora* and thus the most productive among the users. Secondly, the analysis of some other connectors would entail going into other semantic issues that are beyond the scope of this work. We are referring to quantitative formulae such as *por mais/ muito que*, for instance.

[68] The same distinction prevails as far as clauses of reason, of purpose and conditional clauses are concerned.

[69] From a discursive and cognitive point of view, Crevels (2000) proposes a four-level approach to concessive clauses based on Sweetser's (1990) distinction of three levels of meaning: content concessive clauses (express real or hypothetic situations), epistemic concessive clauses (represent items of knowledge) and illocutionary concessive clauses (describe obstacles to the speech acts) and adds a fourth type, textual concessive clauses (modify the whole preceding text). The four types are illustrated by the following data from Crevels (2000: 317).

(i) Although it's raining, we're going for a walk.
(ii) He is not at home, although his car is parked in front of the house.
(iii) Even though I am calling a bit late, what are your plans for this evening?
(iv) I speak and write Serbian, Albanian, Turkish and Dutch, but I cannot express my true feelings in any other language than Romani. Although, now that I come to think of it, I have done it many times...

Leaving aside the last type because it occurs at the textual level and not at the sentence level, one can match the other types to the enunciation and utterance concessive clauses: the latter integrate the first type and the former the second and third types.

subordinate clause and the situation represented by the main clause, in (123) it is between the situation of the subordinate clause and the circumstances of the enunciation. Because of this feature, it does not come as a complete surprise that the latter exhibits a higher degree of semantic independence[70], evidenced, namely, by the lack of temporal and mood correlation.

The second distinction to draw concerns the set of content concessive clauses. This distinction has a semantic nature and is grounded on the degrees of factuality conveyed by concessive clauses. Accordingly, it is possible to single out concessive clauses with factual, hypothetic and contrafactual reading (cf. Quirk *et al.* (1985), Lopes (1997), Flamenco Garcia (1999), Varela (2000), a.o.).

(124) Embora tenha de trabalhar, vou ao cinema.
Although have(Subj) of t- work, go to-the cinema.
Although I have to work, I will go to the cinema.

(125) Mesmo que tenha de trabalhar, vou ao cinema.
Even that have(Subj) of to-work, go to-the cinema.
Even if I have to work, I will go to the cinema.

(126) Mesmo se tivesse de trabalhar, teria ido ao cinema.
Even if had(Subj) of to-work, would-have gone to-the cinema.
Even if I had to work, I would have gone to the cinema.

The examples adduced above illustrate the three different interpretations as far as factuality goes. In the first example, the situation *ter de trabalhar* is real. More to the point and endorsing Lopes' analysis (1997) of this reading, the factual concessive assertion attributes to the proposition *p* a specific time, *t*, corresponding to a moment factually confirmed. In the second example, it is only postulated the existence of a time, the time interval where the situation *ter de trabalhar* is located, projected into the future, but not confirmed. In the third example, the subordinate clause implicitly denies the situation, interpretation that becomes more evident if one adds the assertion "e não tive de trabalhar" ('*and I hadn't to work'*). This means that a specific time, verified or not, is not assumed, as it happens with the factual and hypothetic concessive clauses.

Due to the hybrid semantic and logic status of the concessive clauses with hypothetic and contrafactual readings, it has been suggested that they should be

[70] Syntactically speaking, the enunciation concessive clauses are also more independent, occupying a more peripheral position. For a more thorough explanation, cf. Quirk *et al.* (1985) and Lobo (2003).

integrated in an intermedial subclass between the concessive clauses and the conditional clauses. On the one hand, they mark a contrast between two situations and the consequent prevails regardless of the value of the antecedent, like the concessive clauses, and on the other hand, they describe non-factual situations, that is, suppositions, bearing an epistemic uncertainty (Lopes (1997: 194)), like the conditional clauses.

Because of these shared properties, some consider this type of structures to be concessive conditionals, approximating them more of the conditionals (Lopes (1997), Flamenco Garcia (1999), Lobo (2003)) and others consider them to be conditional concessive clauses (Quirk *et al.* (1985), Costa (2005)), focusing on the concessive traces. A third group use the concept of unconditionality to label these constructions (Peres *et al.* (1999), Varela (2000)). These name them unconditional clauses, since these clauses indicate that a situation takes place unconditionally, that is, regardless of the content conveyed by the subordinate clause[71].

The emergence of different factual interpretations derive from the combination of morphological, semantic and pragmatic factors such as the morphological features of the connector, the verb tenses, the mood and aspectual characteristics. Actually, some connectors mark factual reading, others signal hypothetic and contrafactual readings and others bear the three types of readings. In this last case, Costa (2007) suggests that these connectors should be represented in the lexicon as underspecified ([α factual]) and the others with or without the feature *factual* ([+/- factual]), respectively. The underspecification of connectors such as *ainda que* ('even if/ though') would be solved due to the interaction of semantic properties like verb tenses, types of aspectual predicates, aspectual modification or bare nouns, and/ or pragmatic information.

For the European Portuguese, two studies (Varela (2000); Costa (2007; 2010)) include a systematisation of the several values of the connectors as well as of the possible tense combinations that induce those values. We will attempt to conciliate both analysis in the following table, adapted from (Costa 2007: 1)[72], taking into account only the connectors already singled out and the finite forms.

[71] Nonetheless, since we will be mainly worried about the factual concessive, we will not develop other classification proposals and will consider that the concessive clauses may have three possible interpretations: factual, hypothetic and contrafactual.

[72] Costa (2007) only discriminates the verb tenses that occur in the subordinate while Varela (2000) considers the verbs tenses occurring in both clauses. We include in table 10 the combination of the verb tenses in both clauses.

Concessive connectors	Values					
	Factual		Non-Factual			
			Hypothetic		Contrafactual	
	subordinate clause	main clause	subordinate clause	main clause	subordinate clause	main clause
embora, se bem que	*Modo Conjuntivo* ('Mood Subjuntive'): *Presente* ('Present') *Pretérito Perfeito Composto Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-perfeito*	*Modo Indicativo* ('Mood Indicative'): Presente ('Simple Present') *Pretérito Perfeito* ('Simple Past') *Futuro* ('Future') *Condicional* ('Conditional')	Ø	Ø	Ø	Ø
ainda que	*Modo Conjuntivo* ('Mood Subjuntive'): *Presente* ('Simple Present') *Pretérito Perfeito Composto Pretérito Imperfeito*[73] ('Simple Past')	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Presente') *Pretérito Perfeito* ('Simple Past') *Futuro* ('Future') *Condicional* ('Conditional')	*Modo Conjuntivo* ('Mood Subjuntive'): *Presente* ('Simple Present') *Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-perfeito*	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Present') *Futuro* ('Future') *Condicional* ('Conditional')	*Modo Conjuntivo* ('Mood Subjuntive'): *Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-perfeito*	*Modo Indicativo* ('Mood Indicative'): *Condicional* ('Conditional')

[73] Varela (2000) considers the combination of the verb tenses *Pretérito Imperfeito do Conjuntivo* followed by *Futuro do Indicativo* ('Future of the Indicative') with *ainda que* ungrammatical.

(i) Ainda que lesse o livro, não vai contar a história. (2000: 107)
Even if he read the book, he will not tell the story.

Nonetheless, if you change the example to:

(ii) Ainda que lesse o livro, não lhe vou comprar outro.
Even if he read the book, I will not buy another one.

it becomes grammatical. As pointed out by Professor Fátima Oliveira (p.c.), the ungrammaticality seems to result from the presence of the same subject in the two clauses.

mesmo que	Ø	Ø	*Modo Conjuntivo* ('Mood Subjuntive'): *Presente* (Simple Present') *Pretérito Perfeito Composto Pretérito Imperfeito* ('Simple Past')	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Presente') *Futuro* ('Future') *Condicional* ('Conditional') *Pretérito Perfeito* ('Simple Past')	*Modo Conjuntivo* ('Mood Subjuntive'): *Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-perfeito*	*Modo Indicativo* ('Mood Indicative'): *Condicional* ('Conditional')
mesmo se	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Present') *Pretérito Perfeito* ('Simple Past')	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Present') *Pretérito Perfeito* ('Simple Past') *Futuro* ('Future') *Condicional* ('Conditional')	*Modo Conjuntivo* ('Mood Subjuntive'): *Futuro Futuro Perfeito Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-*perfeito	*Modo Indicativo* ('Mood Indicative'): *Presente* ('Simple Present') *Futuro* ('Future') *Condicional* ('Conditional') *Pretérito Perfeito* ('Simple Past')	*Modo Conjuntivo* ('Mood Subjuntive'): *Pretérito Imperfeito* ('Simple Past') *Pretérito-mais-que-perfeito*	*Modo Indicativo* ('Mood Indicative'): *Condicional* ('Conditional')

Table 10. Combination of verb tenses in sentences with concessive clauses

Overall, the concessive clauses pose many interesting semantic problems related to the notions of causality, factuality and temporality, which have been addressed to some extent. However, a discursive analysis of this type of clauses is still lacking. Moreover, other relevant contributions can be made as far as their temporal characterisation as we will show in chapter 4.

1.3.4. Conditional clauses

The conditional sentences constitute one of the most complex objects of study among the adverbial clauses because they involve different mechanisms of grammatical, logical, semantic and pragmatic nature. Due to this fact and their role in mathematical, practical and causal reasoning, they have been widely investigated, and still many problems remain to be dealt with.

A complete survey of all the semantic issues raised by the conditionals represents an impractically large undertaking. Therefore, though we will follow the same overall structure of the previous sections (definition, main connectors, most

important analyses and typologies, verb tense patterns and discursive functions), we will not discuss at length all these problems and others related to them.

In European Portuguese, the connector *se* ('if') is by far the commonest form of expressing conditionality in subordinate clauses. It integrates structures of the type *Se P então Q* ('If P then Q') or *Q se P* ('Q if P'), where *P* is the antecedent or protasis and *Q* the consequent or apodosis, as illustrated by (127) and (128).

(127) Se está a chover, fico em casa.
If is rain, stay at home.
If it's raining, I will say at home.

(128) Fico em casa se está a chover.
Stay at home, if is rain.
I will stay at home, if it's raining.

Other connectors that can occur in this type of structure are: *caso, no caso de* (followed by *Infinitive*) ('in case'), *mesmo se* ('even if'), *a não ser que* ('unless'), *desde que* ('providing', 'provided that', 'as/ so long'), *só se* ('only if'), among others. The connectors like *se e só se* ('if and only if ') crop up in configurations of the type *P se e só se Q* ('P if and only if Q'), exemplified in (129).

(129) Fico em casa se e só se estiver a chover.
I stay at home if and only if be(Subj) raining.
I will stay at home if and only if it is raining.

The question of how to analyse conditional sentences has received many answers throughout the years. There are two major lines of analysis: (i) the truth-functional approach (material conditional); and (ii) the non-truth-functional approach (Stalnaker-Lewis' proposal (1968; 1973), Adams Thesis (1975), Veltman's Update Semantics (2005)).

In the truth-conditional approach, material implication defines the conditional sentences and hence the truth of the sentence depends on the values of truth or falsity of the protasis and apodosis. This analysis renders the following possibilities of indicative conditional sentences.

P	Q	P → Q
1	1	1
1	0	0
0	1	1
0	0	1[74]

Table 11. Values of truth or falsity of indicative conditional sentences

However, this treatment is far from being satisfactory because of the lack of correspondence between the representation of the conditional in propositional calculus and in natural language[75], that is, in certain contexts, a sentence can be true in propositional logic and meaningless in natural language, like (130)[76].

(130) Se Einstein descobriu a teoria da relatividade, os dinossauros são reptéis.
If Einstein discovered the theory of relativity, the dinosaurs are reptiles.

The non-truth-functional or intensional approach aims at providing a more accurate treatment of the conditionals by evaluating a conditional sentence against a stock of beliefs. According to Stalnaker (1968), this task consists of the following steps: first, add the antecedent hypothetically to your stock of beliefs; second, make whatever adjustments are required to maintain consistency (without modifying the hypothetical belief in the antecedent); finally, consider whether the consequent is then true. Therefore, the truth-value of the sentences depends, in a given world of evaluation, on the truth or falsity of the consequent in the closest world to the evaluation world where the antecedent is true.

This proposal is grounded on the Ramsey Test (1929), which stipulates that if two people are arguing 'If A will C ?' and are both in doubts as to *A*, they are adding *A* hypothetically to their stock of knowledge and arguing on that basis about *C*. Normally, linguists consider it valid only for the indicative conditionals[77].

[74] This line of the table corresponds to an *ad absurdum* conditional named by Quirk *et al.* (1985) as rhetorical conditional clauses ("If they're Irish, I'm the Pope").
[75] In spite of all the problems, Abbot (2004) tries to promote the material conditional approach (especially over its intensional rival) claiming that the indicative conditionals express truth conditions, but in an asymmetrical way. Nevertheless, she admits that many problems remain unsolved.
[76] For a more elaborated explanation on this matter, see Edgington (1986; 1997), Oliveira (1990), Ferreira (1996), Santos (1997), Peres *et al*. (1999), Kaufman (2001), among others.
[77] Notice, however, that Stalnaker's theory (1975) predicts the same semantic analysis for both indicative and subjunctive conditionals. With the subjunctive conditionals, the selection function may need to go

Lewis (1973) objects to two aspects of Stalnaker's system: the uniqueness assumption: for every world *w*, there is at most one closest world to *w*, and the limit assumption: for every world *w*, there is at least one closest world to *w*. This objection leads to the proposal of plural choice functions, which allow the consideration of more than one possible world.

In addition to the possible worlds' analysis of the conditional clauses, there is another proposal that also elaborates on the Ramsey Test, Adams Thesis (1975 in Trauggot *et al.* (1986)). According to this approach, when two people are arguing 'if P will Q', they are fixing their degrees of belief in *Q* given *P***,** which means that the probability of an indicative conditional is a conditional probability[78].

More recently, Veltman (1986; 2005), in his Update Semantics' theory, suggests that instead of considering the global notion of world as predicted by the intensional theory of Lewis-Stalnaker, the notion of partial world would be more accurate. In this framework, the world *w* is evaluated in terms of partial beliefs about the world. These partial beliefs are updated and differ between the speakers.

As far as semantic typologies are concerned, Peres *et al.* (1999) put forward a general proposal of typology of the conditional constructions for the European Portuguese assuming as main criterion the parameter of sufficiency and/ or necessity of conditions. They distinguish between monoconditional clauses, which can be of sufficient condition or of necessary condition, and biconditional clauses, which are of necessary and sufficient condition. The structures of sufficient condition are closed if the antecedent only conveys a proposition and open (or unconditional) if it conveys more than one proposition (these correspond to the structures considered to be conditional concessive clauses). Connectors of the type *só se* ('only if') introduce the conditionals that mark a necessary condition. The biconditional clauses can be direct when introduced by connectors such as *se e só se* ('if and only if') and *desde que* ('providing', 'provided that', 'as/ so long') and indirect when headed by connectors such as *a não ser que* ('unless').

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outside the context set, that is, outside the set that comprises those worlds that are consistent with the common ground.

[78] Abbot (2004) questions the validity of probability judgements because they are not as trustworthy as they should be and, thus, "should not be taken so seriously as the basis of a semantic analysis" (Abbot (2004: 10).

Nonetheless, the most prolific typology is based on the degrees of probability that the conditionals may express. The examples given so far are all factual conditionals, but, as the conditional concessive above, the conditional clauses can be hypothetical (131) and counterfactual (132), too[79].

(131) Se o João fosse comigo, eu não teria tanto medo.
If the João go(Subj) with-me, I not would-be so afraid.
If João went with me, I wouldn't be so afraid.

(132) Se o João tivesse ido comigo, eu não teria tido tanto medo.
If the João had(Subj) gone with-me, I not would have been so afraid.
If João had gone with me, I wouldn't have been so afraid.

While the factual conditionals express a high degree of probability, the hypothetical convey a high degree of improbability and the counterfactual represent unreality, something that is contrary to the fact.

A similar, although more general classification, is a twofold distinction between Indicative and Subjunctive conditionals, where the first are associated with non-counterfactuality and the second with counterfactuality. However, this distinction is not adequate for English (Declerck and Reed (2001)) and for European Portuguese (Oliveira (1990)) because, although the Indicative mood implies non-counterfactuality, the subjunctive mood does not always imply counterfactuality (cf. (131)).

Still in a framework that hinges on the parameter of factuality, Declerck and Reed (2001) proposal integrates a much more complex and elaborated classification. They establish two major classes: the factual and the theoretical (nonfactual). The latter consists of two other classes: the neutral theoretical, that express a supposition without any kind of presupposition about the compatibility between the supposed world and the real world (cf. (133)), and the non-neutral theoretical, that carry the supposition and the presupposition.

(133) If you need basics like saucepans, ironing boards and kettles, a department store may well be the place to start looking. (Declerck and Reed (2001: 62))

[79] Kaufman (2001) uses the terms predictive, epistemic and counterfactual, instead of factual, hypothetical and counterfactual, respectively.

The non-theoretical conditionals can be closed, whenever it is assumed, on the basis of another speaker's authority, that the eventuality will be fulfilled (cf. (134)); open, whenever it is assumed that the eventuality may or may not be fulfilled; tentative, if it is assumed that the eventuality is unlikely to be fulfilled; and counterfactual, when it is assumed that the eventuality is incompatible with the real world. Loosely speaking, we can match the last three subtypes to the threefold distinction factual, hypothetical and counterfactual.

(134) If, as you say, you can't accompany me tonight, I'll have to look for someone else. (*Ibidem*)

It should be noted that the typologies presented above concern only the conditional sentences that relate the content of the two propositions *P* and *Q* and not the ones that are dependent on an implicit speech act, such as (135).

(135) I am not a coward, if that is what you think. (Declerck and Reed (2001: 320)

According to Declerck and Reed (2001), this sentence constitutes an example of rhetorical conditionals given that the subordinate clause explains the reason for the speaker to utter the proposition in the main clause. In Quirk *et al.*'s (1985) terminology, these are conditionals of indirect condition by opposition to conditionals of direct condition. The latter are divided into open (or real, factual, neutral) and hypothetical (closed, unreal, rejected, nonfactual, counterfactual and marked) conditionals.

The semantic typology that follows parameters of factuality or of possible-worlds is undoubtedly closely related to different temporal and mood schemata, that is, different sequences of tenses may mark different degrees of hypothesis and probability. In fact, "a discussion of the use of tenses is indispensable in a work on English conditionals[80], because it is in large measure the choice of tense forms that determines the possible-world-type of conditional" (Declerck and Reed (2001: 113)).

The three basic tense patterns for the European Portuguese are: *se* ('if') + *Presente do Indicativo* ('Simple Present of the Indicative') + *Presente/ Futuro do Indicativo* ('Simple Present/ Future of the Indicative'), that produce a factual reading; *se*

[80] The same is true for the Portuguese.

('if') + *Pretérito Imperfeito do Conjuntivo* ('Simple Past of the Subjunctive') + *Condicional* ('Conditional'), that may be ambiguous between a hypothetical or counterfactual reading; and se ('if') + *Pretérito-mais-que-perfeito do Conjuntivo* + *Condicional Perfeito* ('Conditional Perfect'), that normally carry a counterfactual interpretation. Nevertheless, there are many more possibilities of combinations of verb tenses with different interpretations as far as probability is concerned. Ferreira (1996) discusses some of those alternatives, which we systematise in table 12.

Protasis	Apodosis
• *Presente do Indicativo* ('Simple Present of Indicative') • *Presente Progressivo do Indicativo* ('Progressive Present of Indicative')	• *Presente do Indicativo* ('Simple Present of Indicative') • *Presente Progressivo do Indicativo* ('Progressive Present of Indicative') • *Futuro do Indicativo* ('Future of the Indicative') • *Condicional* ('Conditional') • *Pretérito Imperfeito do Indicativo* ('Simple Past Imperfectum of Indicative')
• *Pretérito Imperfeito do Indicativo* ('Simple Past Imperfectum of Indicative') • *Pretérito Imperfeito Progressivo do Indicativo* ('Progressive Simple Past Imperfectum of Indicative')	• *Pretérito Imperfeito do Indicativo* ('Simple Past Imperfectum of Indicative') • *Condicional* ('Conditional')
• *Pretérito Perfeito do Indicativo* ('Simple Past of Indicative') • *Pretérito Perfeito Composto*	• *Presente do Indicativo* ('Simple Present of Indicative') • *Presente Progressive do Indicativo* ('Progressive Present of Indicative') • *Futuro of the Indicative* ('Future of the Indicative') • *Condicional* ('Conditional') • *Pretérito Imperfeito do Indicativo* ('Simple Past Imperfectum of Indicative')
• *Futuro do Conjuntivo*	• *Presente do Indicativo* ('Simple Present of Indicative') • *Futuro do Indicativo* ('Future of the Indicative')
• *Pretérito Imperfeito do Conjuntivo* ('Simple Past of Subjunctive)	• *Condicional* ('Conditional') • *Pretérito Imperfeito do Indicativo* ('Simple Past Imperfectum of Indicative')
• *Pretérito-mais-que-perfeito do Conjuntivo*	• *Condicional* ('Conditional') • *Pretérito-mais-que-perfeito do Indicativo* ('Past Perfect of Indicative')

Table 12. Combination of verb tenses in sentences with conditional clauses discussed by Ferreira (1996)

According to Ferreira (1996), these sequences of tenses represent three different temporal orderings depending on the type of causality involved. If there is a relation of cause-effect, then the eventuality represented by the antecedent precedes or overlaps the eventuality in the consequent. If there is an inferential relation (cf. (136)), then the antecedent follows the consequent.

(136) Se o João está a comer, o remédio fez efeito. (Ferreira (1996: 74))
If the João is eat, the medicine worked.
If the João is eating, the medicine worked.

However, the author observes that there are also cases that can be interpreted without establishing any type of temporal relation, as in (137).

(137) Se tu tomas conta do bebé, eu faço as compras.
If you take care of the baby, I will do the shopping.

The recurrent temporal ordering of precedence of the antecedent is partially responsible for its initial position in the sentence. There are obviously other factors of different nature, pragmatic/ discursive reasons, to posit the protasis in the initial position, such as contrasting suppositions or possibilities (cf. Ferreira (1996) and Montolío (1999)). Nonetheless, the protasis can occupy the final position and, when this happens, Montolío (1999) claims that it acts as a specification or restriction on the main clause ('Q if P') or as an afterthought, a rectification or a way to get an answer from the listener ('Q, if P').

In retrospect, it was not our intention with this brief review of conditional sentences to cover all the semantic issues raised by these types of clauses, but only to present a summary of the different perspectives insofar as proposals of analysis and of typologies as well of temporal and discursive descriptions. This revision allowed us also to conclude that, although the conditional clauses have been object of many studies, the temporal, discursive and aspectual analysis can be further developed and be even combined in a theoretical framework to render a more broad description of this type of clauses.

1.3.5. Clauses of purpose[81]

The clauses of purpose distinguish themselves from the other adverbial clauses which express causality because they focus on the effect, that is normally portrayed as temporally posterior to the cause described by the main clause. In European Portuguese, they are introduced by *para* ('so') and *para que* ('so that'), that are the most frequent, and by *a fim de (que)*, *de modo/ forma/ maneira a que*, *com o fim/ intuito de (que)*, among others[82].

The connectors *para* ('so') *a fim de* and *com o fim/ intuito de* are followed by the inflected and non-inflected infinitive, whereas *para que* ('so that') *a fim de que*, *de modo/ forma/ maneira a que* and *com o fim/ intuito de que* co-occur with the Subjunctive. In the first case, more often than not, the subjects are coreferential, but the subject of the clause of purpose can also be co-referential with the direct or indirect object of the main clause. In the second case, the subject is most frequently non-coreferential with the subject of the main clause, but it can also be coreferential with the subject, the direct and indirect object of the main clause (cf. Lobo (2003), Brito (2003) and Braz (2005)).

The effect described by this type of clauses can take on different semantic representations. In fact, the European Portuguese (and Spanish) grammatical tradition uses the cover term *finais* ('final') to designate not only the clauses that express a result or consequence which is normally factual and non-intended (*Q, para (que)P* ('Q, so that P')), but also the clauses that describe a result or consequence which is intended and yet to be achieved (*para (que) P, Q* ('in order to P, Q')). In turn, the English grammatical tradition labels the first type as clauses of result and the second type as clauses of purpose (Quirk *et al.* (1985), Kortmann (1986)). The two types are exemplified in (138) and (139)[83].

[81] We will use the term *clauses of purpose* to name all types of adverbial clauses introduced by connectors as *para* (*que*) ('to'/'in order to'). Thus, we will subsume under this group of clauses not only the factual, considered by Quirk *et al.* (1985) as clauses of result, but also the putative, labelled by those authors as clauses of purpose.

[82] For a more detailed analysis of the connectors that introduce the clauses of purpose or of result, see Kortmann (1996), Galán Rodriguez (1999), Lobo (2003), and Braz (2005).

[83] The presence *vs* the absence of modal auxiliaries in the subordinate clause allows to differentiate the clauses of purpose from the clauses of result, respectively.

(138) We paid him immediately, so (that) he left contented. [result] (Quirk *et al.* (1985: 1108)

(139) We paid him immediately, so (that) he would leave contented. [purpose](*Ibidem*)

At first sight, this twofold distinction seems to correspond to the three semantic subtypes stipulated by Brito (2003: 716) for the *orações finais* ('clauses of purpose'), the factual clauses, on the one hand, and the hypothetical and counterfactual clauses, on the other hand. However, the fact that Brito (2003) chooses the verb tense of the main clause as criterion to attribute the sentences with clauses of purpose a value of factuality and not the verb tense of the subordinate clause disallows such correspondence. For instance, she claims that a clause headed by *para que* ('so that') is factual if the verb tense of the main clause is the *Pretérito Perfeito do Indicativo* ('Simple Past'). Nonetheless, a sentence like (140) with that verb tense in the first clause may be interpreted as non-factual or hypothetical. One can add *e até agora só lá foram duas vezes* ('and till now they only went there two times').

(140) O João comprou uma casa em Beja para que os filhos ficassem perto dos avós.
The João bought a house in Beja so that the children stayed(Subj) close of-the grandparents.
João bought a house in Beja so that his children would be close to their grandparents.

It is not the situation of the clause of purpose that receives a factual interpretation but the situation represented by the main clause and yet the author states that examples with the same sequence of tenses of (140) are illustrative of "orações finais factuais" ('factual clauses of purpose').

The same criterion is followed by Brito (2003) to define the hypothetical and the counterfactual clauses. According to Brito (2003: 716), the first occur with the *Futuro* ('Future') or *Presente do Indicativo* ('Simple Present') with a futurative reading in the main clause (cf. (141)) and the second with *Pretérito-mais-que-perfeito composto do Indicativo* ('Past Perfect') in the main clause and with the *Condicional Perfeito* ('Conditional Perfect') or with the Infinitive in the subordinate clause (cf. (142)).

(141) Nós mandamos/ mandaremos/ vamos mandar a encomenda amanhã para que tu a recebas/ receberes no teu aniversário. (Brito (2003: 716))
We send/ will-send/ go send the package tomorrow so that you it receive(Subj) in your birthday.
We will send the package tomorrow so that you receive it in your birthday.

(142) Eu teria feito tudo para que tu pudesses ganhar a bolsa. (Brito (2003: 716))
I would-have done everything so that you could win the scholarship.
I would have done everything so that you could win the scholarship.

Once again, leaving some of verb tenses out of the equation may render erroneous interpretations. Notice that in (141) the sequence *Presente do Indicativo* ('Simple Present') + *Presente do Conjuntivo* ('Simple Present of the Subjunctive') may assign to the proposition a factual, and not hypothetical, reading.

In addition to a study of the temporal properties of the clauses of purpose, a finer-grained description of the aspectual features is also required. As far as we know, the only work for the European Portuguese that integrates some considerations on this subject is Braz (2005) and it contains erroneous generalisations as to what aspectual classes are compatible with the clauses of purpose. She claims (2005: 46) that the main clause should represent a non-stative situation, conclusion that does not correspond to the truth. A sentence like (143) is perfectly acceptable and not as rare as the author assumes.

(143) O João vive em Lisboa para estar perto dos filhos.
The João lives in Lisbon to be close to the children.
João lives in Lisbon to be close to his children.

The discursive functions of the clauses of purpose have not also been object of a systematic and conclusive study. Thompson (1985) attempts to describe the different discursive roles that a clause of purpose may take. According to her proposal, if the clause of purpose resumes information that is already known, it occupies the initial position and, if it introduces new information is in a final position. The last position is preferred due to the iconic representation of the situations. She attributes to the preposed clause of purpose the role of "naming a problem" raised by the context and to which the

following clauses present the answer. However, this is not always the case as observed by Braz (2005), who does not provide an alternative analysis, nonetheless.

One last remark is in order here. All the properties presented so far concern the content or event clauses of purpose. As with the other adverbial clauses that express causality, the clauses of purpose can be divided into clauses of content and clauses of enunciation. The sentence (144) integrates one of the latter.

(144) Para que saibas, hoje fico em casa.
So that know, today stay in home.
So that you know, today I will stay at home.

Contrarily to the content clauses of purpose, firstly, the initial position is non-marked, and sometimes the only option, and, secondly, the clauses of enunciation do not require a temporal dependence with respect to the main clause.

All in all the clauses of purpose are the less studied of the adverbial clauses in European Portuguese. It follows that issues like temporal and discursive relations have not yet been investigated in a systematic way.

Conclusions

In this chapter, first, we aimed at revising the main literature on adverbial subordination in order to look into the state of arts, on the one hand, and to determine the starting point of our investigation, on the other hand. Second, it was our intention to highlight some questions that are still problematic in the semantic treatment of adverbial clauses so that we could deal with them in chapter 4.

In 1.1., we began by determining the different processes of clause linkage looking into six different grammar books of different languages and into some proposals that ground the distinction of the different processes on syntactic criteria, semantic and syntactic criteria or discursive, syntactic and semantic criteria. This part allowed us to determine exactly the role of adverbial subordination in the grammatical mechanisms used to link clauses.

After establishing the placement of adverbial subordination in those processes of clause linkage, we examined the syntactic and semantic features that single out

adverbial subordination, in section 1.2., in order to present a general overview of the main features of this type of subordination.

In section 1.3., we revised some of the main descriptions of the different types of adverbial clauses, mainly in European Portuguese. For each of the subtypes of adverbial clauses, we considered the connectors that most frequently introduced them, the most relevant classifications/ typologies, the most frequent verb tenses' sequences and the aspectual and discursive properties. This semantic revision served two purposes: first, to provide a description of the main semantic issues involving the adverbial subordinate clauses; second, to find out whether the temporal, aspectual and discursive characterisation of these clauses has been pursued and to what extent it has been done in the literature.

Concerning the aims of this chapter, we come to the following conclusions:

(i) Adverbial subordination features a set of syntactic and semantic characteristics that distinguish it from other mechanisms of clause linkage. Although there are many different typologies of different theoretical nature, the classification of clauses such as time, conditional and concessive clauses, clauses of reason and of purpose as adverbial subordinate clause due to their syntactic behaviour is largely subscribed by the several proposals.

(ii) The semantic analysis of adverbial clauses has been carried out more thoroughly with respect to specific types of adverbial clauses in the literature.

(iii) As far as temporal and aspectual characteristics are concerned:
   a. the time clauses, in particular the *when*-clauses, the conditional clauses and the concessive clauses have been investigated more extensively.
   b. To the contrary, the clauses of reason and of purpose have been the object of less extensive and diversified analyses.

(iv) However, more often than not, the temporal description is reduced to a survey of the most frequent combinations of verb tenses and their resulting interpretations without their treatment in a formal semantic framework.

(v) Regarding the discursive or rhetorical role of the adverbial subordinate clauses, to begin with, it is object of various interpretations.
    a. Some interpret it as referring to the type of circumstance the adverbial clause expresses and to other readings that emerge in certain contexts.
    b. Others relate it to informational structure (new and known information).
    c. Moreover, the rhetorical or discursive meaning of these clauses is inferred more or less intuitively without stipulated formal semantic constraints.

Bearing in mind these conclusions, it is our claim that a semantic analysis of the five types of adverbial clauses performed in a formal theoretical framework, in which their interpretation derives from the articulation of information concerning temporal, aspectual and rhetorical characteristics, results more accurate, universal and effective. Before presenting our proposal in chapter 4, we will define the temporal, aspectual and rhetorical theoretical framework in the next two chapters.

Chapter 2

Tense and Aspect

Introduction

In this chapter, we aim at determining the theoretical framework as far as temporal interpretation is concerned that we will work on when analysing the data. The definition of such a framework is indeed a complex task not only because temporal interpretation is very intricate and requires the consideration of different sources, but also because, although the investigation on this domain is abundant, the approaches can be very different. This means, on the one hand, that we have to narrow down the information sources that we will consider in our own investigation and, on the other hand, we have to ascertain whether those approaches can, or not, account for the semantic properties we seek to investigate.

Therefore, to achieve our aim, we will start by defining *time* in natural languages, in section 2.1.. According to the adopted definition of time, different mechanisms are used to express time. In fact, being the temporal interpretation compositional and having different sources of information, it is necessary to look into the relevant devices. Nevertheless, the study of the role of each mechanism in the final reading of the predication would constitute a large undertaking that could not be pursued here extensively. For this reason, in this chapter, we will confine our analysis to two of these devices: tense and aspect.

So, in section 2.2.1., we will present a critical analysis of some of the existing approaches/ proposals for the treatment of tense, highlighting the strong points and also the downsides. As far as aspect is concerned, although it is not our aim to present an extensive analysis of aspectual theories, since it plays a relevant role in the determination of temporal relations, in section 2.2.2., we will look into the most significant proposals in order to adopt a suitable terminology to be used in our own theoretical description.

It should be noted, however, that our intention is not so much to discuss at length the most pertinent theories of tense and aspect, but to collect instruments of analysis. In

fact, as we have already explained, the theories of tense and aspect abound and an in-depth investigation of the most influential ones would be impractical in the present work. Moreover, a presentation and critical analysis of the main theories were already carried out in Silvano (2003). Notwithstanding that, while justifying the option for a model of analysis, some criticism on the different proposals will be expressed.

The theoretical instruments gathered from the revision of the main proposals for the treatment of tense and aspect will be used to describe the European Portuguese tense system in section 2.3.. In this section, we will present a formal representation of verb tenses of the Indicative mood.

Since the object of study of the present investigation is complex sentences, a revision of the main theories about the phenomenon *consecutio temporum* is mandatory. Therefore, we will consider some of the proposals which attempt at explaining temporal anaphora and at providing a theoretical framework to properly describe it and we will point out some of their shortcomings and their most compelling features. This task will be carried out in section 2.4.. At the end of this section, we will present a proposal for the treatment of sequence of tenses, which is motivated by the critical analysis of the revised approaches.

We will end with the relevant conclusions of the analysis carried out throughout the chapter.

2.1. Time in natural languages

All human languages comprise the notion of time and have mechanisms to reason about time, about how far away an event is in time, about hypothetical or planned events. The concept of time is normally associated with a unidirectional line where the present separates the past from the future and where time inevitably moves. Therefore, on the one hand, the *now*, which includes the time of utterance, is the anchoring point that allows us to establish the past, future and present. A situation that is located in the past is anterior to the moment of utterance, while one that is located in the future is posterior and one in the present overlaps the moment of utterance. On the other hand, what is at this precise moment the *now* in five minutes times is the past. Besides being perceived as linear, dynamic and ordered, time is also conceived as

infinite with an unbounded future and a bounded past. Furthermore, time is seen as being constituted by smaller temporal units that can be measured, related or subdivided. These units are ordered by a relation of earlier and later. However, the ordering may not be a simple timeline, because of partial ordering and the occurrence of hypothetical or unreal situations, which may lead to a branching representation of time.

If all natural languages convey the notion of time, needless is to say that they must have mechanisms of expressing time (cf. Comrie (1985), Klein (2009), among others). There are different ways by which time is encoded in natural languages from tense and aspect to temporal adverbials and discourse principles. Although it is possible to single out the different temporal devices, the interpretation of the temporality of a predication is compositional and, so, results from the interaction of information concerning all those devices.

2.2. Two devices of time expression: Tense and Aspect

2.2.1. Tense

At a grammatical level, one of the devices that encode time is tense[1], which is used to locate temporally a predication. This linguistic category integrates different verb tenses that locate the predications in three temporal domains: present, past and future. In order to fully understand the concept of tense, it is necessary to address notions of the semantics of tense, such as time interval, reference time, utterance time, speech time and temporal perspective point, rooted in some proposals. In fact, temporal reasoning is not only concerned with anchoring and ordering the predications, but also with creating the most suitable formalisms for representing the temporal properties of those predications (cf. Mani *et al.* (2005: 161)).

[1] Cf., for instance, Comrie (1985: viii) "I take tense to be defined as the grammaticalisation of location in time".

2.2.1.1. Instants, intervals and events/ states-based semantics

In the literature, different theoretical proposals aim at formalising the metaphysic conception of time. One of the features that typically distinguish the structure of time within a model of temporal reasoning is the primitive time unit and the choice is normally between instants (points) or intervals (periods)[2]. According to the tradition of tense logic (Prior (1968) and Montague (1970)), the treatment of time is grounded on propositional logic or predicate logic enhanced with two tense operators: P (Past) and F (Future). In this framework, a sentence like (145), represented in formal language as *Pø*, is true at a given time *t*, *iff* there is some time *t'* at which *ø* is true.

(145) Mary travelled to India.

However, such a model is too limitative because it does not adequately represent all the possibilities of temporal localisation or provides a satisfactory description of linguistic phenomena like temporal anaphora[3]. The interpretation of tense as indefinite is the reason why this model cannot properly treat temporal anaphora. In a sequence of tenses in the past, p_1 and p_2, these are said to be true a *t iff* there exist t_1 and t_2 both earlier than *t*, and p_1 holds at t_1 and p_2 at t_2, but nothing is said with respect to the order between t_1 and t_2. This problem is solved if tense is interpreted definitely.

Moreover, the fact that these tense logical systems only integrate two tense operators and only interpret the propositions against instants of time disallows a proper representation of a sentence like (146)[4].

(146) Mary has been living in London since she graduated.

For these reasons, Bennet and Partee (1978) argue in favour of an interval-based semantics and not an instant-based semantics.

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[2] For a thorough description of the differences between an instant and an interval-based framework, see van Benthem (1983).

[3] See Bennet and Partee (1978) and Kamp and Reyle (1993) for more criticism of Priorean logic.

[4] There are more elaborated proposals of models of tense logic with more than two operators. Still the same shortcomings prevail because these tense logics are not able to represent some features of tenses of natural languages (cf. Kamp and Reyle (1993: 497)).

> "Let T be real numbers. T is to be regarded as the set of moments of time. Let $\leq$ be the standard dense simple ordering of T. I is an interval of T if and only if I C T and for any t_1, t_3 ϵ I such that $t_1 \leq t_3$ if t_2 is such that $t_1 \leq t_2 \leq t_3$, then t_2 ϵ I." (Bennet and Partee (1978: 11))

The choice of real numbers to represent the set of moments of times rests on the following reasons: it mirrors the intuition that time is infinite; there is a dense simple ordering of time; and it assigns to intervals the property of having an upper bound (or lower bound) as a final bound (or initial bound). In addition to this property, intervals can have subintervals. Moreover, the relation of precedence between the intervals is a transitive, asymmetric and irreflexive relation.

Dowty (1982; 1986) also advocates that the semantics of a sentence should be stated in terms of the primitive notion of truth with respect to an interval of time and adds the idea that the truth of a sentence with respect to an interval *I* is independent of the truth of that same sentence with respect to subintervals of *I*, moments within *I* or superintervals of *I*. This assumption constitutes the foundation for the defining criteria of aspectual classes[5].

Kamp (1979) and Kamp and Reyle (1993) voice some criticism against both the instant-based semantics and the interval-based semantics. According to them, on the one hand, the latter does not account for the fact that in a sentence like (147) there may be some instant in which the sentence is not true.

(147) Mary is ill.

On the other hand, the instant tense analysis does not adequately describe a sentence like (148), because *Maria* standing in the *write* relation to *a letter* at *t* is true, not only at that very instant, but at an interval *I*.

(148) Mary was writing a letter.

To overcome the problems raised by these two semantic approaches, Kamp and Reyle (1993) put forward a third option: an event-based semantics sharing some

[5] Cf. section 2.1.1.1.

characteristics with the interval-based semantics. Sentences are described in terms of events or states, but intervals (atomic or not) are still taken into consideration in the analysis of those sentences[6]. The formalisation of the relation between them will be discussed shortly.

2.2.1.2. The notion of reference time in the representations of tenses

Regardless of the primitives one adopts, the notion of reference time is crucial to the analysis of tenses and, thus, of temporal relations in predications. However, although this premise is widely accepted, there is not a consensual approach to its notion and function[7].

The first formalised notion of reference time goes back to Reichenbach (1947). He perceives the insufficiency of just considering the time of utterance in the analysis of tenses, proposes a three-place structure composed by not only the point of speech, but also the point of the event and the point of reference. The point of speech corresponds to the time point of the act of speech. The point of the event is the time in which the predication is located. The point of reference is vaguely defined as a time between the point of the event and the point of speech.

The articulation of these three points renders nine fundamental forms, enabling, thus, the definition of all verb tenses, as illustrated by table 13[8].

[6] Dowty (1986) believes that this framework is not incompatible with the definition of the aspectual classes in terms of intervals. Actually, he argues that it would be necessary to take these definitions into consideration in order to properly represent the semantics of verbs, aspectual adverbs and tenses.

[7] Cf. Bertinetto (1985: 41): "Tough virtually every scholar who deals with tenses in natural languages recognizes the notion of ' reference time', there is hardly any agreement on its meaning and function" and Nerbonne (1986: 85): "It is of course the concept of reference time which has puzzled researchers".

[8] The dash between the letters represents a relation of anteriority and the comma a relation of simultaneity.

Structure	New Name	Traditional Name
E – R – S	Anterior past	Past Perfect
E, R – S	Simple past	Simple Past
R – E – S R – S , E R – S – E	Posterior past	Possible transcription: 'I did not expect he would win the race.'
E – S , R	Anterior present	Present Perfect
S, R, E	Simple present	Present
S, R – E	Posterior present	Simple Future
S – E – R S, E – R E – S – R	Anterior future	Future Perfect
S – R, E	Simple future	Simple Future
S – R – E	Posterior future	Possible transcription: 'I shall be going to see him'

Table 13. Reichenbach's representation of tenses (1947: 77) (*adapted*)

Reichenbach (1947) suggests a new terminology depending on the position of the point of reference with respect to the point of speech ('past', 'present' and 'future') and on the position of the point of event regarding the point of reference ('anterior', 'simple' and 'posterior'). The fact that the tenses are defined in terms of two sorts of relations, justifies the classification of Reichenbach's tense theory as two-dimensional.

Despite the fact that there are some drawbacks[9], Reichenbach's theory provides a treatment of tenses that captures to a certain extent the way time is used in natural languages. However, some refinements are in order. In fact, different authors soon acknowledge the insufficiency of considering just one time of reference in the representation of certain verb tenses, as well of sentences with two temporal references, like the ones in (149) and (150).

(149) The others would have left by then. (Declerck (1991: 227)

(150) We are now leaving tomorrow. (*Ibidem*)

Many solutions are offered to overcome this shortcoming. Bertinetto (1985), for instance, argues that, in fact, the Reichenbach's point of reference carries a complex function of extrinsic and intrinsic temporal reference: (i) locating the situation in the time domain, i.e., 'event localising function'(L); and (ii) pointing temporal indications

[9] For a critical description, see Silvano (2003) and the references therein (Comrie (1995), Declerck (1991), Binnick (1991)).

which are internally postulated by certain verb tenses, i.e., 'reference time'. According to these definitions, the reference time is only required in the presence of compound tenses and, when it is not explicit, it must be inferable from the context. The event localisation function may or may not surface. In a sentence like (151),

(151) Who has built this house?

while the reference time implicitly coincides with the speech point, due to the semantics of the verb, the localising time (L) is absent.

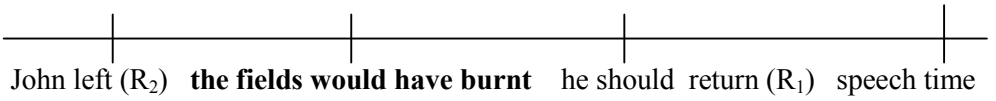
Comrie (1985) also considers that the reference point is not necessary for the non-compound tenses. For this reason, he postulates three groups of tenses (absolute, relative and absolute-relative[10]), in which the reference time plays different roles. So, while the absolute tenses do not require a time of reference and are defined in terms of the relation between the time of event and the time of speech[11], the relative and the absolute-relative tenses require a time of reference. The difference between relative tenses and the absolute-relative tenses lays on the presence/ absence of the speech time in their definition: the first are described with respect to the temporal relation between the event time and the reference time and the second regarding the temporal relation of anteriority, simultaneity and posteriority between the event time, the reference time and the speech time. In this last group of tenses, Comrie (1985) also stipulates two reference moments for the Conditional Perfect. The representation of this tense in (152) illustrates how this system works.

[10] Soares Barbosa (1830:205) distinguishes absolute tenses from relative tenses.

[11] Declerck (1991) extensively criticises Comrie's analysis of absolute tenses adducing several compelling arguments in favour of the presence of the reference time, namely the well-known Partee's observation (1973) about the sentence "I didn't turn off the stove" that underlines the existence of an implicit specific time not referred in the previous context. However, it is worthy of note that, in the 1984's paper, Partee acknowledges that the simple past cannot be analysed in the same manner as pronouns due to its forward reading in some contexts. She still characterises tense as anaphoric, but adds the following stipulation to her claim: tense is context-dependent and is not necessary to see it as referring to times as pronouns refer to entities.

(152) John left for the front; by the time he should return, the fields would have burnt to stubble. (Comrie (1985:76))

Conditional Perfect: E before R_1 after R_2 before S
E = the fields would have burnt to stubble
R_1= by the time he should return
R_2= João left for the front



The following table represents the three groups of tenses and their most frequent occurrences.

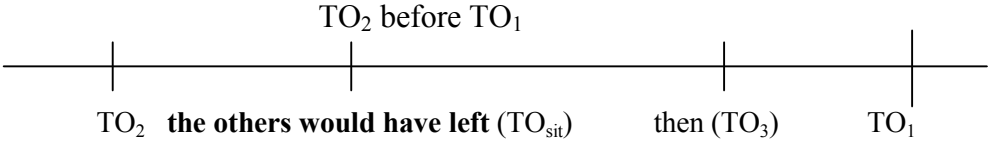
Verb tenses		**Temporal relations between the relevant times**
Absolute tenses	Present	E simul S
	Past	E before S
	Future	E after S
Relative tenses	Relative Present	E simul R
	Relative Past	E before R
	Relative Future	E after R
Absolute-relative tenses	Pluperfect	E before R before S
	Future perfect	E before R after S
	Future in the past	E after R before S
	Future perfect in the past	E before R_1 after R_2 before S

Table 14. Cormie's representation of tenses (1985)

In its turn, Declerck (1991) defines different time intervals to represent different reference times: the temporal zero-point (t_0), which is "the ultimate origin of all temporal relations" described in a predication, can be identified with the time of utterance (TU) and the time of reference, which is the time interval from which the situation is located and which can be established by the context, being in this case the time of orientation (TO), or by a temporal adverbial, in which case it is the established time (TE). Another time of reference is the time of orientation of the situation (TO_{sit}), which corresponds to the time of orientation that is simultaneous with the time of the situation (TS). Tenses like the Conditional Perfect have different TO, as it is evident from its representation in (153).

(153) The others would have left by then. (1991:384)

Conditional Perfect: TS simul TO_{sit}
TO_{sit} completely before TO_3
TO_3 after TO_2
TO_2 before TO_1



TO_2 **the others would have left** (TO_{sit}) then (TO_3) TO_1

The following table describe the structure of the verbs tenses proposed by Declerck (1991).

Verb tenses		**Temporal relations between the relevant times**
Present time-sphere	Absolute present	TS simul TO_{sit} TO_{sit} includes t_0
	Relative present	TS simul TO_{sit} TO_{sit} includes TO_1
	Present Perfect	TS simul TO_{sit} TO_{sit} completely before TO_1 or TO_{sit} before and till TO_1 $TO_1 = t_0$ or TO_1 = TO *behaving as* t_0
	Absolute future	TS simul TO_{sit} TO_{sit} after t_0 TS simul TO_{sit} TO_{sit} since t_0 onwards
	Relative future	TS simul TO_{sit} TO_{sit} after TO_1 TS simul TO_{sit} TO_{sit} since TO_1 onwards
	Absolute future perfect	TS simul TO_{sit} TO_{sit} completely before TO_2 or TO_{sit} before and till TO_2 TO_2 after t_0
	Relative Future perfect	TS simul TO_{sit} TO_{sit} completely before TO_2 or TO_{sit} before and till TO_2 TO_2 after TO_1
Past time-sphere	Absolute preterite	TS simul TO_{sit} TO_{sit} before t_0
	Relative preterite	TS simul TO_{sit} TO_{sit} before TO_1
	Past perfect	TS simul TO_{sit} TO_{sit} completely before TO_2 or TO_{sit} till TO_2 TO_2 before TO_1 (frequently t_0)
	Absolute conditional	TS simul TO_{sit} TO_{sit} completely after TO_2 or TO_{sit} since TO_2 onwards TO_2 before t_0
	Relative conditional	TS simul TO_{sit} TO_{sit} completely after TO_2 or TO_{sit} since TO_2 onwards TO_2 before TO_1
	Conditional perfect	TS simul TO_{sit} TO_{sit} completely before TO_3 or TO_{sit} since TO_3 onwards TO_3 after TO_2 TO_2 before TO_1

Table 15. Declerck's representation of tenses (1991)

Although Declerck's theory (1991) reflects the intuition that it is necessary to consider more than one type of reference point, the substantial terminological diversity results in a somewhat complex and dense instrument of description of the temporal relations in predications.

Advocating the relevance of defining some context-defined point of reference, Kamp and Reyle's proposal (1993) is built on Reichenbach's theory of tenses. The first step is to clarify the notion of reference point, which "suffers from the defect that it is "overloaded": in his theory reference times are made to do too many things at once" (Kamp *et al.* (2005: 72)). To this end, the authors distinguish between two different times of reference: the temporal perspective point (TPpt), which is identified with the time interval from which the situation is seen, and the reference point (Rpt), which explains the narrative progression and, thus, it is relevant for sequences of more than one sentence. Therefore, in a discourse like (154), the TPpt of the situation *Maria writing the letter* is the time of the utterance (n).

(154) Mary wrote the letter. (Kamp and Reyle (1993: 558))

As to the reference point, the general rule sets out that the Rpt of an initial discourse sentence remains undetermined. However, if we were to add another sentence to this discourse, like in (155), then, the Rpt of the represented situation would be the event described in the previous sentence. It should be noted that the TPpt would remain *n*.

(155) Mary wrote the letter. She went to the post office.

Since Kamp and Reyle's theory is two-dimensional, their description of tenses integrates two types of relations. The first is between the TPpt and the utterance time (n) and has two feature values [+ Past] or [- Past], if the TPpt is located before *n* or overlaps *n*, respectively. The second relation, which expresses Tense, is established between the location time of the eventuality and the TPpt and has three feature values, present, past

and future. These theoretical principles render the following analysis of English verb tenses[12].

	Relation between TPpt and n	**Relation between location time and the TPpt**
present	- PAST	*pres*
future	- PAST	*fut*
simple past	- PAST +PAST	*past* *pres*
past future	+PAST	*fut*
present perfect	- PAST	*pres*
future perfect	- PAST	*fut*
past perfect	+PAST	*past*
	- PAST +PAST	*past* *pres*
past future perfect	+PAST	*fut*

Table 16. The temporal properties of verb tenses (Kamp and Reyle (1993: 601))

The use of the verb tenses defined above is exemplified in the following set of examples.

(156) Mary is in the library. (Kamp and Reyle (1993: 514))

(157) John will leave work at the usual hour. (*Ibidem*: 597n)

(158) Fred arrived at 10:00. (*Ibidem*: 593)

(159) Mary had been unhappy in her new environment for more than a year. But now she felt at home. (*Ibidem*: 595)

(160) Mary got to the station at 9:45. Her train would arrive at 10:05. (*Ibidem*: 595)

(161) Mary has lived in Amsterdam. (*Ibidem*: 567)

(162) John will get there around 6:30. He will have had a hard day. (*Ibidem*: 597n)

(163) Mary was content. The past two days had been strenuous. But now she had sent off her proposal. (*Ibidem*: 599)

(164) Mary went to the post office. She had written the letter. (*Ibidem*: 573)

(165) I will be at the party at 11:00. The guests would have arrived by that time.

[12] At this point, we are just concerned with the temporal features of the verb tenses. The aspectual features will be addressed in section 2.2.2.1.4., page 112-113. In the present section, we will only refer to aspectual characteristics when the distinction between the tenses representations demands it.

The first three examples resort to the Simple Present, Future and Simple Past, respectively, which in terms of temporal reference means that: (i) the relation between the TPpt of the eventualities and the utterance time is the same, <*the TPpt coincides with the utterance time*>; (ii) the relation between the described eventuality and the TPpt differs, <*described eventuality coincides/ after/ precedes the TPpt*>. A less common use of the Simple Past is present in the second sentence of (159). In this case, the temporal adverb *now*[13] determines that the TPpt of the situation is before the utterance time and that the eventuality overlaps with the TPpt. Whenever the situation is represented in the past future (Conditional) the TPpt is also anterior to the utterance time, but the described eventuality is located after the TPpt.

The Present Perfect and the Future Perfect, used in (161) and in (162), share the same type of relation between the TPpt and the utterance time <*the TPpt coincides with the utterance time*>, but are discernable insofar as the feature of tense. While the first implies that <*the described eventuality coincides with TPpt*>, the second is defined by the relation of posteriority between the eventuality and the TPpt.

The Past Perfect is ambiguous between three different interpretations. One of the interpretations corresponds to the typical flashbacks. In these cases, the TPpt of the described eventuality is before the utterance time and the location time of that eventuality is before the TPpt (cf. the first underlined sentences of (163)). On another reading the Past Perfect is greatly influenced by the presence of the temporal adverbial *now* (cf. last sentence of (163)), which establishes the location time of the situation in a time interval that overlaps with the TPpt, a time interval anterior to the speech time. The choice between this description and the other possibility (<- PAST, *past*>), exemplified in (164), is, as the authors put it, difficult to make and depends on the context. In this case, the TPpt of the result state[14] of the situation "had written a letter" coincides with the speech time and the location time of that result state is anterior to the TPpt. As a matter of fact, if we take into consideration that the first event, "went to the post office",

[13] In a footnote, Kamp and Reyle (1993: 597) discuss the possibility of the TPpt having the value feature of [+ FUT] when it co-occurs with *now*, as in (i).

(i) Maria will have been unhappy in her environment for more than a year. But now she will feel at home.

However, because they encountered some reluctance near their informants concerning this and other discourses in the future, they maintain that TPpt has only two value [- Past] or [+ Past].

[14] We will discuss the analysis of the perfective system as representing a result state in section 2.3.1., pages 126-131.

is included in the result state represented in the second sentence, it is easier to understand why the TPpt of this second situation overlaps *n*.

The last example contains the past future perfect, which is defined by the following pair of relations: *<the TPpt precedes the utterance time; the described eventuality after TPpt >*.

Kamp and Reyle's two-dimensional theory of tense resolves the ambiguity created by Reichenbach's notion of reference point and provides a straightforward account of temporal reference in predications. However, some shortcomings need to be dealt with. According to Kamp *et al.* (2005: 92), the most serious problems concern "(i) the principles governing the identification of reference time *r* and perspective time *p*; and (ii) the specification of the relations in which *r* and *p* stand to location time and utterance time". However, they do not offer any solution to those problems, claiming that "it appears that if we want to make substantial further progress on these problems we need a framework in which these factors (pragmatic) can be treated in a systematic way".

2.2.2. Aspect

Aspect is another semantic category which is pertinent to the determination of temporal relations. Contrary to tense that considers the situations externally and portrays them as indivisible, aspect carries information concerning the internal structure of the situations.

Traditionally, there is a distinction between aspect, *aktionsart* and aristotelic aspect[15]. The first one is used to refer to the internal focalisation conveyed by affixes, the second describes the internal properties of the eventualities derived by lexical information and the third concerns the classification of the situations in the abstract. However, bearing in mind that the main target language of this investigation is European Portuguese, along with Cunha (2004: 12-16), we argue that the distinction between aspect and *aktionsart*, on the one hand, and between aspect and aristotelic aspect is not prolific. The former is not very productive because in both cases the aspectual outcome is the same and, moreover, in European Portuguese, there are not

[15] Cf. Binnick (1991) for a more complete description of the three notions of *aspect*.

affixes that have only an aspectual meaning. The latter distinction raises some complex problems as far as the determination of the aspectual class of a certain situation grounded solely on an abstract notion and, thus, not taking other linguistic elements into account.

So, we will resort to a broader notion of aspect: a semantic category which focuses on the internal temporal structure of the eventualities regardless of the linguistic devices used. This notion means that the final aspectual interpretation of aspect is obtained compositionally and results from the interaction of different linguistic and extra-linguistic factors which go beyond the verb aspectual class. This means that the final aspectual interpretation of a predication should take into account not only the basic aspectual class of the verb, but also the tenses, the adverbials, the aspectual operators such as *começar a* ('begin'*), acabar de* ('finish'), among others, the arguments, the prepositional phrases and also extra-linguistic and contextual information[16].

In what follows, we begin by describing the properties of aspectual classes in some proposals, then we will have a brief look at some factors that influence the aspectual output of a predication and, finally, discuss Cunha's proposal for a unified conception of aspect.

2.2.2.1. The aspectual typology

The properties that define each aspectual class are relevant to determine the internal structure of the situations. Therefore, the aspectual identity of a situation is defined by the presence or absence of a set of features: [+/- dynamic], [+/- durative], [+/- telic] and [+/- homogeneous].

Since Vendler's proposal (1967) was foundational and very relevant in the forthcoming literature, we will start by presenting the four categories put forward by him and make use of some linguistic tests used by Dowty (1979). The aspectual net developed by Moens (1987) enhances and improves Vendler's typology, what justifies its description. The distinction between phase and non-phase states by Cunha (1998) enables a finer-grained characterisation of states.

[16] For a more detailed analysis of the factors that interfere in the final aspectual reading, see Oliveira (1991, 1994, 1995, 2003), Cunha (1998; 2004) and Leal (2009).

2.2.2.1.1. Activities, accomplishments, achievements and states (Vendler (1967) and tests (Dowty (1979))

Vendler (1967) establishes four categories of verbs: activities, accomplishments, achievements and states exemplified in the following sentences.

(166) John ran in the Lisbon's marathon. (activity)

(167) Mary drew a circle. (accomplishment)

(168) Peter recognised Maria.(achievement)

(169) John knew the solution to the problem. (state)

The activities are dynamic, atelic, durative and homogeneous situations. The accomplishments are also dynamic and durative, but telic and heterogeneous. The achievements share with the accomplishments the property of dynamism, telicity and heterogeneity, being, however, non-durative. The states are not dynamic (contrary to the eventive situations), are atelic, homogeneous and durative.

There are some criteria or tests that enable a more or less significant distinction between these aspectual classes. Dowty (1979) uses some tests to distinguish stative from non-stative situations[17] (cf., for instance, the progressive test in (170) and other tests to identify the different non-stative classes (cf., for instance, the adverbial test in (171) for activities).

(170) a. *John is knowing the solution to the problem. (stative situation)
b. John is running in the Lisbon's marathon. (non-stative situation)

(171) a. John ran in the Lisbon's marathon for an hour. (activity)
b. *John ran in the Lisbon's marathon in an hour.

[17] It should be noted that not all non-stative situations answer in the same way to these tests. As pointed out by Dowty, the behaviour of achievements is very complex. For instance, contrary to activities and accomplishments, achievements fail the test for agency and progressive.

The example (170) shows that states cannot occur in the progressive form, contrary to non-stative situations. States are also not able to occur with the imperative, as complement of verbs such as *force* or *persuade*, with agentive adverbs (*carefully* or *deliberately*), with pseudo-cleft constructions or have a frequentative reading in the Simple Present.

The example (171) illustrates the test of temporal adverbials. In this case, the activities are compatible with *for*-adverbials, but not with *in*-adverbials, contrary to accomplishments that only marginally accept *for*-adverbials.

These and other tests are summarised in table 17, adapted from Dowty (1979: 60).

Criterion	States	Activities	Accomplishments	Achievements
1. meets non-stative tests	no	yes	yes	some
2. has habitual reading in the simple present	no	yes	yes	yes
3. *Ø for an hour, spend an hour Øing*	ok	ok	ok	bad
4. *Ø in an hour, take an hour to Ø*	bad	bad	ok	ok
5. *Ø for an hour* entails *Ø at all times in the hour*	yes	yes	no	n.a. (not applicable)
6. *x is Øing* entails *x has Øed*	n.a.	yes	no	some
7. complement of *stop*	ok	ok	ok	bad
8. complement of *finish*	bad	bad	ok	bad
9. ambiguity with *almost*	no	no	yes	no
10. *x Øed in an hour* entails that *x was Øing during that hour*	n.a.	n.a.	yes	no
11. occurs with *studiously*, *attentively*, *carefully*,...	bad	ok	ok	bad

Table 17. Tests to distinguish the different aspectual classes (adapted from Dowty (1979: 60))

Although Dowty (1979) recognises the classification of Vendler (1967) as valid, he comes to the conclusion that further semantic distinctions are in order to fully explain the different behaviours within the same aspectual classes. He proposes a categorisation of the verbs by their temporal properties in semantics of intervals and by agency. The consideration of these criteria renders a classification of eight categories: states, activities, single change of state (roughly achievements) and complex change of state, being each category divided into non-agentive and agentive, as exemplified in table 18.

	Non-agentive	Agentive
States	**1a.** be asleep, be in the garden (stage level), love, know (object level) **1b.** Interval statives: sit, stand, lie	**2a.** possibly be polite, be a hero, etc. Belong here, or in 4.
Activities	**3.** make noise, roll, rain	**4.** walk, laugh, dance (cf. 2a)
Single change of state	**5.** notice, realize, ignite	**6.** kill, point out (something to someone)
Complex change of state	**7.** flow from x to y, dissolve	**8.** build (a house), walk from x to y, walk a mile.

Table 18. Aspectual classification proposed by from Dowty (1979: 184)

However, as pointed by Dowty himself, this classification comes out as "fuzzy", mainly because one verb belonging to a particular aspectual class can in certain circumstances be converted into another aspectual class. For instance, an activity can be transformed into an accomplishment adding a bare plural. As a matter of fact, as we will show in the next section, Moens' proposal (1987) develops an analysis which provides the adequate description of theses aspectual commutations that Vendler (1967) and Dowty (1979) strive to give.

2.2.2.1.2. The Aspectual Net (Moens (1987) and Moens and Steedman (1988))

In Moens (1987) and Moens and Steedman's (1988) proposals, there are two important concepts: aspectual nucleus and aspectual net.

The aspectual nucleus refers to different phases that define the aspectual classes: preparatory process, culmination and consequent state. These three phases provide the distinction of the different eventive classes. The states do not carry any phases and thus are out of the aspectual nucleus. As to the events, the combination of the phases *culmination* and *consequent state* renders the aspectual class *culmination* (the achievements, in Vendler's classification); the combination of the three phases defines the *culminated processes* (Vendler's accomplishments); the consideration of the *preparatory process* characterises the *processes*; and the phase *culmination* describes *points*.

So, while culmination and points are atomic events, processes and culminated processes are extended events. Furthermore, while culminations and culminated processes have a consequent state, points and processes do not.

The second noteworthy concept is of the aspectual net. This notion derives from the observation that there are different linguistic devices such as tense and adverbials which transform the predications of one aspectual class into predications of a different, though related, aspectual class. The aspectual net represents the possible transformations or commutations that result from extracting or adding phases from the aspectual nucleus. Table 19 illustrates Moens and Steedman's (1988) aspectual dynamic based on Moens' (1987).

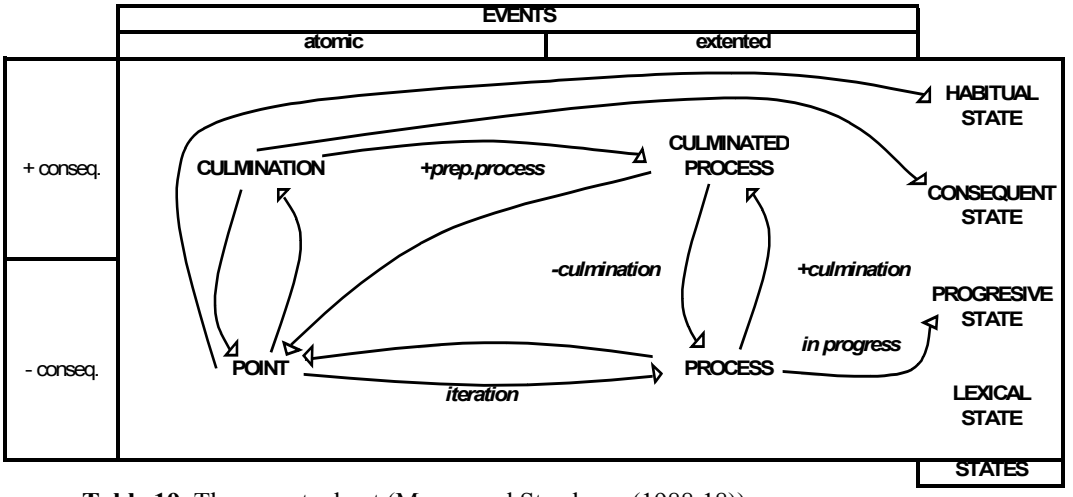


Table 19. The aspectual net (Moens and Steedman (1988:18))

The two notions of aspectual nucleus and aspectual net constitute an immeasurable enhancement to the analysis of aspectual properties of predications. Nevertheless, there is still a distinction that is in order here and that can improve greatly this classification. We are referring to phase and non-phase states carried out by Cunha (1998; 2004), that we will look into in the next section.

2.2.2.1.3. Phase and non-phase states (Cunha (1998; 2004))

Cunha (1998; 2004) considers that states are featured with the property [+/- phase] which is gradable, at least for the European Portuguese. This analysis is predicated on the observation that stative situations respond differently to Dowty's tests

(1979). While the situation in (172) behaves as a typical state, obtaining ungrammatical results in Dowty's tests, the situation in (173) produces grammatical results and the one in (174) in some tests renders grammatical sentences and in other ungrammatical.

(172) a. *O João está a ser alto.
The João is being tall.
**João is being tall.*

b. *O Pedro forçou o João a ser alto.
The Pedro forced the João to-be tall.
** Pedro forced João to be tall.*

c. *Sê alto, João!
Be tall, João!
**Be tall, João!*

d. *O João é deliberadamente alto.
The João is deliberately tall.
**João is deliberately tall.*

e. *O que o João fez foi ser alto.
What the João did was to-be tall.
**What João did was being tall.*

f. *O João é habitualmente alto.
The João is usually tall.
**João is usually tall.*

(173) a. A Maria está a ser simpática.
The Maria is being nice.
Maria is being nice.

b. O Pedro forçou a Maria a ser simpática.
The Pedro forced the Maria to-be nice.
Pedro forced Maria to be nice.

c. Sê simpática!
Be nice!
Be nice!

d. A Maria é deliberadamente simpática.
The Maria is deliberately nice.
Maria is deliberately nice.

e. O que a Maria fez foi ser simpática.
What the Maria did was to-be nice.
What Maria did was being nice.

f. A Maria é habitualmente simpática.
The Maria is usually nice.
Maria is usually nice.

(174) a. ?? A Ana está a ser saudável.
?? The Ana is being healthy.
?? Ana is being healthy.

b. ?O João persuadiu a Ana a ser saudável.
?The João persuaded the Ana to be healthy.
?João persuaded Ana to be healthy.

c. Sê saudável!
Be healthy!
Be healthy!

d. ??A Ana foi deliberadamente saudável.
??The Ana was deliberately healthy.
??Ana was deliberately healthy.

e. ?? O que a Ana fez foi ser saudável.
??What the Ana did was to-be healthy.
??What Ana did was being healthy.

f. A Ana é habitualmente saudável.
The Ana is usually healthy.
Ana is usually healthy.

It follows that states must be positioned in a phase scale, whose two poles are [+phase] and [-phase]. States such as *ser alta* are [-phase], states like *ser simpática* are [-phase] and the ones as *ser saudável* are hybrid. Only the states with the property [+phase] can be integrated in Moens and Moens and Steedman's aspectual net and be converted into processes.

Cunha (2004) develops further the classification of states by combining the aspectual property [+/-phase] with the temporal property of stage[18] (Carlson (1977), Dowty (1979), Chierchia (1995) and Kratzer (1995)) that distinguishes individual-level predicates from stage-level predicates. The intersection of these two "vectors" ensues a classification of phase and non-phase individual-level states (cf. (177) and (178)), and phase and non-phase stage level states (cf. (175) and (176)).

[18] In Cunha's analysis (2004: 351), stage is mainly a temporal concept that refers to a bounded interval and phase is an aspectual notion which concerns the time portion relevant for the change of the state-of-affairs represented by a given situation.

(175) A Ana vive em Amsterdão.
The Ana lives in Amsterdam.
Ana lives in Amsterdam.

(176) A Ana é Irlandesa.
The Ana is Irish.
Ana is Irish.

(177) A Maria é simpática.
The Maria is nice.
Maria is nice.

(178) A Maria tem uma febre alta.
The Maria has a fever high.
Maria has a high fever.

It should be noted that Cunha's proposal is based on data from the European Portuguese. However, as it is possible to conclude from the examples presented in English, it seems that the discrepancies observed in European Portuguese also exist in English. It is not our intention to argue in favour of an extension of Cunha's classification to other languages, but simply observe that as far as the data described are concerned, the subclasses of states proposed for the European Portuguese seem to be valid for the English version of the examples.

2.2.2.1.4. Kamp and Reyle (1993)

In Kamp and Reyle's theoretical framework, the aspectual properties of the predications are grounded on two sets of features with different values: [+states] *vs* [-states] and [+Perf] *vs* [-Perf]. The first feature allows the distinction between states and events, respectively, and the second between eventualities that refer to result states and eventualities that refer to other phases than the result phase part.

The definition of eventualities with the values [+states] and [-states] corresponds to the one presented in previous proposals, that is, while states involve the continuation of some condition (cf. (179)), events involve some kind of change (cf. (180)).

(179) Mary loves Bill.

(180) Mary wrote a letter.

This distinction is relevant to interpret tensed discourse, since it interferes with the temporal characterisation of the situations, namely insofar the relation with the reference point (Rpt): while stative situations usually overlap the Rpt (cf. (181)), the eventive situations follow it (cf. (182)).

(181) Mary went to the hospital. She was ill.

(182) Mary went to the hospital. The doctor examined her.

The second aspectual feature taken into account invokes the aspectual nucleus (Moens (1987) and Moens and Steedman (1988)). The sentences describing eventualities with the value [+Perf] have a result state (cf. (183)), whereas the ones with the value [-Perf] represent any other phase (cf. (184)).

(183) Mary has lived in London.

(184) Mary bought a house.

As far as the verb tenses in the English system are concerned, their aspectual properties are summed up in table 20.

	The stative or non-stative nature	**The presence or absence of a result state**
present	+ STAT	- PERF
future	+/- STAT	- PERF
simple past	+/- STAT + STAT	- PERF - PERF
past future	+/- STAT	- PERF
present perfect	+ STAT	+ PERF
future perfect	+ STAT	+ PERF
past perfect	+/- STAT	- PERF
	+ STAT + STAT	+ PERF + PERF
past future perfect	+ STAT	+ PERF

Table 20. The aspectual properties of verb tenses (Kamp and Reyle (1993: 601))

2.3. The Portuguese tense system

In this section, firstly, we will present a descriptive analysis of the Portuguese tense system and, secondly, present a formalisation for the verb tenses of the Indicative mood.

In the Portuguese tense system, it is widely assumed that there are at least three moods: the Indicative, the Subjunctive and the Imperative, although the *Conditional* ('Condicional') and the *Future*[19] ('Futuro') tenses, simple or perfect, can occur as moods[20]. The Indicative and the Subjunctive moods are composed of different verb tenses that locate the situations in three time spheres: past, present and future[21]. The Imperative has only one tense (*Presente*) and it is specialised in the expression of deontic modality in the form of an order[22].

The Indicative and Subjunctive[23] systems are summed up in tables 21 and 22.

[19] We will graph the verb tenses with capital letter so that we can distinguish them from the reference to temporal domains as present, past and future. Furthermore, we will refer to the different tenses using the Portuguese terms, mainly because sometimes there is not an exact correspondent in English.

[20] Cf. Oliveira (2003: 254) and Oliveira and Lopes (1995), among others. This classification is in keeping with Barbosa's (1830), although instead of considering the Imperative, he classifies the infinitive as a mood. As far as the Brazilian Portuguese grammars are concerned, there are discrepancies: whereas Bechara (2002) presents a five-mood classification (Indicative, Subjunctive, Conditional, *Optativo* ('optative') and Imperative), Cunha and Cintra (1984) is in accordance with Oliveira (2003).

[21] Notice that Declerck (1991) considers only two time spheres, the present and the past. However, the stipulation of three time spheres (and of three values for the TPpt, for that matter) can account more accurately for the Portuguese data (cf. Peres (1993)). As a matter of fact, Kamp and Reyle (1993) discuss the possibility of ascribing to the TPpt also the value *Fut* in order to describe some English data (cf. n. 13).

[22] We will focus our revision on the Indicative and the Subjunctive moods, as well as on the modal interpretation of the *Future* and *Conditional*, because these occur most commonly in sentences with adverbial clauses.

[23] In English, the subjunctive is much less common than in European Portuguese. In fact, as stated by Quirk *et al.* (1985: 155), "the subjunctive in modern English is generally an optional and stylistically somewhat marked variant of other constructions". Huddleston and Pullum (2002) go even further and write that the subjunctive mood has more or less been eliminated from the inflectional system, being limited to 1st/3rd person *were*. Nevertheless, according to Quirk *et al.*, there are two forms of the subjunctive: the present and past subjunctive. The former is realised by the base form of the verb (cf. (i)), like the imperative, and the latter by the past tense form of the verb *to be*, *were* (cf. (ii)).

(i) I insist that the Council reconsider its decisions. (Quirk *et al.* (1985: 155))

(ii) If she were leaving, you would have heard about it. (Ibidem: 156)

The Portuguese tenses and their English counterparts	Exemplification
Presente ('Present')	*amo* ('love')
Pretérito Imperfeito ('Simple Past *Imperfectum'*)	*amava* ('loved')
Pretérito Perfeito ('Simple Past')	*amei* ('loved')
Pretérito Perfeito composto ('Present Perfect'[24])	*tenho amado* (' have loved')
Pretérito mais-que-perfeito ('Past Perfect')	*amara/tinha amado* ('had loved')
Futuro ('Future')	*amarei* ('will love')
Futuro Perfeito ('Future Perfect')	*terei amado* ('will have loved')
Condicional ('Conditional')	*amaria* ('would love')
Condicional Perfeito ('Conditional Perfect')	*teria amado* ('would have loved')

Table 21. The Indicative system

The Portuguese tenses and their English counterparts	Exemplification
Presente ('Present')	*ame* ('love')
Pretérito Imperfeito ('Simple Past')	*amasse*
Futuro	*amar*
Pretérito Perfeito Composto	*tenha amado*
Pretérito mais-que-perfeito	*tivesse amado*
Futuro perfeito	*tiver amado*

Table 22. The Subjuntive system

2.3.1. The Indicative system

We will begin the analysis of the Portuguese verb tenses by the semantic characterisation of the Indicative tenses.

The ***Presente*** ('Simple Present') can be used to locate situations in different time intervals. In fact, although the designation implies an overlapping relation between the event time and the speech time, actually this circumstance only seldom takes place. It is when it is combined with the states that the *Presente* has a real temporal interpretation of present. In these cases, the TPpt is *n* and the relation between the eventuality and the TPpt is of inclusion, as illustrated by the following examples.

[24] Cf. note 35, page 40 for the mismatch between the *Pretérito Perfeito Composto* and the *Present Perfect* in certain contexts.

(185) A Ana adora a Primavera.
The Ana loves the Spring.
Ana loves Spring.

(186) O Carlos está constipado.
The Carlos is with-a-cold.
Carlos has a cold.

With events, the *Presente* ('Simple Present') can have a deictic reading, when the predications constitute direct reports (cf. (187)).

(187) Cristiano recebe a bola, chuta e marca golo.
Cristiano gets the ball, kicks and scores goal.
Cristiano gets the ball, kicks and scores goal.

In (187), the different events *recebe a bola*, *chuta* and *marca golo* overlap the speech time, which is their TPpt.

In other contexts where the *Presente* is used with events, we most frequently obtain an aspectual reading of habituality, as in (188)-(191).

(188) O João escreve. (process)
The João writes.
João writes.

(189) O Rui pinta um quadro (todos os meses). (culminated process)
The Rui paints a painting (every the monthes).
Rui paints a painting (every month).

(190) A Ana chega sempre atrasada. (culmination)
The Ana arrives always late.
Ana always arrives late.

(191) O Pedro espirra sempre que cheira uma flor. (point)
The Pedro sneezes whenever that smells a flower.
Pedro sneezes whenever he smells a flower.

In these examples, the represented situations are lexically a process, a culminated process, a culmination and a point which are commuted into a habitual state due to the co-occurrence with the *Presente* ('Simple Present'). The habituality reading is construed on the basis of an undetermined incidence of events of the same kind (cf. Oliveira (2003)). In the first example, the temporal boundaries are not established, but there is

the information that the speech time is included in the time interval where those events take place. The remaining examples require some type of quantification that attributes to the situations a repetitive reading.

In order to get a temporal interpretation of present with events, one has to use the *Presente Progressivo* ('Present Continuous'), composed by the aspectual operator *estar a* followed by the infinitive of the main verb. In these cases, the aspectual class of the situations commute to stative predications, as in examples (192)-(193).

(192) Os alunos estão a resolver uma ficha de trabalho.
The students are solve a sheet of work.
The students are solving a worksheet.

(193) O Manuel está a ser muito prestativo.
The Manuel is be very helpful.
Manuel is being very helpful.

However, the *Presente Progressivo* is not always interpreted as establishing an overlapping relation between the time of speech and the time of the event. Depending on the use of temporal adverbials, it can also have a reading in which the relation between the speech time and the event time is of posteriority. Examples (194) and (195) exemplify this circumstance.

(194) Amanhã, por esta altura, estou a viajar para Londres.
Tomorrow, by this time, am travel to London.
Tomorrow, by this time, I am travelling to London.

(195) No próximo mês, no dia 15, a Joana já está a relaxar numa praia exótica.
In-the next month, on-the day 15, the Joana already is relaxe in-a beach exotic.
By next month, on the 15th, Joana is already relaxing in an exotic beach.

In these two cases, the TPpt does not coincide with the speech time, but with a posterior time interval, that in (194) corresponds to the time denoted by the adverbial *amanhã, por esta altura*, and in (195) to the time denoted by *no próximo mês, no dia 15*.

In similar contexts, the *Presente* ('Simple Present') also subscribes the same characterisation and these contexts *TPpt<n* and *e O TPpt* (cf. (196)).

(196) Amanhã, por esta altura, já estou em Londres.
Tomorrow, by this time, already am in London.
Tomorrow, by this time, I will be in London.

In addition to the readings presented above, this tense can also be used in a predication to establish a posteriority relation with the speech time, as long as it co-occurs with temporal adverbials and as long as the situations are eventive. The examples (197)-(199) illustrate what we have said.

(197) O Afonso viaja para Lisboa amanhã.
The Afonso travels to Lisbon tomorrow.
The Afonso travels to Lisbon tomorrow.

(198) *O Afonso viaja para Lisboa.
The Afonso travels to Lisbon.
**The Afonso travels to Lisbon.*

(199) A Cláudia está doente. (overlapping reading)
The Claúdia is sick.
Claúdia is sick.

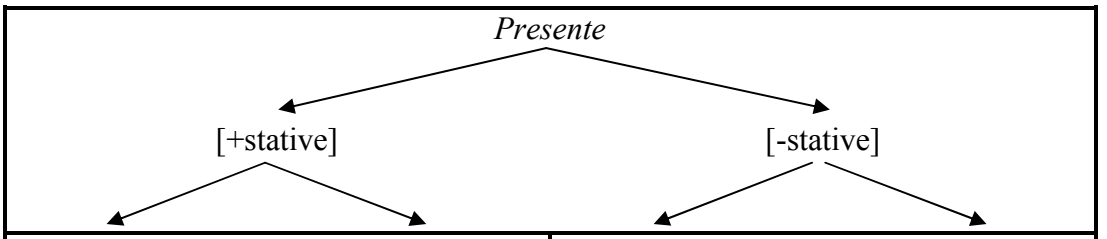
The use of the *Presente* as a marker of a future situation is largely documented in the literature (cf. among others, Oliveira (1985); Cunha e Cintra (1994); Oliveira and Lopes (1995); Oliveira (2003)). This interpretation surfaces in the presence of time adverbials that refer to future time intervals combined with eventive predications. In accordance with some authors, namely Lopes (1995), the responsible element for the future temporal localisation is not the *Presente* ('Simple Present'), but the time adverbial. The *Presente* would only carry a modal value of certainty or high probability. However, if we assume that even in the contexts with future or past time adverbials the *Presente* still carries the feature [-past], which describes the relation between the TPpt and *n*, then it is correct to conclude that this tense is not without temporality features and, hence, it is not the time adverb that is the sole responsible for the temporal localisation of the situation.

There is still another different reading available to the *Presente*. In this case, there is an anteriority relation between the TPpt, i.e., the speech time, and the event time. The only requirement is the presence of time adverbials describing intervals that are anterior to *n*, like in (200).

(200) Em 1911, Marie Curie recebe o segundo Prémio Nobel pela descoberta do rádio.
In 1911, Marie Curie receives the second Prize Noble for-the discovery of-the radio.
In 1911, Marie Curie receives the second Noble Prize for the discovery of radio.

In these cases, the responsibility for the temporal localisation would also lay on the time adverbial.

Matos (1999: 244) puts forward a classification for the different readings available with the *Presente*, which is represented in the following schema.



[-quantificational]	[+quantificational]	[past]	[future]
Deictic Present	Iterative/ habitual/ generic *Present*	Historic Present	Future Present
The signification established by the *Presente* is self-sufficient.		The context determines past and future interpretations, being normally a time adverbial responsible for those interpretations.	

Table 23. The analysis of the *Presente* proposed by Matos (1994: 244)

Bearing in mind the different interpretations, we will now put forward proposal of a representation of this tense[25] in Kamp and Reyle's theoretical framework, though with some methodological and terminological changes. As far as the relation between the TPpt and the location time of the situation, we will use Peres' terminology (1993), that is also used by Lopes (1995), because it is more transparent and, hence, more informative. So, we will describe the relation mentioned above with the features *[ant]* (anteriority), *[overl]* (overlapping), *[post]* (posteriority), instead of *[past]*, *[present]* and *[fut]*. As to the relation between the TPpt and the speech time (*now*), aiming at making the formalisation of each tense as translucent and unambiguous as possible, we will also adopt Peres' (1993) terminology that describes in a more exact manner the relation between the two relevant time intervals. So, the features *[past]*, *[present]* and *[fut]* will

[25] The same analysis will be used to represent the different temporal and aspectual meanings of the other verb tenses.

be used when the TPpt is in the past of the speech time, it is in the present and when it is in the future in regards to the speech time, respectively.

Moreover, in order to give a complete account of the different readings of the verb tenses, we will distinguish between two types of readings or interpretations: one that is inherent to the verb tense and it is the reading by default and the other that surfaces depending on the context, namely on the presence of past and future time adverbials.

Accordingly, for the *Presente*, the default reading is characterised by a TPpt that coincides with the speech time and that overlaps the location time of the situation. Aspectually, this reading carries the feature [+stative][26]. The contextual readings (or secondary readings) are four: the first occurs with eventive situations in direct reports, the second one in the presence of past time adverbials, the third in the presence of time adverbials that denote an interval posterior to the speech time and the last one when the TPpt is posterior to the speech time and there is an overlapping relation between the TPpt and the location time of the situation. Table 24 sums up the formal representation of the *Presente*.

CHARACTERISATION OF THE *PRESENTE*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PRES	*overl*	+STAT
Contextual readings	PRES PRES PRES FUT	*overl* *ant* *post* *overlp*	-STAT +STAT/-STAT +STAT/-STAT +STAT/-STAT

Table 24. The formal representation of the *Presente*

[26] In the representation of the tenses that integrate the European Portuguese system, which is based on Kamp and Reyle's proposal for the English, we will not include the feature [+/-PERF] corresponding to the presence of a result state, because, as we will explain in more detail when referring to the Perfective system (pages 126-131), we consider it to be inferential and not part of the meaning of the verb tenses.

The ***Pretérito Imperfeito*** ('Simple Past *Imperfectum'*) locates the situations in a past time interval and perspectvises them as occurring without establishing any initial or final frontier. For that reason, in example (201), the situation *estar no cabeleireiro* is located in a time interval anterior to the speech time and it establishes with its TPpt (the time interval where the situation *o João telefonou* takes place) an overlapping relation.

(201) A Inês estava no cabeleireiro quando o João lhe telefonou.
The Inês was in-the hairdresser when the João her called.
Inês was in the hairdresser when João called her.

In this example, the TPpt is included in the event time. Nevertheless, there are configurations where the *Pretérito Imperfeito* represents a situation that is linked to its TPpt by a total overlapping relation, as in (202).

(202) No ano passado, os meus alunos eram mais empenhados.
In-the year last, the my students were more committed.
Last year, my students were more committed.

By default, a situation described in the *Pretérito Imperfeito* chooses as its TPpt a past time interval and establishes with it an overlapping relation (total or partial) (cf. (204)) or an inclusion relation (cf. (203) and (205)).

(203) O João escrevia a carta quando a Ana chegou.
The João wrote(imp) the letter when the Ana arrived.
João was writing the letter when Ana arrived.

(204) O Rui saía quando a Maria chegou.
The Rui left(imp) when the Maria arrived.
Rui left when Maria arrived.

(205) O João espirrava muito quando a Ana chegou.[27]
The João sneezed a-lot when the Ana arrived.
João was sneezing a lot when Ana arrived.

[27] Oliveira (2003:140) considers that a sentence as *O Rui espirrava quando a Maria chegou* ('Rui was sneezing when Maria arrived') is not very natural. However, if we add a quantifier like *muito* ('a lot') the iterative reading becomes more visible and the sentence more acceptable.

These examples show that, similar to the *Presente* ('Simple Present'), the *Pretérito Imperfeito* also influences the aspectual profile of some classes of situations. Therefore, when it co-occurs with culminated processes and culminations, the *Pretérito Imperfeito* withdraws their culmination and transforms them in atelic situations, as in (203) and (204), respectively.

With points the use of the *Pretérito Imperfeito* leads to an interpretation where there is a multiple occurrence of the situation. In the case of (25), the situation *espirrar* ('sneeze') is repeated several times in a time interval that includes the moment of Maria's arrival.

The processes and states do not suffer any aspectual commutation because their structure does not include a culmination point. They are perspectivised as unbounded situations happening in the past.

In addition to the temporal interpretation where the TPpt is PAST and the relation between the situation and the TPpt is of overlapping, there is another inherent reading of the *Pretérito Imperfeito*. As observed by Oliveira (p.c.), whenever the predicate is an individual level state, as in (206), the *Pretérito Imperfeito* does not require a past time interval to be its TPpt. In such cases, the TPpt is the utterance time and the temporal relation between the situation and the TPpt is of anteriority.

(206) A Beatriz era inteligente.
The Beatriz was(imperf) intelligent.
Beatriz was intelligent.

The sentences with stage level states as the one in (207) result strange without a past time interval that acts as its TPpt.

(207) A Maria estava triste.
The Maria was(Imp) sad.
Maria was sad.

Oliveira (2004) observes that the *Pretérito Imperfeito* has an additional semantic-pragmatic effect when it co-occurs with these individual-level states that the *Pretérito Perfeito* ('Simple Past *Perfective'*) does not carry. Both convey the temporal information that the property is no longer applicable to the individual, but the *Pretérito*

Imperfeito, in certain contexts of non-complex sentences, also includes the inference that the predicate does not apply because the individual no longer exists. For instance, in example (208) we infer that the individual still exists at the speech time, in (206) we infer that the individual does not exist anymore, and in (209) we conclude that the property no longer applies to the individual, without questioning the presupposition of the individual existence.

(208) A Beatriz é inteligente.
The Beatriz is intelligent.
Beatriz is intelligent.

(209) A Beatriz foi inteligente.
The Beatriz was(perf) intelligent.
Beatriz was intelligent.

As noted by Oliveira (2004), however, this inference of the non-existence of the individual at the speech time associated with the *Pretérito Imperfeito* only surfaces with individual-level stative predicates, and not with stage-level stative predicates (cf. (207)), and in sentences that do not establish strict temporal boundaries (cf. (210)).

(210) a. O João era um bom aluno.
The João was(imp) a good student.
João was a good student.

b. No ano passado, o João era um bom aluno.
In-the year last, the João was(imp) a good student.
Last year, João was a good student.

Another interpretation of the *Pretérito Imperfeito* is of habituality (cf. (211)-(214)).

(211) A Maria estudava muito na faculdade. (process)
The Maria studied(imp) a-lot in-the university
Maria studied a lot at the university.

(212) O Rui pintava um quadro (todos os meses). (culminated process)
The Rui painted(imp) a painting (every the months).
Rui painted a painting (every month).

(213) A Ana chegava sempre atrasada às aulas da faculdade (culmination)
The Ana arrived(imp)always late to-the classes of-the university.
Ana always arrived late to the university classes.

(214) O João espirrava sempre que cheirava uma flor. (point)
The João sneezed (imp) whenever that smelled(imp) a flower.
João sneezed whenever he smelled a flower.

In this interpretation, the situation's TPpt is also *n* and the relation between the situation and the TPpt is of anteriority.

In predications with the *Pretérito Imperfeito*, there are certain contexts where this tense has a modal interpretation expressing the speaker's attitude towards the utterance (i.e., the uncertainty of the occurrence of the represented situations) and not so much a temporal reading. (cf. (215)-(217)).

(215) Agora[28] comia um gelado.[29]
Now ate an ice-cream.
Now I would eat an ice-cream.

(216) Amanhã ia ao dentista.
Tomorrow went to-the dentist.
Tomorrow I would go to the dentist.

(217) Se não chovesse no próximo fim-de-semana, viajávamos para o Algarve.
If not rain(Subj) in-the next weekend, travelled to the Algarve.
If it didn't rain next weekend, we would travel to Algarve.

Bearing in mind the analysis carried out, we will consider that the *Pretérito Imperfeito* has two types of temporal readings: a reading by default and a contextual reading. In the first type of reading, there are two possibilities. When the *Pretérito Imperfeito* co-occurs with an individual-level stative predicate, the TPpt is *n* and the relation between the TPpt and *n* is of anteriority. When it occurs with a stage-level state or events, the TPpt is a past time interval and the relation between the two is of overlapping or of inclusion of that past time interval in the time interval occupied by the situation represented by the *Pretérito Imperfeito*. In this case, the predications can be stative or not depending on the aspectual class that occurs. The contextual reading

[28] The time adverb *agora* (and its English counterpart 'now', for that matter) can denote a past, present and future time depending on the context. In this particular example, although it seems to denote a close future, in fact, the TPpt is still the speech time.
[29] Examples like this one, as well as other uses of the *Pretérito Imperfeito,* are analysed by Oliveira (1986).

corresponds to a habitual interpretation of the *Pretérito Imperfeito*. Table 25 sums up theses interpretations.

CHARACTERISATION OF THE *PRETÉRITO IMPERFEITO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PRES PAST	*ant* *overl*	+STAT -STAT/+STAT

Table 25. The formal representation of the *Pretérito Imperfeito*

The ***Pretérito Perfeito*** locates the situations in a time interval that is anterior to the speech time and presents them as finished (cf. (218) and (219)).

(218) Os professores manifestaram-se ontem contra as políticas governamentais.
The teachers protested yesterday against the politics governmental.
The teachers protested against the governmental politics.

(219) O Pedro viveu em Paris.
The Pedro lived in Paris.
Pedro lived in Paris.

The two sentences describe situations, an eventive one and a stative, that establish an anteriority relation with the speech time, which acts as their TPpt. In both cases, the *Pretérito Perfeito* signals that the situations have ended.

Although the basic value of the *Pretérito Perfeito* is characterised by the coincidence of the TPpt with the speech time and by the anteriority relation between the eventuality and the TPpt, there are configurations where the TPpt is a time interval which is posterior to the speech time, as sentence (220) exemplifies.

(220) Na próxima semana, quando o Simão vier, já a Sofia partiu para o Canadá.
In-the next week, when the Simão come(subj), already the Sofia left to-the Canada.
Next week, when Simão comes, Sofia has already left to Canada.

In (220), the TPpt of the culminated process *partir para o Canadá* is a future time in relation to the speech time, more precisely, the TPpt is the time interval denoted by the adverbial *na próxima semana* ('next week'), when Simão comes. Nonetheless, the relevant situation has an anteriority relation with the TPpt, like in examples (218) and (219).

CHARACTERISATION OF THE *PRETÉRITO PERFEITO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PRES	*ant*	+STAT/-STAT
Contextual reading	FUT	*ant*	+STAT/-STAT

Table 26. The formal representation of the *Pretérito Perfeito*

Before characterising the *Pretérito Perfeito Composto*, a brief explanation about the semantic nature of this and similar tenses of the so-called *Perfective system* is in order. The ***Pretérito Perfeito Composto*** along with the ***Pretérito Mais-Que-Perfeito*** and the ***Futuro Perfeito*** integrates the Perfective system. There has been a lot of debate concerning the semantic nature of these tenses and their English counterparts ('Present Perfect'[30], 'Past Perfect' and 'Future Perfect'). Some authors attribute these tenses mainly an aspectual nature (Moens and Steedman (1988), Kamp and Reyle (1993)); others a temporal nature (Binnick (1991), Declerck (1991), Cunha (2004)): others an aspectual and temporal nature (Peres (1993)); and others an ambiguous aspectual or temporal nature (Ogihara (1991))[31]. In a nutshell, the main problem lays on the stipulation, or not, of a result state by the forms that belong to the Perfective system. The authors that argue in favour of a predominantly aspectual nature of these tenses represent them as focusing the part of the nucleus that follows the culmination, but that does not include it (cf. Kamp and Reyle (1993), for instance). In their analyses, the tenses in question describe a result state and the temporal localisation of anteriority associated with them derives from their aspectual properties. Nevertheless, authors such

[30] As we have already pointed out, there is not an exact correspondence between the *Pretérito Perfeito Composto* and the *Present Perfect* (cf. note 35, page 40).
[31] For the arguments that sustain the different perspectives, see Cunha (2004: 169-210).

as Declerck (1991), Lopes (1997), Oliveira (2003), Cunha (2004), among others, point out that the occurrence of a result state with the tenses *Pretérito Perfeito Composto*, *Pretérito Mais-Que-Perfeito* and *Futuro Perfeito* is not possible with all aspectual classes (the states, for instance) or in all linguistic contexts.

Although the presence of a result state in stative situations that do not integrate in their basic structure a consequent state may seem odd, it can explained by associating an event to them, according to Kamp and Reyle (1993). They argue that, when the predication is eventive, the perfect describes an event represented by the non-perfect verbal phrase and, when the predication is stative, the perfect describes a state which results from the occurrence of an event that relates to the end of the state. In the eventive predications, the DRS condition is e $\supset\subset$ s and in the stative it is *e= end (s)* and e $\supset\subset$ s. They apply this analysis to the predications with the Present Perfect, Past Perfect and Future Perfect.

Declerck (1991: 319-353) argues against the representation of the Present Perfect as conveying a result state. He claims that "resultativeness is not an inherent part of the meaning of the present perfect" (*Ibidem*: 326) being instead a "conversational implicature attached to the use of the present perfect" (*Ibidem*: 342).

As to the European Portuguese, Peres (1993) subscribes most of Kamp and Reyle's proposal but enhances the importance of the past participle in obtaining the final interpretation. He proposes that the past participle conveys the temporal value of anteriority, inherent to all perfective configurations, and that the value of the TPpt for this form is UNDET(ermined). As to *ter*, the auxiliary verb used in these configurations in European Portuguese, he considers it to be an operator with a particular status among auxiliary verbs, an inducer of temporal perspective: of a present perspective in the contexts of occurrence of the *Pretérito Perfeito Composto*, of a past perspective with the *Pretérito-mais-que-perfeito* and of a future perspective with the *Futuro Perfeito*.

Lopes (1997) analyses in more detail one of the tenses that supposedly integrate the Perfective system, the *Pretérito-mais-que-perfeito*, and distinguishes between a resultative and a non-resultative reading. Although she recognises that the resultative interpretation is more available with aspectual classes that involve a culmination point, namely culminated processes and culminations, she also shows that even with these aspectual classes the *Pretérito-mais-que-perfeito* can focus the event and not the result

state. According to her, examples like (221) and (222) can have two different readings as exemplified in the sentences in *a* and *b*.

(221) O Rui tinha pintado um quadro. (culminated process)
The Rui had painted a painting.
Rui had painting a painting.

a. Quando se candidatou à Escola de Artes, o Rui tinha pintado um quadro.
When himself applied to-the School of Arts, the Rui had painted a painting.
When Rui applied to the Arts School, he had painted a painting.

b. O Rui tinha pintado um quadro numa semana.
The Rui had painted a painting in-a week.
Rui had painting a painting in a week.

(222) A Ana tinha saído. (culmination)
The Ana had left.
Ana had left.

a. Quando a Ana me telefonou, já tinha saído do supermercado.
When the Ana me called, already had left from-the supermarket.
When Ana called me, I had already left the supermarket.

b. A Ana tinha saído às duas horas.
The Ana had left at-the two o'clock.
Ana had left at two o'clock.

In her analysis, in the examples in a), the *Pretérito-mais-que-perfeito* focuses the result state of the culminated process in (221) and of the culmination in (222), but in b) it focalises the situation as a culminated process in (221) and as a culmination in (222). In (221a), this tense describes a result state *tinha pintado um quadro* that includes the state *candidatou-se à Escola de Artes*. This reading is represented by the following formula <PAST; overl; +STAT; +PERF>. In the non-resultative reading in (221b), for instance, the TPpt of the situation is PAST, the relation between the TPpt and the location time is of anteriority; the situation is –STAT and –PERF.

Oliveira (2003) also distinguishes between a resultative and a non-resultative reading, considering that the former is only available in predications with aspectual classes that have in their internal structure a culmination point.

Cunha (1998; 2004) disputes the analysis where the tenses of the Perfective system carry a result state as part of their meaning. He claims that the construction of *ter* with the non-inflected past participle carries mainly temporal information. Only the construction *ter* followed by direct object and inflected past participle conveys unequivocally aspectual information, because it is the only construction that can account for a visible result state. This conclusion is predicated on arguments related not only to the co-occurence of the two configurations with different tenses, temporal adverbials and with non-phase states, but also to the question of cancellation of the result state.

The comparison of the behaviour of the two constructions as far as the compatibility of all tenses are concerned shows that *ter* + non-inflected past participle is not compatible with all verb tenses, contrary to *ter* + direct object + inflected past participle (compare (223) with (224)).

(223) a. A Maria tem/ tinha aspirado a casa. (Cunha (2004:176))
The Maria has/had vacuumed the house.
Maria has/had vacuumed the house.

b.*A Maria teve aspirado a casa. (*Ibidem*)
The Maria had vacuumed the house.
Maria had vacuumed the house.

c. *Amanhã, a Maria vai ter aspirado a casa. (*Ibidem*: 177)
Tomorrow, the Maria will have vacuumed the house.
Tomorrow, Maria will have vacuumed the house.

(224) a. A Maria tem/ tinha a casa aspirada. (*Ibidem*)
The Maria has/had the house vacuumed.
Maria has/had the house vacuumed.

b. A Maria teve a casa aspirada. (*Ibidem*)
The Maria had the house vacuumed.
Maria had vacuumed the house.

c. Amanhã a Maria vai ter a casa aspirada. (*Ibidem*)
Tomorrow, the Maria will have the house vacuumed.
Tomorrow, Maria will have the house vacuumed.

In regards to the second test, Cunha (2004) comes to the conclusion that the tenses that integrate the so-called Perfective system, contrary to *ter* + direct object + inflected past participle, select temporal adverbials in a different manner when compared to states, because they are sensible to the type of predication involved in the representation (compare (225) with (226)).

(225) O João tinha trabalhado durante duas horas. (*Ibidem*: 178)
The João had worked for two hours.
João had worked for two hours.

(226) *A Ana tinha morrido durante uma semana. (*Ibidem*: 179)
The Ana had died for a week.
**Ana had died for a week.*

As to the third test, due to the characteristics of non-phase states, in particular, their incapacity of becoming events and, thus, conveying a result state of a culmination, the predications with the tenses in question should be incompatible with these types of state and they are not (cf. (227)).

(227) (Antes de comprar o Volvo), o João tinha tido um BMW. (*Ibidem*: 185)
(Before of-the buy the Volvo), the João had had a BMW.
(Before buying the Volvo), João had had a BMW.

In what concerns the fourth test, assuming that the main semantic meaning of the predications with perfective tenses is the presence of a result state, it would be expected that the latter could not be cancelled. Nonetheless, this is not the case (cf. 228).

(228) O João tinha estado a escrever um artigo mas desistiu. (*Ibidem*: 182)
The João had been to write an article but gave-up.
The João had been writing an article but he gave up.

Although Cunha's (2004) conclusions sound straightforward and convincing, he restricts his analysis to non-complex sentences and, in fact, if we look into the examples presented by Lopes (1997) with *when*-clauses, her analysis of the *Pretérito-mais-que-perfeito* as describing in these contexts a result state which overlaps the situation of the subordinate clause is also quite accurate.

It is not our intention to present an answer to this intricate problem. Although we acknowledge that in certain contexts tenses as the *Pretérito Perfeito Composto*, *Pretérito-mais-que-perfeito* and *Futuro Perfeito* can exhibit a reading of a result state, we will leave out the result state readings and we will describe their primary temporal

and aspectual properties without further investigating the weight of each type of information in their semantic nature.

The ***Pretérito Perfeito Composto***, contrary to the *Pretérito Perfeito*, does not locate a situation in a past time interval, or perspectivises it as terminated. In fact, this tense represents a situation whose initial boundary we only know that is somewhere in a time that is anterior to the speech time and whose extension goes to or beyond *n* (cf. Oliveira and Lopes (1995) and Oliveira (2003)[32]). The following examples illustrate the use of the *Pretérito Perfeito Composto*.

(229) Os alunos têm estado sossegados. (state)
The students have been quiet.
The students have been quiet.

(230) A Maria tem estudado muito. (process)
The Maria has studied a-lot.
Maria has been studying a lot.

(231) O Rui tem pintado um quadro (todos os meses). (culminated process)
The Rui has painted a painting (every the month).
Rui has been painting a painting (every month).

(232) A Ana tem chegado atrasada. (culmination)
The Ana has arrived late.
Ana has been arriving late.

(233) O João tem espirrado muito. (point)
The João has sneezed a-lot.
João has been sneezing a lot.

The observation of the examples adduced above validates the conclusion that the *Pretérito Perfeito Composto*, like the *Presente*, has also the property of influencing the aspectual profile of the situation with which is combined. Generally speaking, the occurrence of eventive situations with this tense leads to an iterative reading (cf. (229)-(233)), while the combination with states conveys only temporal information.

As to the temporal characterisation, the *Pretérito Perfeito Composto* usually selects as the TPpt of the situation the speech time and imposes an anteriority and

[32] Campos (1984; 1997) compares the *Pretérito Perfeito* and the *Pretérito Perfeito Composto* as far as their temporal and aspectual properties are concerned and proposes a formal treatment of these tenses in a different theoretical framework. Nonetheless, the final general outcome regarding the semantic features is the same as presented by Oliveira and Lopes (1995) and Oliveira (2003).

overlapping relation with that time interval. Then again, such a characterisation is only true for stative situations. For events, the predication is interpreted as expressing the repetition of several situations of the same type in a time interval that is anterior and overlapping the speech time. Therefore, whilst in (229), the state starts somewhere in the past and extends and goes beyond the speech time, in (231), for instance, each month, Rui paints a painting. This circumstance started somewhere in the past and goes on till the speech time.

In the examples given so far, the TPpt has always been the speech time. However, in examples like (234), the *Pretérito Perfeito Composto* describes a situation whose TPpt is a future time interval ("quando o Simão vier") and that is completely anterior to its TPpt.

(234) Na próxima semana, quando o Simão vier, já a Sofia tem partido para o Canadá.
In-the next week, when the Simão come(Subj), already the Sofia has left to-the Canada.
Next week, when Simão comes, Sofia has already left to Canada.

In these circumstances, the eventive situation loses the iterative reading and acquires a temporal interpretation that is not available when the TPpt coincides with the speech time.

Table 27 sums up the different temporal readings of the *Pretérito Perfeito Composto*.

CHARACTERISATION OF THE *PRETÉRITO PERFEITO COMPOSTO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PRES	*overl+ant*	+STAT
Contextual reading	FUT	*ant*	+STAT/-STAT

Table 27. The formal representation of the *Pretérito Perfeito Composto*

The ***Pretérito Mais-Que-Perfeito***[33] represents a situation in a time interval which precedes another past time. Hence, the TPpt of the situations with which it co-occurs is by default a time interval previous to the speech time. Furthermore, the situation is seen as terminated, as in the *Pretérito Perfeito*. Examples (235)-(238) demonstrate this feature.

(235) Quando fui à escola, a professora já tinha saído.
When went to-the school, the teacher already had left.
When I went to the school, the teacher had already left.

(236) Às onze horas, a maioria dos alunos já tinha terminado o trabalho.
At-the eleven o'clock, the majority of-the students already had finished the work.
At eleven o'clock, the majority of the students had already finished the work.

(237) A professora estava satisfeita porque os alunos tinham estudado muito e tinham passado no exame.
The teacher was happy because the students had studied a-lot and had passed in-the exam.
The teacher was happy because the students had studied a lot and they had passed the exam.

(238) O professor tinha avisado os alunos acerca das punições.
The teacher had warned the students about the punishments.
The teacher had warned the students about the punishments.

The four predications with the *Pretérito-mais-que-perfeito* select as TPpt a past time linguistically explicit in (235), (236) and (237) and implicit in (238). Therefore, in the first three examples, the *when*-clause, the time adverbial and the situation of the main clause, respectively, act as TPpts for the situations with which they are combined. In the last example, we infer the existence of a past time interval responsible for establishing the TPpt. Regarding the relation between the TPpt and the speech time, the semantics of this verb tense imposes that the TPpt is anterior to *n* (PAST).

The temporal and aspectual features of the *Preterito-mais-que-perfeito* are summarised in the following table.

[33] The two forms of the *Pretérito Mais-Que-Perfeito*, the compound and non-compound, nowadays do not originate different meanings in terms of temporal localisation of the situations with which they are combined, being more common the compound form.

CHARACTERISATION OF THE *PRETÉRITO-MAIS-QUE-PERFEITO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PAST	*ant*	+STAT/-STAT

Table 28. The formal representation of the *Pretérito-mais-que-perfeito*

The ***Futuro***, like the other tenses of the *Futuro* and the *Condicional*, can occur as a tense or mood, though, most of the times it has a modal interpretation. This most frequent reading results from the fact that, whenever the speaker chooses to locate a situation in a future time, because the situation has not yet taken place, he cannot commit himself to the fulfilment of that situation. The tenses that express futurity are usually treated in a semantic theoretical framework of possible worlds, because the localisation of a situation in a future time implies the consideration of a set of possible worlds which are dependent on the knowledge available to both the speaker and the listener[34]. The degree of certainty varies according to the configuration used to express futurity, as we will show shortly.

In a temporal interpretation of the *Futuro*, the speaker chooses as the TPpt of the situation the speech time (cf. (239)) or an interval that is posterior to *n* (cf. (240)) and it locates the situation in a posterior time interval.

(239) No próximo mês, estarei de férias.
In-the next month, will-be of holydays.
Next month, I will be on holydays.

(240) O João partirá para Angola, quando tiver o passaporte.
The João will-leave for Angola, when have(Subj) the passport.
João will leave for Angola, when he has the passport.

It should be noted, however, that (239) is ambiguous between a temporal and a modal reading, because the predication can be interpreted as occurring as long as everything goes as expected. Nonetheless, the temporal characterisation is still possible in certain

[34] For a more detailed analysis of both temporal and modal readings of the *Futuro* in European Portuguese in the semantic framework of possible worlds and of intervals, see Oliveira (1985).

contexts of modal reading, what points to the conclusion that even in these cases the *Futuro* is not totally without temporal features. What amounts to say that in certain contexts the temporal and modal readings co-exist. The same observation is not valid for examples like (241).

(241) O João saberá a resposta (neste momento/ amanhã).
The João will-know the answer (in-this moment/ tomorrow).
João will know the answer (at this moment/ tomorrow).

In this context, the temporal characterisation is determined by temporal adverbials and not by the semantics of the tense itself. Hence, the epistemic interpretation is the preferential one.

The comparison between examples (239) and (242) and (243) reveals that in European Portuguese the configurations used in these two last examples convey a much more evident temporal reading than the first.

(242) A Sónia vai assinar a escritura da casa amanhã.
The Sónia goes sign the deed of-the house tomorrow.
Sónia will sign the deed of her house tomorrow.

(243) A Sónia assina a escritura da casa amanhã.
The Sónia signs the deed of-the house tomorrow.
Sónia signs the deed of her house tomorrow.

The configuration with the verb *ir* ('go') in the *Presente do Indicativo* plus the *Infinitivo* ('Infinitive') of the main verb, as well as the configuration with the *Presente do Indicativo* are the two most used alternatives to the *Futuro* to locate situations in a future time interval. Both express in a more assertive way than (244) that the signing of the deed of Sónia's house will take place in the time interval denoted by the time adverb *amanhã*, that is, in a time interval that is posterior to the TPpt *n*.

(244) A Sónia assinará a escritura da casa amanhã.
The Sónia will-sign the deed of-the house tomorrow.
Sónia will sign the deed of her house tomorrow.

According to Oliveira (1985: 357), while the examples with the *Futuro* are interpreted as a prediction of the type "it is possible that... if ....", the construction with the verb *ir* in the *Presente do Indicativo* + *Infinitivo* transmits the idea of a plan established in a time interval before the speech time that will succeed unless something changes, and the use of the *Presente do Indicativo* expresses an assertion of a future situation. Subsequently, in a certainty or epistemic scale, the *Presente* occupies a higher place than the other two configurations and the *Futuro* the lower position. In terms of possible worlds, the *Futuro* is the most branching one, while *ir* + *Infinitive* implies the consideration of a more restricted set and the *Presente* refers to only one world.

CHARACTERISATION OF THE *FUTURO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PRES	*post*	+STAT/-STAT
Contextual reading	FUT	*post*	+STAT/-STAT

Table 29. The formal representation of the *Futuro*

The ***Futuro Perfeito*** locates temporally a situation in a future time that is anterior to another future time interval. Examples (245) and (246) are instances of this use.

(245) Na próxima sexta-feira, o André já terá comprado o carro.
In-the next Friday, the André already will-have bought the car.
Next Friday, André will have already bought the car.

(246) Quando voltares do supermercado, a casa terá sido arrumada.
When return(Subj) from-the supermarket, the house will-have been cleaned.
When you return from the supermarket, the house will have been cleaned.

In (245), the TPpt corresponds to the time interval *na próxima semana*, while, in (246), it corresponds to the time interval *quando voltares do supermercado* and both are posterior to the speech time. The events *o André comprar o carro* and *a casa ser arrumada* are anterior to those TPpts.

When the modal reading occurs with the *Futuro Perfeito*, contrary to what happens with the *Futuro*, where the TPpt is usually the same in both temporal and modal interpretation, in this case, the tense seems to lose all temporal features, being the temporal adverbials responsible for the temporal localisation. Examples (247) and (248) illustrate this occurrence.

(247) a. O Rodrigo terá acordado.
T*he Rodrigo will-have woken-up.*
Rodrigo will have woken up.

b. Agora, o Rodrigo já terá acordado.
Now, the Rodrigo already will-have woken-up.
Now, Rodrigo will have already woken up.

c. Quando o João chegou, o Rodrigo terá acordado.
When the João arrived, *the Rodrigo will-have woken-up.*
When João arrived, Rodrigo will have woken up.

(248) a. A polícia terá registado um número elevado de assaltos nesta zona.
The police will-have registered a number high of robberies in-this zone.
The police will have registered a high number of robberies in this zone.

b. No ano passado, a polícia terá registado um número elevado de assaltos nesta zona.
In-the year last, the police will-have registered a number high of robberies in-this zone.
Last year, the police will have registered a high number of robberies in this zone.

In both examples, the *Futuro Perfeito* by itself is not able to establish the TPpt. In (247), depending on the adverbial localisers, the temporal adverbial in a. and the *quando*-clause in b., the TPpt is the speech time or a past time, respectively. Furthermore, the relation between the TPpt and the eventuality also varies: whilst in (247a) is of anteriority, in (247b) is of overlapping. However, none of these items of information is provided by the semantics of the tense, but by the contexts. The same principle applies to (248). Hence, in these examples, the modal interpretation of doubt or uncertainty is clearly the only one available. Once again, since these are modal interpretations of the tense in question and since we are only concerned with the temporal values of the different verb tenses, we will not include them in table 30.

Table 30 sums up the temporal characterisation of the *Futuro Perfeito*, illustrated by examples such as the ones in (245) and (246).

CHARACTERISATION OF THE *FUTURO PERFEITO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	FUT	*ant*	+STAT/-STAT

Table 30. The formal representation of the *Futuro Perfeito*

The ***Condicional*** locates temporally a situation in a past time interval that is posterior to another past interval. For this reason, in the Brazilian terminology, it is named *Futuro do Passado* ('Future of the Past'). The TPpt is a time interval anterior to the speech time and the situation establishes with this interval a relation of posteriority. The sentence in (249) is exemplificative of the organisation of the different intervals that feature the *Condicional*.

(249) Em 1861, Camilo escreveu um romance que o imortalizaria.
In 1861, Camilo wrote a romance that him would-immortalise.
In 1861, Camilo wrote a romance that would immortalise him.

The situation described by the *Condicional* adopts as TPpt the time interval where the situation *Camilo escrever um romance* takes place and it is located after that event.

When the *Condicional* loses the temporal features and becomes solely modal, the TPpt can be a time interval that is posterior to the speech time, like in (250), or a past time interval, like in (251).

(250) Amanhã eu partiria para um sítio exótico e isolado (se pudesse).
Tomorrow I would-leave to a place exotic and isolated (if could).
Tomorrow I would leave to an exotic and isolated place (if I could).

(251) O João concorreu a uma bolsa e recebê-la-ia se não fosse a ausência de artigos publicados em revistas internacionais.
The João applied to a scholarship and would-receive it if not be(Subj) the lack of papers published in journals international.
João applied to a scholarship and he would recevive it if it weren't for the lack of published articles in international journals.

The temporal interpretation of the *Condicional* is formalised in table 31.

CHARACTERISATION OF THE *CONDICIONAL*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PAST	*post*	+STAT/-STAT

Table 31. The formal representation of the *Condicional*

The ***Condicional Perfeito*** is used to locate situations in a past time that is anterior to another past time as exemplified in (252).

(252) Quando lhe ligaram do stand, o André já teria comprado o carro.
When him called from-the stand, the André already would-have bought the car.
When they called him from the stand, André would have already bought the car.

There are certain contexts where the *Condicional Perfeito* carries preferentially a modal interpretation (cf. (253)).

(253) Naquela altura, Camões já teria terminado "Os Lusíadas".
In-that time, Camões already would-have finished "Os Lusíadas".
By that time, Camões would have already finished "Os Lusíadas".

In this example, the TPpt of the situation, given by the temporal adverbial, corresponds to a past time interval and the situation, if true, would have been located in a time anterior to the TPpt. Nonetheless, the modal interpretation of uncertainty overcomes the temporal interpretation in this context.

In contexts where the TPpt differs from a past time, the *Condicional Perfeito* acts as mood. (254) portrays this possibility.

(254) Hoje, a Maria não teria desistido de Arquitectura.
Today, the Maria not would-have given-up from Architecture.
If it were today, Maria wouldn't have given up Architecture.

The temporal interpretation of the *Condicional Perfeito* is described in table 32.

CHARACTERISATION OF THE *CONDICIONAL PERFEITO*			
Types of available readings	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Reading by default (or inherent reading)	PAST	*ant*	+STAT/-STAT

Table 32. The formal representation of the *Condicional Perfeito*

The following table sums up the temporal characterisation of the tenses of the Indicative system.

Temporal characterisation of the tenses of the Indicative system				
Tenses	**Types of available readings**	**Relation between TPpt and n**	**Relation between location time and the TPpt**	**The stative or non-stative nature**
Presente	Reading by default (or inherent reading)	PRES	*overl*	+STAT
	Contextual readings	PRES PRES PRES FUT	*overl* *ant* *post* *overlp*	-STAT +STAT/-STAT +STAT/-STAT +STAT/-STAT
Pretérito Imperfeito	Reading by default (or inherent reading)	PRES PAST	*ant* *overl*	+STAT +STAT/-STAT
Pretérito Perfeito	Reading by default (or inherent reading)	PRES	*ant*	+STAT/-STAT
	Contextual reading	FUT	*ant*	+STAT/-STAT
Pretérito Perfeito Composto	Reading by default (or inherent reading)	PRES	*overl+ant*	+STAT
	Contextual reading	FUT	*ant*	+STAT/-STAT
Pretérito-mais-que-perfeito	Reading by default (or inherent reading)	PAST	*ant*	+STAT/-STAT
Futuro	Reading by default (or inherent reading)	PRES	*post*	+STAT/-STAT
	Contextual reading	FUT	*post*	+STAT/-STAT
Futuro Perfeito	Reading by default (or inherent reading)	FUT	*ant*	+STAT/-STAT
Condicional	Reading by default (or inherent reading)	PAST	*post*	+STAT/-STAT
Condicional Perfeito	Reading by default (or inherent reading)	PAST	*ant*	+STAT/-STAT

Table 33. The temporal formal representation of the tenses of the Indicative

2.3.2. The Subjunctive system

The analysis of the Subjunctive tenses is slightly more complex than the study of the Indicative system due to two reasons. The first one concerns a wider range of the modal values carried by the Subjunctive forms[35]. The second reason is related to the semantic and syntactic features of the Subjunctive tenses, namely, their preferential occurrence in constructions of syntactic subordination[36] and their semantic dependence on other tenses to ascertain the TPpt and their temporal characterisation.

An account of all the modal readings of the Subjunctive and all syntactic contexts where it occurs is out of the scope of this investigation. Therefore, we will present an overview of this mood system as far as their temporal and modal values are concerned.

Traditionally, the Subjunctive mood is featured as describing an untrue, unreal, doubtful, uncertain situation (cf. Cunha and Cintra (1985), for instance). However, this characterisation does not account for the uses of the Subjunctive, in particular its use in concessive clauses where the proposition is seen as true. For this reason Fonseca (1970; 1994) and Oliveira (2003; 2008), among others, consider that this mood can have two different readings: a virtual and a relative temporal. Marques (1995), who is mainly concerned with the value readings of the Subjunctive, attempts at distinguishing the two different types of interpretations referred above by stipulating that, when the proposition in which this mood is present does not convey the knowledge of the truth of the sentence, the proposition expresses the knowledge of the truth of the sentence, but this knowledge is not relevant, that is, it is not new information. Accordingly, in a sentence like (255),

(255) Se tivesse tempo, ia ao cinema.
If have(Subj) time, went to-the cinema.
If I had time, I would go to the cinema.

[35] Marques (1995) argues that the Indicative is the mood reserved for signalling an attitude of knowledge while the Subjunctive is the non-marked mood, associated with a wider variety of modal values.
[36] In European Portuguese, the most frequent syntactic constructions where the Subjunctive is used are the following: *that*-clauses, selected by verbs, nouns and adjectives, restrictive relative clauses and adverbial clauses (concessive, conditional, final, time, clauses of reason). For more information about these uses, see Marques (1995) and Oliveira (2003; 2005).

we cannot infer the truth of the situation represented by the *if*-clause. But in a sentence like (256),

(256) Embora gostasse ir ao cinema, não tenho tempo.
Although like(Subj) go to-the cinema, not have time.
Although I would like to go to the cinema, I don't have time.

although the situation described by the concessive clause is viewed as true, that knowledge is not important because the information is not new. Such an analysis does not imply that the Subjunctive forms do not carry temporal information.

In fact, depending on the syntactic contexts, the Subjunctive tenses can represent situations that establish anteriority, overlapping and posteriority relations with situations described by other verbs tenses. The problem resides in the possibility of each verb tense conveying more than one temporal relation depending on the type of clause where it is used and on the verb tense with which is combined.

As it was already discriminated in table 22, there are six Subjunctive tenses: *Presente*, *Pretérito Imperfeito*, *Futuro*, *Pretérito Perfeito Composto*, *Pretérito-mais-que-perfeito* and *Futuro Perfeito*. Their temporal characterisation following the theoretical framework we used for the verb tenses of the Indicative tenses is impracticable because of their dependence on other tenses in the determination determine of their temporal features and because of the wide variety of possibilities of combination.

Taking into account the occurrences of the Subjunctive tenses in *that*-clauses in European Portuguese, Fonseca (1994) proposes that the non-compound forms can establish overlapping and posteriority relations and the compound forms normally establish anteriority relations. The author also observes that although the tenses are dependent on other tenses, there temporal dependence is not always the case. Oliveira (2008) extends this idea and shows that the Subjunctive tenses in *that*-clauses can create in certain contexts a new temporal domain[37] instead of being temporally subordinated to the other tenses. This means that the TPpt can be PRES, PAST or FUT depending on the verb combinations.

[37] Cf. Silvano (2003) for a more detailed explanation of the two processes of temporal subordination and creation of a new temporal domain and the section 2.4.1.8. of this chapter, pages 158-160.

In regards to the adverbial clauses, as far as we know, there is not a temporal characterisation of the Subjunctive forms in the lines we propose for the Indicative system. Due to this reason and to the fact that most of the readings of the Subjunctive tenses are contextual readings and so a thorough observation of the data is required, we will leave this investigation for chapter four.

2.4.The *consecutio temporum* phenomenon

The sequencing of tenses or the *consecutio temporum* phenomenon occurs when two or more verb tenses are combined in syntactic configurations such as strings of independent sentences or complex sentences. The assumption that sequencing of tenses can emerge in complex sentences is in accordance with Oliveira (1998).

> "... se considerarmos que o estudo da semântica dos tempos, como aliás, de uma série de outros fenómenos linguísticos, deve ter o texto e não a frase isolada como objecto de análise, verificamos que a sequencialização dos tempos, porque exprimem, pelo menos, a ordenação dos acontecimentos e dos estados descritos, se pode observar mesmo quando se trata do domínio de frases complexas." (Oliveira 1998: 421)
> *... if we consider that the study of tense semantics, as, in fact, of other linguistic phenomena, should have the text and not the independent sentence as object of analysis, we conclude that the sequence of tenses, because they express, at least, the ordering of events and states described, can be observed even in the domain of complex sentences.*

However, the syntactic domains of the sequencing of tenses constitute only a side of this complex linguistic phenomenon. There are many questions that need to be answered: What are the semantic requisites to obtain sequence of tenses? When two situations are not temporally related by a direct bound, can we speak of *consecutio temporum*? Is *consecutio temporum* the same as temporal anaphora? Gutiérrez (1999) adds a semantic prerequisite to the syntactic notion of *consecutio temporum*.

> "Dicho fenómeno alude a la relación de dependencia que se estabelece entre las interpretaciones temporales de dos formas verbales si entre sus respectivas oraciones existe asimismo una relácion de dependencia o subordination sintáctica." (Gutiérrez 1999: 3063)
> *Such phenomenon refers to the relation of dependence that is established between the temporal interpretations of two verbal forms if between their respective clauses there is a relation of dependence or syntactic subordination.*

Gutiérrez (1999) claims that a relation of dependence between the temporal readings of the verb forms, which are related in some way, is one of the conditions for the existence of sequencing of tenses. Cleary, when we interpret a complex sentence, such as (257), or a succession of non-complex sentences, as in (258), we are able to order the situations that are represented, evidence that they have some kind of relation.

(257) When John woke up, he had breakfast.

(258) John woke up. He had breakfast. He drove to work.

However, in examples (259) and (260), the relation between the temporal interpretations of the different situations results odd.

(259) *John woke up. He had had breakfast. He will drive to work.

(260) *When John woke up, he had had breakfast.

Therefore, according to Gutiérrez's definition, one cannot state that these are examples of the linguistic phenomenon of sequence of tenses. However, what happens if the TPpt of the situations is not the same and if the first situation does not provide the reference point for the second situation, as it is the case of (261b) and (262b)? Can we still speak of the presence of the *consecutio temporum* phenomenon?

(261) a. João woke up. He had gone to bed very late.
b. João woke up. He went to bed very late.

(262) a. João said he had gone to bed very late.
b. João said he went to bed very late.

Before attempting to come to grips with these problems, we will glance at some of the main proposals of formal representations of *consecutio temporum* in the next section. The analytical revision of the different proposals will enable us to highlight the strong and weak points of each one in order to verify which one is better equipped to deal with the data that will be analysed in chapter 4.

2.4.1. Formal representations of *consecutio temporum*

2.4.1.1. Reichenbach (1947)

Reichenbach (1947) proposes two rules of the sequence of tenses: the permanence of the reference point and the positional use of the reference point. The first rule implies that the reference point is the same for all clauses, even if the events described in those clauses occupy different time points. This circumstance is illustrated by the following examples and their respective representation.

(263) I had mailed the letter when João came and told me the news. (1947:293)

1st clause E_1 —R_1 —S
2nd clause R_2, E_2 —S
3rd clause R_3, E_3 —S

(264) I did not know that you would be here. (*Ibidem*)

1st clause R_1, E_1 —S
2nd clause R_2 —S, E_2

The second rule applies when the reference points of the situations described do not coincide, like the one in the third clause in (265). The reference point is the "carrier of the time position" (1947: 295).

(265) He was healthier when I saw him than he is now. (1947:295)

1st clause R_1, E_1 —S
2nd clause R_2, E_2, —S
3rd clause S, R_3, E_3

The two rules proposed by Reichenbach adequately explain the possibilities of combining different verb tenses. Nevertheless, the conditions in which one and the other take place are not specified. In fact, there are contexts where it is possible to follow the rule of the positional use of the reference point (cf. (266)) and others where it is not (cf. (267)).

(266) John said he likes Mary.

(267) *Mary said that she was happy while she is in France.

These sentences pose the question whether the rules of sequence of tenses put forward by Reichenbach can be applied to all syntactic types of clauses in complex sentences. It seems that there are certain types of clauses for which the positional use of the reference point is not an option.

2.4.1.2. Partee (1984)

Partee (1984)[38] establishes a parallelism between nominal and temporal anaphora. She observes that, like the pronouns, the verb tenses are anaphoric and can be construed with non-linguistic (cf. (268)) or linguistic antecedents (definite (cf. 269)) and indefinite (cf. (270)))[39].

(268) I didn't turn off the stove. (*Ibidem*: 244)

(269) When John saw Mary, she crossed the street. (*Ibidem*: 245)

(270) Mary woke up some time during the night. She turned on the light. (*Ibidem*: 246)

The theory adopted by Partee to explain this parallelism integrates the concept of reference point from Reichenbach (1947), which, in many authors' perspective, is in the core of temporal anaphora. So, in example (268), Partee considers that the Simple Past is used to refer to an implicit specific time which is not introduced by the previous linguistic context and, thus, is anchored to a reference time. In (269), the temporal antecedent of the situation represented by the main clause is the situation represented by the *when*-clause, which provides the reference point. In (270), the antecedent for the second situation is provided by the indefinite adverb *some time during the night*.

[38] It should be noted that the foundational text is Partee, B. (1973), "Some Structural Analogies Between Tenses and Pronouns in English", in *The Journal of Philosophy*, 70, pages 601-609. In this work, we refer to Partee (1984), where the author revises some of the original proposals.

[39] Partee (1984) also establishes a parallel between nominal and temporal anaphora as far as bound variables and donkey-sentences are concerned. However, since these semantic contents will not be addressed in the present work, we have deemed it best not to refer to them.

Some features of Partee's (1984) work require comments. The claim that, in independent sentences, represented in the Simple Past, this verb tense is anaphoric raises some problems. On the one hand, if we take the Simple Past to be dependent on a particular time which is introduced by a non-linguistic context, then the reference point is that time interval and not the speech time. Such a description seems to undermine the widespread distinction between deictic temporal relations (when localisation of the situations is performed in relation to the utterance time) and anaphoric temporal relations (when the localisation of the situations is performed in relation to another contextually linguistic defined moment). On the other hand, this description of the Simple Past does not explain the usual forward movement of time in a sequence of eventive sentences. In the 1984's paper, Partee acknowledges that the Simple Past cannot be analysed in the same manner as pronouns due to this forward reading in some contexts. She still maintains that tense is anaphoric, but adds the following stipulation to her claim: tense is context-dependent and it is not necessary to see it as referring to times as pronouns refer to entities.

Nevertheless, as we will show, many authors do not subscribe the analysis in which a sentence at the beginning of a discourse selects as its reference point a non-linguistic reference time (cf. Kamp and Reyle (1993), for instance), because such a consideration would entail taking some pragmatic factors related to the non-linguistic context of the communicative act into account.

2.4.1.3. Dowty (1986)

Dowty's analysis of the temporal structure of discourse is predicated on the assumption that temporal relations in a sequence of sentences are inferred via: (i) a compositional analysis of the aspectual features of the predications; (ii) a Temporal Discourse Interpretation Principle (TDIP), which establishes the localisation of the reference time (and it is independent of the aspectual class of the predication); and (iii) pragmatic principles such as the Gricean conversational implicatures and common-sense reasoning grounded on the listener's world knowledge.

In relation to the first parameter, Dowty argues that the temporal interpretation of a discourse depends on the sentence being a state, an activity or an accomplishment/ achievement[40].

With respect to the second parameter, he adopts a two-dimensional approach to the semantic of tense according to which the relevant times are the reference time (that is, the time at which the event or the state represented by the sentence occurs or obtains) and the speech time (that is, the time at which the sentence is heard or read). So sentences are analysed in terms of a pair of times <*i*, *j*>, the first time being the reference time and the second the speech time. The sentences in the past, in the present and in the future are defined by the relations of anteriority, overlapping and posteriority between *i* and *j*, respectively. When the sentences occur in the perfect or progressive, the speech time is out of the picture and the relation is between the reference time *i* and another reference time *i'*, which carries some relation to *i*. As to the localisation of the reference time, the TDIP stipulates that the reference time of each sentence is a time conveyed by a time adverbial and, in its absence, it is a time which immediately follows the reference time of the previous sentence. In this second case, the closeness of the reference time to the previous sentence is determined by the listener's understanding, by the nature of the situations and by the world knowledge about the common temporal relations among situations.

In what concerns the third parameter, the temporal analysis of independent sentences' sequences should consider discourse conventions expressed by Grice's maxims, the perspective of the speaker and the background knowledge.

The combination of these premises renders the following analysis. Whenever the second sentence of a sequence represents an accomplishment or an achievement, as in (271) and (272), the second event is interpreted as occurring later than the time of the first event, moving the narrative time forward. The TDIP instructs us to locate the reference time of the second situation immediately after the first situation.

[40] Dowty (1986) deliberately integrates accomplishments and achievements in the same class because, according to him, the tests that supposedly distinguish between these two classes render sometimes inaccurate results. Furthermore, the temporal relations that they establish with the other situations are the same, as we will show shortly.

(271) John entered the president's office. The president walked over to him. (1986: 37)

(272) John entered the president's office. The president woke up. (1986: 37)

Whenever the situation of the second sentence is a state[41], as in (273), it is interpreted as overlapping with the situation of the first sentence.

(273) John entered the president's office. The president sat behind a huge desk. (1986: 38)

In spite of the fact that the TDIP predicts that the second situations occur immediately after the first situation, the assumption that those statives began before John's entering the office and prevails after John's entrance is not incompatible with the TDIP, because TDIP establishes that states are asserted to obtain in sequence. If we accept this interpretation, it means that we take not only what is asserted, but also what is assumed into account.

The presence of an activity in the second situation, as in (274) and (275), can result into two different temporal orderings, overlapping and posteriority, respectively.

(274) John entered the president's office. The clock on the wall ticked loudly. (1986: 38)

(275) John asked where the children were. Maria looked anxiously out of the window. Their coats lay on the lawn, but they were not in sight. (1986: 53)

Although Dowty's theory aims at a uniform treatment of the three aspectual classes, it comes across with a problem in the description of sentences, such as (276), which violate the TDIP.

(276) John knelt at the edge of the stream and washed his face and hands. He washed slowly, feeling the welcome sensation of the icy water on his parched skin. (Dowty (1986: 58))

[41] With certain adverbs such as *suddenly*, stative can have an inceptive interpretation (cf. (i)).

(i) João went over the day's perplexing events once more in his mind. Suddenly, he was fast asleep. (Dowty (1986: 38)

The reference time of the situation of the second sentence ('he washed slowly') is not after the first situation, but overlaps it. In fact, it is a detailed description of the same event. It should be noted that the overlapping of the states and some activities is explained by the assumption that they obtain or continue for a long time. In order to solve the problem posed by examples such as (276), Dowty adds another stipulation to the TDIP according to which "if the discourse itself conveys some implication as to how events are to be specifically ordered, this should take priority over the third part of the rule that orders reference times successively". Thus, this third part is taken to be the "default case".

Dowty's proposal brings into the treatment of *consecutio temporum* relevant contributions, namely the integration of aspect and of some pragmatic principles, which Reichenback's theory lacked. The specification and systematisation of the type of bound between the different parameters of analysis would benefit, in our point of view, the overall analysis.

2.4.1.4. Hinrichs (1986)

Hinrichs (1986) brings forth a framework of analysis of temporal anaphora involving tense morphemes, temporal conjunctions and temporal adverbs. For the present purposes, we will focus on the first type of temporal anaphora.

In Hinrichs' account, the temporal order of the situations represented by a sequence of simple tensed clauses cannot contradict the order of the sentences. There are, however, different temporal relations depending on the aspectual type of the situation. If the situation is an accomplishment or an achievement, the temporal order is of succession, if it is a state or an activity it is of overlapping or succession. The sentence in (277) exemplifies the relation of posteriority between accomplishments and between a state (*being pitch-dark*) and an accomplishment (*switching off the light*).

(277) Jameson entered the room, shut the door carefully and switched off the light. It was pitch-dark around him because the Venetian blinds were closed. (1988: 68)

Regardless of the aspectual class, the new situation is always linked to the temporal reference point of the discourse. The aspectual class interferes in the relation between the reference time and the event time. In the case of the accomplishments and achievements, the situations establish with the reference point a temporal relation of inclusion and introduce a new reference point after the old reference point, which is substituted. In the case of the activities and states, the reference point is included in the situations.

It is worth noting that, although Hinrichs (1986: 73) approximates his notion of reference point from that of Reichenbach's assigning it an anaphoric function, in fact, it differs. Hinrichs defines reference point as "the perspective from which an event at a given point in a discourse is viewed", when Reichenbach's reference point, though it also includes this notion, is also seen as the intermediate time used to locate the situation. Furthermore, there are also differences in what concerns the relation between the event time and the reference time in non-progressive past tenses (cf. Webber (1988)). Hinrichs considers that with accomplishments and achievements the reference point is located after the event, whereas Reichenbach establishes between them a relation of identity.

It should be noted, however, that the conception of the temporal structure of situations in discourses put forward by Hinrichs does not account for all temporal relations. For instance, it does not explain how temporal interpretations of anteriority can surface in a sequence of sentences in the past tense, such as the one in (278).

(278) For an encore, João played the "Moonlight Sonata". The opening movement he took rather tentatively, but then... (Webber (1988: 71))

2.4.1.5. Webber (1988)

Webber (1988) considers tense a discourse anaphor because its interpretation is connected to some time or event present or derived from the context, just like the noun phrases. Her theory of anaphoric reference is construed on the notion of Discourse Model which is built by the listener and includes the entities that are mentioned in the discourse and the discursive relationships between them (ordering, elaboration,...). Accordingly, in her proposal, the tensed clauses have two properties: (i) they "specify

entities in an evolving model of discourse that the listener is constructing; (ii) the particular entity specified depends on another entity in that part of the evolving Discourse Model that the listener is currently attending to" (Webber (1988: 61)).

She follows Reichenbach's perspective of tense (1947), but, subscribing others' analysis (Hinrichs (1986), for instance), she argues that it is not the point of event that is anaphoric, but the point of reference. Furthermore, she introduces the concept of Temporal Focus that is used to identify the entity that is most focussed and that it is more likely to be in an anaphoric relation with the reference time of the following clause.

The event ontology that Webber adopts is of Moens and Steedman (1988): she considers a tripartite structure of the events (a nucleus that integrates a preparatory phase, a culmination and a consequent phase). According to her, if we consider an anaphoric function β, a tensed clause C_b, an event E_a, an event E_b and its reference time (RT_b), there are three possibilities of how β links RT_b to E_a.

(279) John played the piano. Mary played the kazoo. (Webber (1988: 66))
$\beta_0(C_b, E_a, RT_b) = E_b$

(280) John went to the florist shop. He picked out three roses, two white ones and one pale pink. (*Ibidem*: 67)
$\beta_{conseq}(C_b, E_a, RT_b) = E_b$

(281) John bought Mary some flowers. He picked out three roses, two white ones and one pale pink. (*Ibidem*)
$\beta_{prep}(C_b, E_a, RT_b) = E_b$

In (279), since the tense of the second clause is Simple Past, $ET_b = RT_b$, and the second event is interpreted as being co-extensive with the first event. Nevertheless, when the second clause uses the Past Perfect, like in (282), $ET_b < RT_b$ and overlaps with the first event.

(282) John went to the hospital. He had twisted his ankle on a patch of ice.
(Webber (1988: 67))

In (280), once again, since the tense of the second clause is Simple Past, $ET_b = RT_b$. However, the ET_b is not co-extensive with ET_a, but it is taken as a part of the

consequent phase of ET_a. The example (299) illustrates the case where ET_b is portrayed as being part of the preparatory phase of ET_a.

In this set of examples, the Temporal Focus is featured by the relationships of maintenance, in the case of the function β_0, and of local movement, in the cases of the functions β_{conseq} and β_{prep}. In other words, while in the first context (279) the Temporal Focus stays in the first situation, in the second context (280) it shifts forward to ET_b and in the third one (281) it shifts backward to ET_b.

Overall, Webber (1988) presents a proposal that attempts to combine a uniform treatment of anaphora (nominal and temporal) with discourse modelling. There are two criticisms that are voiced by Mani *et al.* (2005) to which we subscribe. First, Webber's proposal does not take the different aspectual classes into account and second, since she does not consider the tense of the first clause, sometimes wrong predictions are made, namely in sequences of Past Perfects. In these types of sequences, the proposal predicts that the situations move successively backwards and disallows forward interpretations of the situations. Regardless of these downsides, Webber's work (1988) is viewed as an important milestone in the analysis of the phenomenon of sequence of tenses, because, among other reasons, she acknowledges the presence of different discursive relations that influence the temporal relationships between the situations.

2.4.1.6. Declerck (1991)

Declerck (1991) focuses his study not only in strings of independent sentences, but also in complex sentences with different types of clauses, namely time clauses, *that*-clauses and *if*-clauses. He argues that when two or more sentences or clauses are combined, there are two possibilities: (i) integrate the new situation in the temporal domain created by the first situation using relative verb forms; and (ii) create a new temporal domain using absolute verb forms. According to the author, a temporal domain corresponds to a time interval occupied by a situation or by the set of situations which are temporally related to each other through verb tenses. These two mechanisms are named temporal subordination and creation of a temporal domain, respectively.

In each of the four absolute sectors, the pre-present, the present, the pos-present and the past sectors, a specific verb tense is used to describe a situation whose TO is the

central TO of that domain. The Present Perfect, the Present, the Future and the Past verb tenses establish the temporal domain in each of those sectors, respectively. Once the temporal domain is established, new situations can be added, be part of the temporal domain and be in a relation of simultaneity, posteriority and anteriority with the first situation. For instance, in example (283), the present progressive establishes a present domain and the second situation is integrated in the same temporal domain and it is simultaneous with the first situation. In (284), the future tense of the first clause marks a temporal domain in the post-present sector and the second clause uses the future tense to be linked to the first by temporal subordination. The domain-internal relation is of posteriority.

(283) I *am working*, while he *is doing* nothing. (Declerck (1991: 34))

(284) He *will say* that he *will* never *leave* her. (*Ibidem*: 39)

When the situation is not integrated in the current temporal domain, then a new domain is created. The sentence in (285a) exemplifies the creation of a new temporal domain in a past sector by the situation described in the subordinate clause. Contrarily to the situation in the subordinate clause of (285b), the TO of the subordinated clause in (285a) is t_0 and not the TO provided by the first situation.

(285) a. João said that Maria witnessed the accident. (Declerck (1991: 46))

b. João said that Maria had witnessed the accident. (*Ibidem*)

From our perspective, Declerck's proposal (1991) represents an important contribution to the treatment of the sequence of tenses, because, contrary to the majority of the analysis depicted above, it accounts for not only the stretches of non-complex sentences, but also the combination of clauses in complex sentences. Furthermore, it predicts and explains the contexts in which two or more situations in a sequence of sentences or clauses are not in a direct temporal relation with each other[42].

[42] Nerbonne (1986: 85) also distinguishes between two sorts of discourse: temporally connected discourse, when reference time is fixed by the previous discourse (cf.(i)) and temporally free discourse (cf. (ii)).

(i) Al went to New York. The others were there, too.

(ii) Al went to New York. The others were there once, too.

2.4.1.7. Kamp and Reyle (1993)

Kamp and Reyle's *Discourse Representation Theory* (1993) enables a progressive and systematic account of different linguistic phenomenon, namely the temporal structure of sequence of non-complex sentences.

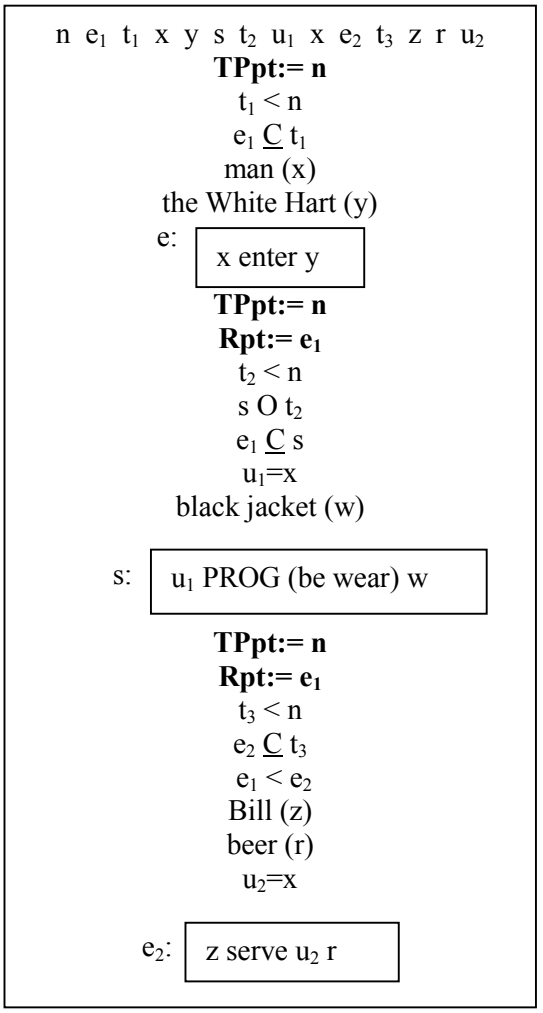
In the DRT's framework, the processing of the discourse is performed one sentence at a time in *Discourse Representation Structures* (DRSs) in an incremental manner. Each sentence is represented in the DRSs by discourse referents, always displayed at the top of the box, and by conditions, which establish a relation of identity between the discourse referents and the corresponding element of the sentence, typically displayed below the universe constituted by the discourse referents. The temporal relations between the TPpt and *n* and between the TPpt and the location time of the eventuality are represented in the set of conditions. Though lacking a detailed characterisation, the DRS also includes the information concerning the aspectual class of the predication, state (s) or event (e). The former overlaps with its location time and the latter is included in its location time. The first sentence is interpreted against an empty context.

The second sentence must be processed against the discourse referents and conditions already introduced in the DRS. In addition to this, its interpretation requires the determination of a condition of the type TPpt:=α and Rpt:=α, being both deleted once the sentence has been processed. With respect to the Rpt, typically the events are located after the reference point, assuring narrative progression, and the states include the reference point. The semantic cohesiveness, which features discourse, demands that the Rpt is selected from the already introduced discourse referents and that the eventuality represented by the second sentence be temporally related to the eventuality described by the first sentence. As a rule, when the second situation is a state and the first an event, it overlaps with the event; when it is an event, it follows temporally the first event.

The following DRS of sentence (286) illustrates how discourses are represented according to DRT principles.

(286) A man entered the White Hart. He was wearing a black jacket. Bill served him a beer. (Kamp e Reyle (1993: 526))

(286')



The initial motivation for the DRT was the attempt to solve the problems related to the interpretation of nominal and temporal anaphora in discourse. The introduction of conditions that relate discourse referents belonging to different predications in a dynamic and compositional perspective enables a straightforward and elegant representation of the anaphoric relations, namely temporal, that one comes across when processing discourses.

There are, however, some downsides to this analysis. In fact, temporal reference constitutes a manifold issue and the stipulations drawn by Kamp and Reyle (1993) do not account for all the possibilities of temporal relations. For instance, a discourse such as the one in (287) raises some problems to their analysis.

(287) A man entered the White Hart. He smiled. He liked the place.

According to the governing principles of the DRT, the events are interpreted as sequential and the state is interpreted as overlapping with the second event. However, the state *liking the place* can indeed have started before *the man entered the White Hart* and in this case it also overlaps with the first event. The latter reading can occur if we take the last sentence to be an explanation of the first sentence, while the former reading results of interpreting the last sentence as an explanation of the second sentence. van Eijck and Kamp (2010) dwelt on this question to illustrate "how complicated the matter of interpreting temporal relations is and how much it depends on pragmatic factors such as discourse coherence and rhetorical relations" adding that "a general treatment of the purely grammatical constraints on temporal reference would, in view of its inevitable lack of specificity, be rather uninformative".

Another shortcoming of Kamp and Reyle's proposal is the absence of mechanisms to properly represent all types of discourse in particular those that combine non-complex sentences with complex sentences. Although they describe some occurrences of *if*-clauses and *when*-clauses, the others are left unaccounted for.

2.4.1.8. Silvano (2002)

Silvano (2002) proposes a theoretical framework to analyse the temporal mechanisms in *that*-clauses in European Portuguese combining some principles from the proposals of Declerck (1991) and of Kamp and Reyle (1993), in particular the notions of temporal domain and of TPpt.

The author argues that there are two temporal mechanisms of combining situations: the temporal subordination and the creation of a new temporal domain. In the first case, the new situation is integrated in the temporal domain created by the first situation, which in terms of temporal characterisation implies that the TPpt of the added situation is the time interval occupied by the first situation (cf. (288)).

(288) Em resposta, o governo de Tony Blair disse que considerava o assunto «muito sério». (Silvano (2002: 149))
In response, the government of Tony Blair said that considered(Imp) the matter «very serious».
In response, the government of Tony Blair said that he considered the matter «very serious».

In (288), the TPpt of the situation *considerava o assunto «muito sério»* is the time interval where the situation *o governo de Tony Blair disse* occurs and between the two situations there is a relation of overlapping.

In the second mechanism, the introduced situation creates a new temporal domain. As such the TPpt is the utterance time (cf.(289)) or a time interval that comprises the utterance time and the time interval where the first situation takes place (cf.(290)).

(289) A direcção do «France-Soir» afirmou que tirou a fotografia da Internet. (Silvano (2002: 149))
The management of-the «France-Soir» asserted that took the picture from-the Internet.
The management of the «France-Soir» asserted that they took the picture from the Internet.

(290) Victor S. Gonçalves, professor naquele departamento, afirmou ao Público que Cláudio Torres não é «um arqueólogo no sentido universitário e europeu do termo». (Ibidem: 149)
Victor S. Gonçalves, professor in-that department, asserted to-the Público that Cláudio Torres not is «an archaeologist in-the sense academic and European of-the term».
Victor S. Gonçalves, professor in that department, asserted to the Público that Cláudio Torres is not «an archaeologist in the academic and European sense of the term».

In (289), the situation represented by the *that*-clause selects as its TPpt *n* and establishes with it a relation of anteriority. In (290), the TPpt of the situation of the subordinate clause is not only *n* but also the time interval of the situation of the main clause and the temporal relation between that situation and its TPpt is of overlapping.

Although the author only applies this analysis to a specific type of syntactic subordination, it would be interesting to verify whether this proposal can properly

characterise the temporal relations in other types of complex sentences, namely those with adverbial subordination.

2.4.1.9. Smith (2004)

Smith (2004) argues in favour of three patterns of tense interpretation depending on the type of discourse context in which the clause occurs, as summed up in the following table.

Patterns of tense interpretation in temporal discourse modes
Continuity: nonfirst clause, bounded events, narrative mode
Anaphora: nonfirst clause, unbounded events and states, narrative mode, all eventualities, descriptive mode.
Deictic: default – all other cases.

Table 34. Patterns of tense interpretation (Smith (2004))

According to the author's analysis, tense conveys continuity, anaphora or deixis. In the first case, the events are bounded and the reference point (RT) advances. In the anaphoric pattern, the eventualities are not bounded and the reference point (RT) does not change. In the third case, the situations are related to the speech time (SpT). One instance of this pattern is the discourse mode of report.

Smith integrates her analysis into the DRT's (Kamp and Reyle (1993)) framework referring to the Continuity and Anaphora principles. In this adaptation, the SpT is only necessary when tense carries a deictic value and the RT as well as the event time (ET) are needed to represent the Continuity and Anaphora patterns. So, for these patterns the SpT (t_1) is omitted and two temporal entities are taken into account, t_2 and t_3 (RT and ET).

Accordingly, the DRS (291') for the sentences in (290) will specify: a RT prior to the SpT following the Deictic pattern (cf. line 2); a second RT after the first in accordance with the Continuity principle (cf. line 8); and a third RT equal to the second as postulated by the Anaphora principle (cf. line 15). As to the localisation of the situations, the events are included in the intervals t_3 (ET) (cf. lines 4 and 10) and the state overlaps t_3 (cf. line 16).

(291) 1. Mara put on her apron.
2. She took out a lump of clay.
3. The clay was wet.

(291')

t_{1a}	t_{2a}	t_{3a}	e_1	x	y	t_{2b}	t_{3b}	e_2	z	w	t_{2c}	t_{3c}	s	u

1. t_{1a} = SpT (Deictic)
2. $t_{2a} < t_{1a}$
3. $t_{2a} = t_{3a}$
4. e_1 C t_{3a}
5. x = Mara
6. y = her apron
7. e_1: Mara put on her apron
8. $t_{2b} > t_{2a}$ (Advancement)
9. $t_{2b} = t_{3b}$
10. e_2 C t_{3b}
11. $z = x$
12. w = a lump of clay
13. e_2: She took out a lump of clay
14. $t_{2c} = t_{2b}$ (Anaphora)
15. $t_{2c} = t_{3c}$
16. s O t_{3c}
17. $u = w$
18. s: The clay was wet

Smith's proposal is an additional proof of the instability of the concept of anaphora. In her analysis, although she recognises the relevance of context to interpret tense, she claims that the facts about tense are much more complex than it has been admitted. For this reason, she puts forward a tense interpretation system that includes three patterns. The interesting point is that she only considers that there is anaphora when the temporal relation between the situations and the respective RTs is of simultaneity, contrarily to majority of the proposals described earlier. Nevertheless, the situations both in the Continuity and in the Anaphoric patterns share a common feature by opposition to the situations in the Deictic pattern: they are oriented to a RT and not to a Spt.

Therefore, in spite of regarding this proposal as a relevant contribution to the characterisation of the different discourse modes, we question the terminology used to refer to the contexts in which the RT of the second situation is the same as the one of the first situation. We argue that it would be more productive to follow the widespread

dichotomy deictic/ anaphoric patterns and in the latter establish a distinction between a continuity pattern and an interruption pattern.

2.4.2. Some remarks

The number and the diversity of the proposals for the treatment of *consecution temporum* are proof of the complex and extensive nature of this phenomenon. Each theory attempts to provide a complete and thorough description and explanation of this process. However, (a) most theories/ proposals are mainly concerned with strings of independent sentences, neglecting the complex sentences, (b) others do not take into consideration important sources of information for determining which temporal process of combining situations is being used. Even though some theories try to pick up where others left, expanding and improving the previous contributions, others propose entirely different frameworks, sometimes using the same terms with other meanings, which increases the confusion around this subject.

Many authors assume that tense is always anaphoric and hence in a discourse all situations establish between them a direct temporal bound. Reichenbach (1967), Declerck (1991), Kamp and Reyle (1993) and Smith (2004) attempt to accommodate the two possibilities of tense being anaphoric or not in the description of the data. Furthermore, some authors take into consideration only the temporal features of the predications; others recognise the relevance of the aspectual features in the final reading; and only three (Dowty (1986), Webber (1988) and (Kamp and Reyle (1993)) acknowledge that in some contexts the temporal and aspectual characteristics do not suffice to accurately explain the final temporal interpretation of the discourse.

Bearing in mind all the proposals just revised and the criticisms that were voiced, we come to the following conclusions, which are relevant for our work.

- First, the notion of temporal anaphora seems to be closely related to the notion of reference point, as defined by Kamp and Reyle (1993). So, when there is a time interval or situation that can act as a reference point for the situation, then there is temporal anaphora.

- Second, assuming that this analysis of temporal anaphora is sound, then, we need to argue in favour of the distinction between temporal anaphora and temporal subordination. In the case of temporal subordination, the notion of TPpt is crucial and allows for the differentiation of two processes of combining situations: temporal subordination and creation of a new temporal domain. The former occurs when, in a discourse with two situations, the TPpt of the second situation to be processed is the time interval where the situation with which it occurs is located, whereas the latter is verified whenever the TPpt of the second situation to be processed is the utterance time or a time interval that includes the time interval of the situation with which it is combined and the utterance time.

- Third, in order to determine the temporal localisation of the situations and their relations to other situations, it is necessary to consider not only the temporal features, but also the aspectual features and their discursive role.

Conclusions

In this chapter, it was our main aim to carry out a critical semantic analysis of two of the mechanisms used to express time in natural languages, Tense and Aspect, in order to establish the theoretical parameters that we will use in the analysis of the data in chapter 4. Furthermore, the analytical revision of the different proposals also allows us to get a general overview of how the semantic treatment of Tense and Aspect has been developed in different frameworks.

To achieve our aim, in section 2.1., we began by defining time in natural languages and by establishing that two relevant mechanisms used to express time are Tense and Aspect. Afterwards, we examined some of the most relevant approaches to tense and aspect in section 2.2..

As far as Tense is concerned, we analysed the positive and negative features of three semantic approaches, the instants approach, the intervals approach and the events/states-based approach. We also highlighted the relevance of the reference time in the representation of tenses.

Regarding Aspect, we revised some of the most prominent aspectual typologies so that we could argue in favour of the one that can account for more data in a more complete and accurate manner.

The critical analysis of the main proposals for tense and aspect treatment provided the necessary elements for our description of the Portuguese tense system. So, in section, 2.3., we presented a formal representation of tenses in European Portuguese, which combines elements from Kamp and Reyle (1993), Peres (1993) and Matos (1994).

Since our object of study is constituted by complex sentences, we had to define a proper treatment for the *consecution temporum* phenomenon. First, we presented our view of the most pertinent existing proposals and, then, we attempted at clarifying some concepts which vary from proposal to proposal, so that we could use them in the analysis of complex sentences with adverbial subordination.

Taking into consideration the investigation carried out in this chapter, we can come to the following conclusions.

(i) The study of tense is undoubtedly crucial in the determination of temporal relations in discourse. Throughout the years, many have been the theories that aimed at providing the theoretical tools to properly describe and explain the occurrences of different temporal readings.

   a. Since the instant and the interval-based semantics by themselves do not account for all types of temporal relations, we argued that the most compelling approach is the event-based semantics (Kamp and Reyle (1993)), which nonetheless is able to combine a sentences' description in terms of events and states with a temporal analysis of sentences grounded on intervals.

(ii) The revision of some of the theories illustrated that aspect should also be taken into consideration when analysing the temporal mechanisms in discourse. In fact, the aspectual characteristics of the predications influence to a great extent their final temporal interpretations, acting tense and aspect as interdependent categories.

(iii) As to the aspectual typology, we observed that Dowty's tests (1979), Moens (1987) and Moens and Steedman's (1988) proposals combined with the distinction between phase and non-phase states (Cunha (1998; 2004)) describe quite accurately the different aspectual classes.

(iv) The presentation of the main features of some theories/ approaches of sequence of tenses revealed that not all use the same terminology and that those that use not always use it with the same meaning. So, we argued in favour of the distinction/ clarification between *Temporal anaphora* and *Temporal subordination*:

a. Temporal anaphora is closely related to the notion of reference time: there is temporal anaphora when there is a time interval/ situation that can act as reference time for the situation in question.

b. Temporal subordination is closely related to TPpt (temporal perspective point): there is temporal subordination when, in a two situations' discourse, the TPpt of the second situation to be processed is the time interval occupied by the situation with which it occurs; and there is creation of a new temporal domain, when the TPpt of the second situation to be processed is the utterance time or a time interval that includes the time interval occupied by the situation with which it is combined and the utterance time.

c. This means that there are cases when there is temporal anaphora, but not temporal subordination.

(v) Notwithstanding the relevance of Tense and Aspect, the process of inferring the temporal relations is even more complex, requiring the consideration of other semantic categories. Some of the theories of *consecutio temporum* acknowledge the importance of other categories such as discursive relations

and integrate them in their analysis. As it happens, this trend justifies the consideration in chapter three of theories that incorporate discursive or rhetorical relations in their framework of semantic analysis of discourse.

(vi) The revision of the main proposals for the treatment of temporal relations also demonstrated that most theories choose as object of analysis single tensed sentences or strings of non-complex sentences. Actually, the latter appear more recurrently when the investigation is mainly concerned with explaining the phenomenon of *consecutio temporum*. Seldom do the authors extend the proposed theoretical framework to complex sentences.

Chapter 3

Rhetorical Relations

Introduction

The notion of rhetorical relations was introduced by discourse studies, where they play a central role explaining how discourse is organised. Most recently they have been integrated in semantic theories which account for different linguistic phenomena, namely temporal relations.

The main aim of this chapter is to present a critical analysis of some of the most relevant proposals for the treatment of rhetorical relations in order to select the one which is best equipped to deal with the data that will be of our study in chapter four. Furthermore, we will raise some questions concerning different issues related to rhetorical relations, namely their information sources and their meaning postulates.

We will begin by clarifying the concept of rhetorical or discursive relations within different theoretical frameworks. In fact, depending on the approach, the rhetorical relations receive different designation, definition and analysis.

To gain a more thorough understanding of the rhetorical relations and how they are inferred, it is necessary to look into the theoretical frameworks in which they are integrated. Therefore, in section 3.2., we will proceed to the revision of some of the most relevant discursive theories that include rhetorical relations. Although there are many different discursive theories, we choose to revise only a few, because most of the prevailing theories adopt a pragmatic or cognitive approach to discourse interpretation and our work aims at putting forward a semantic proposal.

First, we will revise the *Rhetorical Structure Theory* (RST) by Mann and Thompson (1988), in spite of its pragmatic nature, because it is a seminal work as far as rhetorical relations are concerned. In the following section, we will go into the taxonomy of coherence relations proposed by Sanders *et al.* (1992). Despite the fact that they do not develop a formal representation of discourse, their work contributes to a better characterisation of the coherence relations and of the process of interpreting a discourse. Then, we will discuss Kehler's proposal (2002) because he tries to develop a

framework to explain different linguistic phenomena, such as pronominal and temporal anaphora, presupposition, among others, and defines the rhetorical relations in semantic terms. We will finish the revision of discursive theories of rhetorical relations with the *Segmented Discourse Representation Theory* (SDRT), from Asher and Lascarides (1993, 2003) due to their relevance, completeness, validity and efficiency in solving some of the problems left unsolved by other theories. This incursion into the aforementioned discursive theories will endow us with the necessary arguments to justify the choice of the SDRT as the theoretical framework to be used in the analysis of the data in chapter four.

Since one of the main objectives of this work is to investigate the interaction between the rhetorical relations and the temporal relations, section 3.3. raises some questions concerning the approach to this issue by SDRT.

The final section of this chapter aims, on the one hand, at exploring the influence of some linguistic sources in the process of inferring rhetorical relations and, on the other hand, at demonstrating how the rhetorical relations can provide a straightforward description/ explanation of some linguistic phenomena. First, we look into tense and temporal organisation of discourse, then into aspect, cue-phrases and a particular class of cue-phrases, i.e., temporal adverbials. Some works that address these issues are also revised, namely the taxonomy of cue-phrases presented by Knott and Dale (1994) and Knott and Sanders (1998).

The chapter ends with the main conclusions about the matters discussed.

3.1. The concept of rhetorical or discursive relations

In the domain of textual cohesion, the grammatical cohesion has been object of interesting studies with relevant breakthroughs. One of those breakthroughs is related to the introduction of the notion of rhetorical relations to explain the meaning relations between discursive units (cf. Hobbs (1985), Mann and Thompson (1988), Asher and Lascarides (1993, 2003), among others). Hobbs's words (1985: 1) describe the role of the rhetorical relations in texts:

> "Let us begin with a fact: discourse has structure. Whenever we read something closely, with even a bit of sensitivity, text structure leaps off at us. We begin to see elaborations, explanations, parallelisms, contrasts, temporal sequencing, and so on. These relations bind contiguous segments of text into a global structure for the text as a whole."

The observation that discourse has a structure due to the presence of some kind of relations goes back to Grimes (1975), but it was not until 1988, with Mann and Thompson, that a more complete theory of text organisation, based on rhetorical relations, was developed.

In the literature, the designation varies from author to author. The following list encompasses the different designations[1].

- Robert Longacre, *Anatomy of Speech Notions* (1976) – combinations of predications.
- Joseph Grimes, *Thread of Discourse* (1975) – rhetorical predicates.
- Charles Fillmore, "Pragmatics and the Description of Discourse" (1974) – sequiturity relations.
- Edward Crothers, *Paragraph Structure Inference* (1979) – logical-semantic connectives.
- William Mann and Sandra Thompson, *Rhetorical Structure Theory* (1988) – rhetorical relations.
- Ted Sanders, Wilbert Spooren and Leo Noordman, *Taxonomy of Coherence Relations* (1992) – coherence relations.
- Andrew Kehler, *A Theory of Discourse Coherence* (2002) – coherence relations.
- Nicholas Asher and Alexander Lascarides, *Segmented Representation Discourse Theory* (2003) – rhetorical relations.

Not only the designations but also the definitions vary. Some authors base the rhetorical relations' definitions on their semantics (Hobbs (1985), Kehler (2002), Asher and Lascarides (2003), among others), others on their intentions (Grosz and Sidner (1986)) and a third group builds their definitions on the combinations of their semantics and their intentions (Mann and Thompson (1988), among others).

There is another discrepancy within the researchers concerning the nature of the rhetorical relations. While Grosz and Sidner (1986), Asher and Lascarides (2003), for

[1] This list is based on the inventory presented by Hobbs (1985:1-2), to which we added the designations of posterior works.

instance, view them as descriptive and operational constructs used to analyse the discourse structure, Sanders *et al.* (1992; 2000; 2001), Mann and Thompson (1988), Hobbs (1985), among others, see them as cognitive entities with psychological reality, modelling cognitive processes.

According to the latter perspective, understanding a text is determined not only by the nature of the rhetorical relations but also by the linguistic markers of those relations. In fact, the cue-phrases are seen as an important source of evidence for defining a set of rhetorical relations. There have been some studies that support the claim that the rhetorical relations are part of the cognitive representation itself, while the linguistic markers are purely expressions of these relations that guide the reader in inferring the correct rhetorical relation (cf. Sanders et al. (1992), Knott and Dale (1994), Sanders *et al.* (2000)). Grounded on these studies, in addition to a taxonomy of rhetorical relations, these authors put forward a taxonomy of cue-phrases.

Another point of divergence is the definition of the minimal discursive units. Once again, depending on the theory, the extension and even localisation of the discursive units vary. The different theories that propose an analysis of the rhetorical structure of discourse define as units of analysis clauses or/ and single sentences in short discourses. For instance, in the SDRT the arguments of the rhetorical relations are mainly non-complex sentences, being occasionally coordinate clauses with *and* or *but*. However, the fact that the majority of works consider that the minimal discursive units are non-complex sentences does not mean that the rhetorical relations cannot be used to interpret complex sentences, namely subordinate sentences. In fact, Matthiessen and Thompson (1988: 275), consider that subordinate clauses can be viewed as a "grammaticalization of a very general property of the hierarchical structure of the discourse itself".

With respect to the localisation of the two constituents of the rhetorical relation, in most cases, they are adjacent. However, this may be not the case and, thus, the two arguments may be separated by other linguistic material.

Regarding discourse units, SDRT, for instance, predicts that two arguments linked by a rhetorical relation can form a composite unit which can be linked to other units by another rhetorical relation. Moreover, the same two units can be linked by more than one rhetorical relation, contrary to what is allowed by RST.

Generally speaking, the rhetorical relations are more commonly used to describe the structure of a sequence of sentences (cf. Hobbs (1985), Asher and Lascarides (2003), among others) or short texts (cf. Mann and Thompson (1988)). More recently, there have been incursions into the analysis of more extensive texts (cf. Miltsakaki *et al.* (2004), Silva (2005)).

The different perspectives of rhetorical/ coherence or discursive relations presented above are indicative of the proposals' heterogeneity. Since the rhetorical relations need to be integrated in a more or less structured framework, we will make a foray into investigating the main theories of discourse representation.

3.2. Discursive Theories and Taxonomies of Rhetorical Relations

3.2.1. A Theory of Discourse Interpretation (Hobbs (1985))

Hobbs (1985) assumes that in the interpretation of discourse the accumulated knowledge is used to build a theory of what is being said at the moment. Accordingly, a theory of coherence relations must be part of a knowledge-based theory of discourse interpretation.

He argues that such a theory must integrate the following parts: (i) a logical notation or knowledge representation (first-order predicate calculus, for instance); syntax and semantic translation into the logical notation; (ii) knowledge encoded in a base; (iii) a deductive mechanism (*modus ponens*, for instance); (iv) discourse operations or specification of possible interpretations in order to obtain the best interpretation; (v) and specification of the best interpretation. These parts or sub-theories provide the necessary tools to analyse discourse and to describe how each utterance is related to the previous one, that is, which is the coherence relation that links both utterances. In this compositional process, after the two utterances are connected by a coherence relation, an assertion is assigned to this larger utterance.

In his work, coherence relations are defined in terms of what the listener/ reader infers bearing in mind: (i) that the speaker aims at transmitting a message which has some objective; (ii) that he must take into account the listener's knowledge; (iii) and that he must facilitate the listener's comprehension of the utterance. Accordingly, he

establishes four classes of coherence classes: (1) Occasion relations, (2) Evaluation relations, (3) the ones that evoke the listener's prior knowledge and (4) the Expansion relations. Each type of relation is defined and exemplified below.

The Occasion relations occur when a change of state can be inferred from the assertion of the previous segment (S_0), whose final state can be inferred from the present segment (S_1) or when a change of state can be inferred from the assertion of S_1, whose initial state can be inferred from S_0. Example (292) illustrates this class of coherence relations.

(292) He noticed the broken connection in the control mechanism, and took it to his workshop to fix. (Hobbs (1985: 11))

In this example, the second clause describes an action that is the result of a change of knowledge asserted in the first clause.

The second class of coherence relation proposed by Hobbs (1985) is the class of Evaluation relations. Their definition states that we can infer from S_1 that S_0 is a step in a plan for reaching some objective of the discourse or the other way around, that is, we can infer from S_0 that S_1 is a step in a plan for reaching some objective of the discourse. This group includes the Cause and Explanation relations because in the first case "if the state or event described in S_1 has caused the speaker to say S_0, then S_1 evaluates S_0" and in the second case "if the state or event described in S_1 causes the state or event described in S_0, then S_1 explains S_0" (Hobbs (1985: 12)). The utterance in (293) exemplifies the latter.

(293) Did you bring your car today? My car is at the garage. (Hobbs (1985: 12))

The third group of relations evokes the listener's prior knowledge and includes Background and Explanation. The first occurs when it is inferred from S_0 "a description of a system of entities and relations", and it is inferred from S_1 "that some entity is placed or moves against that system as background" (Hobbs (1985: 13)).

(294) And one Sunday morning about five o'clock in the morning I sat down in the Penn Station, / and while I was sitting there a young cat came up to me... (Hobbs (1985: 12))

In this example, the first clause (S_0) represents the scenario where the situation of the second clause (S_1) takes place.

In its turn, the Explanation surfaces when it is inferred that the situation asserted by S_1 causes or could cause the situation asserted by S_0. So, in (295), because the second sentence presents the cause for his state of *being in a foul humour*, it is connected to the previous sentence by the coherence relation Explanation.

(295) He was in a foul humour. He hadn't slept well that night. (Hobbs (1985: 14))

It should be noted that the authors consider that the Explanation only occurs when the sentence describes prior knowledge, the inverse relation being Cause, which is not included in this class.

The last group of relations is the class of Expansion relations and, as it is clear from the designation, they extend the discourse. Hobbs classifies them according to the moves between specific and general assertions and the interaction of these moves with negation, as shown in table 35.

	Specific to specific	**Specific to general**	**General to specific**
Positive	Parallel	Generalization	Exemplification
Negative	Contrast	____	____

Table 35. The Expansion coherence relations (Hobbs (1985: 15))

The Parallel relation occurs when $p(a_1,a_2,...)$ is inferred from the assertion of S_0 and $p(b_1,b_2,...)$ from the assertion of S_1, where a_i and b_i are similar, for all *i*. Example (296) illustrates this definition.

(296) The ladder weighs 100 lb with its center of gravity 20 ft from the foot and a 150 lb man is 10 ft from the top. (Hobbs (1985: 16))

In this sentence, the predicate *p* is *force* and the arguments presented are identical. Therefore, the two clauses of this sentence are linked by the coherence relation Parallel.

The Elaboration takes place when the listener infers the same proposition *P* from the assertions of S_0 and S_1. For instance, in the following example, Elaboration is

inferred if the listener is able to find a connection between the two situations described by both sentences and he is able to recognise that both are similar composites of situations.

(297) Time is running out on Operation Candor.
Nixon must clear himself by early in the new year or lose his slipping hold on the party. (Hobbs (1985: 19))

The Exemplification relation occurs when it is inferred p(A) from the assertion of S_0 and p(a) from the assertion of S_1, where a is a member or a subset of A. The second sentence in (298) is connected to the first one by Exemplification.

(298) This algorithm reverses a list. If its input is "A B C", its output is "C B A". (Hobbs (1985: 20))

The Generalization is the reverse of the Exemplification, that is, infer p(A) from the assertion of S_1 and p(a) from the assertion of S_0, where a is a member or a subset of A.

In the Contrast relation, there are two possibilities: a) one has to infer p(a) from the assertion of S_0 and $\neg p$(a) from the assertion of S_1, where a and b are similar; or b) infer p(a) from the assertion of S_0 and p(b) from the assertion of S_1, where there is some property q such that q(a) and $\neg q$(b). Examples (299) and (300) represent both cases, respectively.

(299) You are not likely to hit the bull's eye, but you are more likely to hit the bull's eye than any other equal area.

(300) If INFO(M) > INFO(N), then set M to LINK(M)
If INFO(M) ≤ INFO(N), then set N to LINK(N)
(Hobbs (1985: 21))

The difference between the subtypes is that while the contrast in the first is between similar entities, in the second it is between contrasting entities.

Although the author does not integrate it in the classification presented in table 35, he adds a final coherence relation to this group, the Violated Expectation. The author's definition is the following: infer P from the assertion of S_0 and $\neg$P from the

assertion of S_1. So, according to this definition, in sentence (301), the listener would infer from the first clause that John is dishonest because he is a lawyer, but that inference is contradicted by the second clause, which asserts that he is honest.

(301) John is a lawyer, but he's honest.

All of these coherence relations can be grouped into two types of relations: coordinating relations and subordinating relations. The coordinating relations are characterised by having a common proposition that is inferred from each larger utterance while the subordinating relations are characterised by having one dominant, subordinating segment that determines the assertion of the larger segment. Parallel and Elaboration are instances of the first type and Background, Explanation, Exemplification, Generalization, Contrast and Violated Expectation are cases of the second type.

Being laid the foundations for the theory, Hobbs (1985) puts forward a method of analysing discourse composed of four steps. The first step consists of dividing the text in a more or less intuitive manner: firstly into two major parts, then each part into two or three segments and so forth till the segment is a single clause. The final result is a tree structure. The next step is labelling the non-terminal nodes of the tree with coherence relations from the bottom up. The third step is the specification in more or less precise terms of the knowledge or beliefs that account for the assignment of the coherence relations. This specification can be formulated by natural or logical language. The last step is of the validation of the hypotheses constructed during the previous phase based on the knowledge underlying the text. A possible route to carry out this step is forming a *corpus* with the same types of text or from the same author in order to constitute a knowledge base that can confirm, or not, the analysis made.

We can exemplify this method using one of Hobbs example (1985: 1) from Chomsky.

(302) I would like now to consider the so-called "innateness hypothesis", to identify some elements in it that are or should be controversial, and to sketch some of the problems that arise as we try to resolve the controversy. Then, we may try to see what can be said about the nature

and exercise of the linguistic competence that has been acquired, along with some related matters.

To begin with, we divide the text into major parts, which correspond to the first and second sentences. In the first major part, a break can be made between the first and second clauses and between the second and third clauses. So, step 1 yields the following partition.

(303) (1a) I would like now to consider the so-called "innateness hypothesis",
(1b) to identify some elements in it that are or should be controversial,
(1c) and to sketch some of the problems that arise as we try to resolve the controversy.
(2) Then, we may try to see what can be said about the nature and exercise of the linguistic competence that has been acquired, along with some related matters.

In step 2, we link the segments with coherence relations from the bottom up taking into account their definitions. Hence, segments (1b) and 1(c) are connected with the Occasion relation; this larger segment is linked with segment (1a) with Elaboration; and segments (1) and (2) with Occasion. This analysis renders the following tree structure.

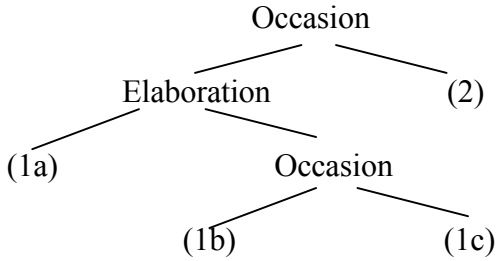


Figure 1. Structure of example (303) (adapted from (Hobbs (1985: 2))

During step 3, one has to explain the assignment of the coherence relations. For instance, it is possible to infer that between (1) and (2) there is an Occasion relation acknowledging a change of state and for that we need to know that both are referring to two hypotheses related to language competence, which implies being acquainted with the meanings of "innateness" and "acquired language competence". The much longer step 4 will validate the inferences made in step 3 by looking into more examples of scientific texts in order to evaluate if this is a prototypical structure for this type of texts.

Hobbs' work has been a source of inspiration for many authors because it shows that the analysis of a text should not only rely on the information related to the order of the sentences, their semantics and syntax, but also to the information given by coherence relations. Another influential point in Hobbs' proposal has been the stipulation of constraints concerning the world knowledge that is activated during the process of analysing the discourse. These two points coupled with the attempt to define a reasonable set of coherence relations make Hobbs' analyse a seminal work.

Nonetheless, there are some shortcomings regarding not only the definition of the coherence relations, but also the proposed method to analyse discourse. The first limitation concerns, on the one hand, the shortness of coherence relations in Hobbs's classification and, on the other hand, the obscurity of the definitions of some coherence relations and of their exemplification. Elaboration is one of latter. If we look into Chomsky's example in (303), the linkage of (1a) to (1b) and (1c) by Elaboration as proposed seems less evident than connecting these propositions with a coherence relation such as Purpose or Result. Hobbs' proposal would be enriched if more coherence relations were considered. Furthermore, the definition of the coherence relations would benefit from the specification of more constraints.

The second downside to his analyse, from our point of view, is related to his methodological approach to the analysis of discourse, in particular to steps 2 and 3. As we presented before, Hobbs claims that first we infer the correct coherence relation and then we specify the type of knowledge involved in that process. However, it would be less fallacious if the order was the other way around, that is, if first we gathered and considered the information from our knowledge-base that comes into play when computing the discourse and then inferred the proper coherence relations. However, this first task proves to be quite difficult because it is not very clear from Hobbs' paper how the world knowledge should work to get the correct inferences.

3.2.2. Rhetorical Structure Theory (Mann and Thompson (1988))

The *Rhetorical Structure Theory* (RST)[2], developed by Mann and Thompson (1988), is a descriptive theory according to which the text forms a whole through the existence of organisational relations or rhetorical relations that hold between its parts. Each unity of the text is connected to the rest of the text through a net of relations and all the unities are hierarchically organised. Grammatically speaking, these units correspond by default to clauses, except for the subject and complement clauses and the restrictive relative clauses[3], which according to the authors lack independent functional integrity. Nevertheless, the authors admit that depending on the objectives of the investigation, on the language-target or on the type of data, oral or written, the minimal unit can vary.

Each relation, thus, connects two units, named nucleus (N) and satellite (S). All units are also spans and these may be constituted by more than a unit. The nuclei fulfil the main objective of the writer, carrying the most essential information, and, hence, they are the most important parts of the text. In its turn, the satellites convey secondary information. So, while a text without the nuclei becomes unintelligible, one without the satellites is decipherable.

According to Mann and Thompson (1985), there are different possibilities of combinations between the nucleus and the satellite in rhetorical relations. In the most common pattern, a nucleus is connected to a satellite, as exemplified in the first schema of figure 2. Another possibility is having one nucleus for two satellites, as shown in the second schema. Another possibility is shown in schema 3: the presence of only two nuclei.

[2] The RST was initially developed with a particular aim: to orient computational text generation, nonetheless, it has been applied in different scientific areas from discourse analysis to psycholinguistic and linguistics.

[3] The authors following Matthiessen and Thompson's (1988) proposal consider that the term subordination lacks accuracy because it integrates types of clauses syntactically different: while some are embedded, others are just combined. For this reason, they leave out the embedded clauses from the set of possible minimal units. For more information about the different types of clauses, cf. 1.1.2., starting on page 12 of this work.

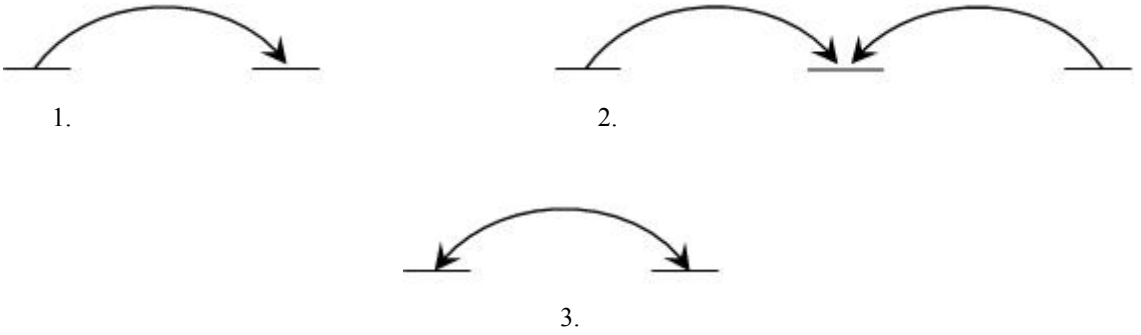


Figure 2. Some possibilities of combinations between nucleus and satellite (adapted from Mann and Thompson (1988: 7))

As it is possible to conclude from the observation of the schemas in figure 2 the arrow always points to nucleus and away from the satellite.

The notions of nucleus and satellite are of utmost importance to the definition of rhetorical relations. In fact, these are defined according to four parameters: (a) constraints on the nucleus, (b) constraints on the satellite, (c) constraints on the combination of nucleus and satellite and (d) effect on the reader (R).

This last parameter leads to the distinction between subject matter relations, which are related to the subject matter of the text, and presentational relations, which are related to aspects of the text structure. In the first group, the intended effect is for the reader to recognise the relation, while, in the second group, it is to increase the acceptance or belief of the nucleus by the reader.

The original paper defines a list of twenty-four rhetorical relations, but they see it as an open list. The summary of all definitions distributed by the subject matter and presentational classes is presented in tables 36 and 37.

Subject Matter			
Relation Name	**Constraints on S or N**	**Constraints on N + S or N + N**	**Intention of W**
Circumstance	on S: S presents a situation (not unrealised).	S sets a framework within which R is intended to interpret N.	R recognises that S provides the framework for interpreting N.
Solutionhood	on S: S presents a problem	N is a solution to the problem presented in S.	R recognises N as a solution to the problem presented in S.
Elaboration	none	S presents additional detail about the situation or some element of subject matter which is presented in N or inferentially accessible in N in one or more of the ways listed below. In the list, if N presents the first member of any pair, then S includes the second: • set - member • abstraction - instance • whole - part • process - step • object - attribute • generalization - specific	R recognises S as providing additional detail for N. R identifies the element of subject matter for which detail is provided.
Volitional Cause	on N: N is a volitional action or else a situation that could have arisen from a volitional action.	S could have caused the agent of the volitional action in N to perform that action; without the presentation of S, R might not regard the action as motivated or know the particular motivation; N is more central to W's purposes in putting forth the N-S combination than S is.	R recognises S as a cause for the volitional action in N.
Non-volitional Cause	on N: N is not a volitional action.	S, by means other than motivating a volitional action, caused N; without the presentation of S, R might not know the particular cause of the situation; a presentation of N is more central than S to W's purposes in putting forth the N-S combination.	R recognises S as a cause of N
Volitional Result	on S: S is a volitional action or a situation that could have arisen from a volitional action.	N could have caused S; presentation of N is more central to W's purposes than is presentation of S.	R recognises that N could be a cause for the action or situation in S.
Non-volitional Result	on S: S is not a volitional action.	N caused S; presentation of N is more central to W's purposes in putting forth the N-S combination than is the presentation of S.	R recognises that N could have caused the situation in S.

Purpose	on N: N is an activity; on S: S is a situation that is unrealised.	S is to be realised through the activity in N.	R recognises that the activity in N is initiated in order to realise S.
Condition	on S: S presents a hypothetical, future, or otherwise unrealised situation (relative to the situational context of S).	Realisation of N depends on realisation of S.	R recognises how the realization of N depends on the realisation of S.
Otherwise	on N: N is an unrealised situation; on S: S is an unrealised situation.	Realisation of N prevents realization of S.	R recognises the dependency relation of prevention between the realisation of N and the realisation of S.
Interpretation	none	on N + S: S relates N to a framework of ideas not involved in N itself and not concerned with W's positive regard	R recognises that S relates N to a framework of ideas not involved in the knowledge presented in N itself.
Evaluation	none	on N + S: S relates N to degree of W's positive regard toward N.	R recognises that S assesses N and recognises the value it assigns.
Restatement	none	on N + S: S restates N, where S and N are of comparable bulk; N is more central to W's purposes than S is.	R recognises S as a restatement of N.
Summary	on N: N must be more than one unit	S presents a restatement of the content of N, which is shorter in bulk.	R recognises S as a shorter restatement of N.
Sequence	Does not apply.	There is a succession relationship between the situations in the nuclei.	R recognises the succession relationships among the nuclei.
Contrast	Does not apply.	No more than two nuclei; the situations in these two nuclei are (a) comprehended as the same in many respects (b) comprehended as differing in a few respects and (c) compared with respect to one or more of these differences.	R recognises the comparability and the difference(s) yielded by the comparison that is being made.
Joint	Does not apply.	none	none

Table 36. Definition of the subject matter rhetorical relations (Mann and Thompson (1988))

Presentational			
Relation Name	**Constraints on S or N**	**Constraints on N + S or N + N**	**Intention of W**
Background	on N: R won't comprehend N sufficiently before reading text of S.	S increases the ability of R to comprehend an element in N.	R's ability to comprehend N increases.
Enablement	on N: presents an action by R (including accepting an offer), unrealised with respect to the context of N.	R comprehending S increases Rs potential ability to perform the action in N′.	R's potential ability to perform the action in N increases.
Motivation	on N: N is an action in which R is the actor (including accepting an offer), unrealised with respect to the context of N.	Comprehending S increases R's desire to perform action in N.	Rs desire to perform action in N is increased.
Evidence	on N: R might not believe N to a degree satisfactory to W. on S: R believes S or will find it credible.	Rs comprehending S increases R's belief of N.	R's belief of N is increased.
Justify	none	R's comprehending S increases R's readiness to accept W's right to present N.	R's readiness to accept W's right to present N is increased.
Antithesis	on N: W has positive regard for N.	N and S are in contrast (see the Contrast relation); because of the incompatibility that arises from the contrast, one cannot have positive regard for both of those situations; comprehending S and the incompatibility between the situations increases R's positive regard for N.	R's positive regard for N is increased.
Concession	on N: W has positive regard for N. on S: W is not claiming that S does not hold.	W acknowledges a potential or apparent incompatibility between N and S; recognising the compatibility between N and S increases R's positive regard for N.	R's positive regard for N is increased.

Table 37. Definition of the presentational rhetorical relations (Mann and Thompson (1988)).

Since the presentation of an example for each rhetorical relation would be a large undertaking, we deemed it best to exemplify only three. The first example conveys a multinuclear relation (cf. (304)).

(304) **1.** Peel oranges.
2. and slice crosswise.
3. Arrange in a bowl
4. and sprinkle with rum and coconut.
5. Chill until ready to serve.

(Mann and Thompson (1988: 74))

The minimal units are already segmented and the point of transition of the relation and the extension of the connected units are also identified. The next step consists in labelling the relations that link all the text spans and creating the schema application that defines the structural constituency of the text. While performing this task, we have to bear in mind the following constraints: (a) completeness (the schema application must include all spans that compose the text); (b) connectedness (each text span is either a minimal unit or part of another schema application of the analysis); (c) uniqueness (each schema application integrates a different set of text spans); and (d) adjacency (the text spans of each schema compose one text span).

To infer a relation, the reader/listener must make plausibility judgements based on context and on the intention of the writer or speaker. In this case, the reader recognises a succession relationship between different nuclei, that was intended by the writer/ speaker and the relation that most accurately defines this connection is Sequence. The schema application for this text is represented in figure 3.

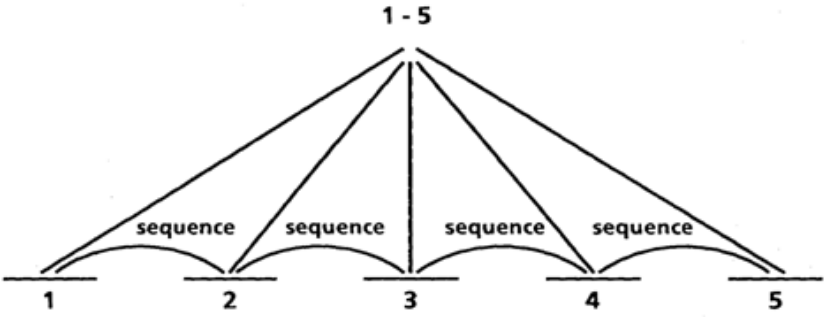


Figure 3. The schema application of example (304)

This relation has the particularity of being the only one, in Mann and Thompson's framework, to require a certain order of the units it connects. As a matter of fact, apart from this one, the other rhetorical relations do not impose any constraints regarding the order of the text spans. However, it is possible to detect some patterns of unmarked order between the nucleus and satellite. For instance, normally in Concession, Background and Condition relations, the satellite precedes the nucleus, while, in Elaboration, Evidence and Purpose, the nucleus comes first.

The second example illustrates an occurrence of the most frequent schema, a single relation nucleus-satellite (cf. (305)).

(305) **1.** Sånga-Säby-Kursgård, Sweden, will be the site of the 1969 International Conference on Computational Linguistics, September 1-4.
2. It is expected that some 250 linguistics will attend from Asia, West Europe, East Europe including Russia, and the United States.
3. The conference will be concerned with the application of mathematical and computer techniques to the study of natural languages, the development of computer programs as tools for linguistic research, and the application of linguistics to the development of man-machine communication systems.

(Mann and Thompson (1985: 53))

Since units 2 and 3 provide more information about the conference introduced in 1, we take the latter to be the nucleus and the former to be the satellite. Each satellite is linked to its nucleus by the relation Elaboration, as represented in the following schema[4].

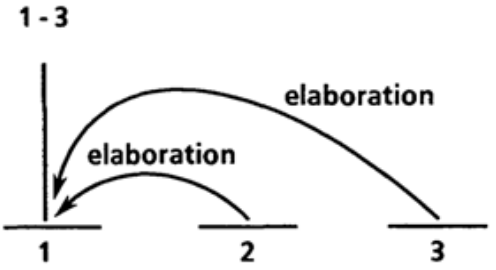


Figure 4. The schema application of example (305)

[4] The analysis of this text is not, from our point of view, complete because it is possible to establish another relation, making the text more coherent. Although the authors do not connect unit 2 to unit 3, we can infer a multinuclear relation, namely the relation Joint.

The last example is a bit more complex due to its extension and, hence, to the larger number of relations one can infer between the text spans.

(306) **1.** Farmington police had to help control traffic recently
2. when hundreds of people lined up to be among the first applying for jobs at the yet-to-open Marriot Hotel.
3. The hotel's help-wanted announcement – for 300 openings – was a rare opportunity for many unemployed.
4. The people waiting in line carried a message, a refutation, of claims that the jobless could be employed if only they showed enough moxie.
5. Every rule has exceptions,
6. but the tragic and too-common tableaux of hundreds or even thousands of people snake-lining up for any task with a paycheck illustrates a lack of jobs,
7. not laziness.

(Mann and Thompson (1988: 13))

The RST analysis renders the following schema.

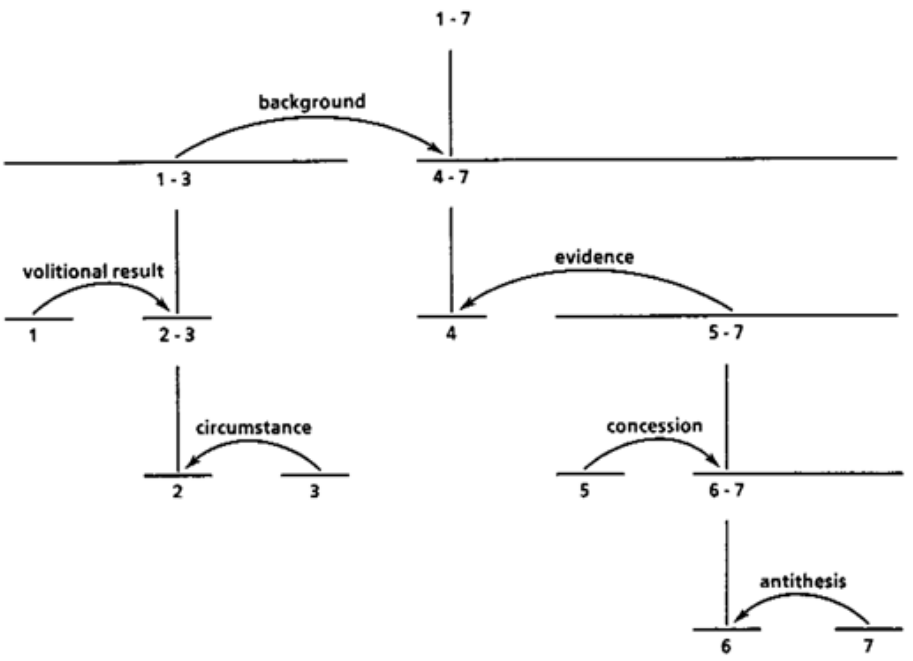


Figure 5. The schema application of example (306)

The schema in figure 5 illustrates very well the hierarchical nature of an analysis based on rhetorical relations. In this case, the top-level relation that includes other relations at lower levels is Background, the nucleus being the text spans of units 4 to 7 and the satellite the segment of units 1 to 3. According to the definition of this relation, the text

span that includes units 1-3 provides the necessary information to understand the content of the nucleus. The first text span (units 1-3) can be decomposed in further units to be linked by other rhetorical relations. Unit 1 can be related to units 2 and 3 with the relation of Volitional Result, because it describes a volitional action caused by the situation represented by the nucleus (units 2-3). The final decomposition consists in linking unit 2 and 3 with the relation Circumstance, which predicts that the satellite (unit 3) establishes the framework to interpret the nucleus (unit 2).

The second member of the relation Background, units 4-7, can also be further analysed into other rhetorical relations. First, the segments unit 4 and the text span composed of the units 5-7 are connected by a relation of Evidence since the satellite (units 5-7) acts as an argument, proof of what is said in the nucleus (unit 4)[5] and it increases the reader's belief of the nucleus. Since the second member of Evidence is a text span that encompasses three units, it is feasible to establish other rhetorical links. This next relation is signalled by the word "but", which although marks an apparent incompatibility between unit 5 (the satellite), on the one hand, and units 6-7 (the nucleus), on the other hand, permits presenting the two situations as compatible and increases the reader's acceptance of the situation described in the nucleus. The relation that best defines this type of link is Concession. Finally, the reader must encounter a relation to relate unit 6 to unit 7. Because both situations are contrary and incompatible, only one can be accepted and the chosen one is the situation in the nucleus (unit 6).

The examples explored above are of various syntactic nature: some include only non-complex sentences, others integrate, in addition to the latter, complex sentences, namely coordinate clauses with the connectors "and" (cf. unit 2 in (304)) and "but" (cf. unit 6 in (306)) and subordinate clauses introduced by the connector "when" (cf. unit 2 in (306)). In fact, Mann and Thompson (1988), as well as Matthiessen and Thompson (1988), claim that the clauses in complex sentences are combined in the same manner than two units of a text. In both cases, the elements that integrate each type of combination are interdependent. This observation leads to the general hypothesis put

[5] Unit 4 carries more than one proposition and yet the authors choose not to divide them in more units. The reason for this lays on the criteria adopted to determine the units: as we have already pointed out, they leave out complement clauses such as the one in this example ("that the jobless could be employed"). This option disallows the consideration of the segment "if only they showed enough moxie" as a unit because its analysis would imply the analysis of the *that*-clause as a member in a rhetorical relation.

forward by Matthiessen and Thompson (1988: 301) that "clause combining in grammar as evolved as a grammaticalization of the rhetorical units in discourse defined by rhetorical relations" and to a narrower hypothesis that the "enhancing hypotactic clause combining[6] has evolved as grammaticalization of the rhetorical relations in text of the enhancing nucleus-satellite".

Focussing on the narrower hypothesis, the authors predict the following grammatical features of the enhancement clause combination: a) the clauses can be marked with a connector, normally at the beginning of the clause that codifies the satellite; b) the satellites can be finite or non-finite; the clauses can exhibit the sequence nucleus-satellite or satellite-nucleus.

In spite of giving some examples which encompass enhancing (adverbial) clauses, the authors do not systematise the most frequent rhetorical relations with those types of clauses.

All in all, the RST is an analytical tool that enables the study of different linguistic phenomena, namely within the grammar of clause. In fact, we consider that this bridging between the rhetorical structure of the text and the rhetorical structure of the clause constitutes a valuable contribution to a more uniform account of how rhetorical relations work. Nevertheless, a more in-depth investigation would certainly result in a more thorough understanding of this issue.

Another strong feature of the RST concerns the notions of nuclearity and satellites, which provide simultaneously a useful functional description at the discursive and (complex) sentence level and a compelling explanation of why it is not always the last unit to be linked to the preceding one, that is, why the rhetorical mechanisms do not necessarily follow the linear order of the discourse. For instance, in text (307), the direction of the rhetorical relation varies, as illustrated by the schema in figure 6.

(307) **1.** Concern that this material is harmful to health or the environment may be displaced.
2. Although it is toxic to certain animals,
3. evidence is lacking that it has any serious long-term effect on human beings.

[6] We recall that in Matthiessen and Thompson (1988) proposal the "enhancing hypotaxis" corresponds to the adverbial subordination. See section 1.1.3.3., page 27, for a more detailed explanation.

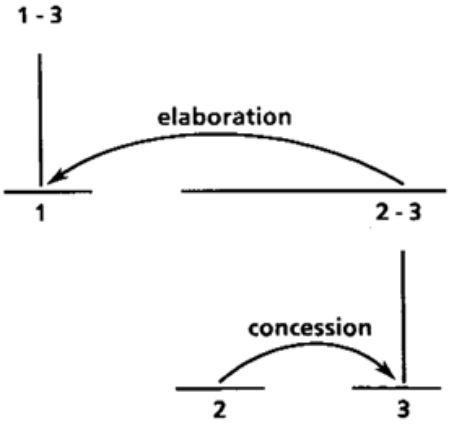


Figure 5. The schema application of example (307)

Whilst in the first case, units 2-3, which occupy the final position in the discursive linearity, are related to unit 1 with Elaboration, in the second case, it is unit 2, which precedes unit 3, which is linked by the relation Concession to unit 3.

One of the points that we regard as particularly troublesome is the definition of the rhetorical relations merely based on the intentions of the writer or speaker, neglecting the contribution of other useful information sources. The process of recognition of rhetorical relations becomes more complicated when it is based solely on the intended effect.

Moreover, RST imposes restrictions to the discourse structure that are too strong, such as the impossibility of having more than one rhetorical relation linking two discursive units[7]. So, when the reader is confronted with two or more candidates, he/ she has to choose one of them on a plausibility judgement, which is not the most clear-cut or accurate manner to solve the problem.

3.2.3. A Taxonomy of Coherence Relations (Sanders *et al.* (1992))

Sanders *et al.* (1992) argue that coherence relations[8] are cognitive entities, and, thus, their account must be psychologically plausible so that a theory of discourse

[7] Taboada and Mann (2006) admit that in certain cases it is possible to have more than one rhetorical relation connecting two units, but they do not believe that this can happen frequently and so, they do not subscribe to this assumption within the RST.

[8] The authors use the term 'coherence' because the main function of the relations in discussion is to establish coherence in a text.

structure may share the same feature. Although they do not build the theory itself, they put forward a classification of coherence relations that may contribute to construct a coherent representation of the discourse within an economic framework with a restricted set of relations[9].

To reach this limited set of coherence relations, it is necessary to classify them in terms of cognitive primitives. This classification implies the characterisation of relations as composites in the sense that they are inferred because they are composed by different parameters or notions. There are four basic parameters, each with two alternative values: basic operation (causal *vs* additive), source of coherence (semantic *vs* pragmatic), order of the segments (basic order *vs* non-basic order) and polarity (positive *vs* negative).

Regarding the first parameter, a coherence relation is causal when there is a relation of implication (causality) between the text segments and additive when the relation is of conjunction. With respect to the second parameter, a coherence relation is semantic when the text spans are related due to their propositional content, while a coherence relation is pragmatic when the text segments are related because of their illocutionary meaning. The coherence relations are also defined in terms of order of the segments: if the segments are in their non-marked order, the coherence relation is basic, if the segments are ordered in a marked manner, the coherence relation is non-basic. Finally, the last parameter concerns polarity: a coherence relation is positive whenever the text segments S_1 and S_2 operate in the basic operation as antecedent and consequent, while if the text segments not-S_1 or not-S_2 function in the basic operation, the coherence relation is negative. The first type (positive) is marked with *and* and *because* and the second type (negative) with *although* and *but*.

The following table lists the coherence relations, their classification according to the four parameters and the examples[10].

[9] Actually, one of the criticisms voiced by Knott and Dale (1994) regarding Mann and Thompson's (1988) proposal is the possibility, predicted by the theory, of adding more rhetorical relations. According to them, the hypothesis that every text can be analysed with coherence relations becomes less strong if there is the possibility of creating a relation whenever necessary.

[10] The examples are from Sanders *et. al.* (1992: 12-16).

Coherence Relation	Basic operation	Source of coherence	Order	Polarity	Example
Cause-Consequence	causal	semantic	basic	positive	Because there is a low-pressure area over Ireland, the bad weather is coming our way.
Contrastive Cause-Consequence	causal	semantic	basic	negative	Although the number of similarities between faces is enormous, we do not have the slightest difficulty in distinguishing a very large number of people.
Consequence-Cause	causal	semantic	non-basic	positive	A piano concerto by Beethoven was removed from the program, because the soloist Anthony di Bonaventura felt seriously ill.
Contrastive Consequence-Cause	causal	semantic	non-basic	negative	In 1969 Hans Hetzel was sentenced to life-long hard labor because of murder, although he had stoutly maintained his innocence.
Argument-Claim	causal	pragmatic	basic	positive	Nests or dead birds may clog up chimneys. Therefore, have your chimney checked one a year and swept when necessary.
Instrument-Goal	causal	pragmatic	basic	positive	We will also present the Portuguese names for the most important places of interest to make the questioning easier.
Condition-Consequence	causal	pragmatic	basic	positive	Ready? Then we're now off on safari.
Contrastive Argument-Claim	causal	pragmatic	basic	negative	Although the papers wrote about gas accidents several times last year, the risk run by the gas user is much smaller than that of the traffic participant.
Claim-Argument	causal	pragmatic	non-basic	positive	(Many people seem to eat only the flower head of broccoli). That is a pity, because the stalk tastes good too.
Goal-Argument	causal	pragmatic	non-basic	positive	In general the buyer will want to diminish his costs of living with the promised subsidy. To that end the Postbank offers to finance this subsidy in advance.
Consequence-Condition	causal	pragmatic	non-basic	positive	Wine is a very healthy beverage that can lengthen man's life not insignificantly, provided that the wine is drunk in small quantities and not too regularly.
Contrastive Claim-Argument	causal	pragmatic	non-basic	negative	You will have to take into account that there are sharks along the whole Yugoslavian coast, although this is certainly not shouted from the rooftops.
List	additive	semantic	----------	positive	The energy consumption of a refrigerator has decreased by 17%, and a deep freezer uses 18 to 20% less electricity than 10 years ago.
Exception	additive	semantic	----------	negative	A species can stand a certain amount of hunting, but the California condor cannot.
Opposition	additive	pragmatic	----------	negative	Bergoss improved by 12 points, as did Van Hattum, Holec, and Smit-Tak. By contrast, Philips lost 10 points.
Enumeration	additive	pragmatic	----------	positive	Test-tube babies raise questions concerning ethical and social aspects. Moreover, what about the legal problems they evoke?
Concession	additive	pragmatic	----------	negative	The consumption of mineral water has been advocated strongly over the last few years in the Netherlands, but the results of an investigation in Germany on the composition of bottled water were not so good.

Table 38. A taxonomy of coherence relations (Sanders et al. (1992))

The claim for a psychological analysis of coherence relations is supported by different studies (cf. Sanders *et al.* (1992), Sanders and Noordman (2000), among others), which prove that the taxonomy just presented provides a successful framework to describe coherence relations and to relate them.

There are, however, some aspects which do not result as successfully as expected. First, the taxonomy of coherence relations results too rooted to certain contexts, being too specific and not wide enough to comprise other relations that may arise when interpreting a discourse. The coherence link in examples (308) and (309) does not seem to find any correspondence with a coherence relation from table 38.

(308) John went to the cinema and, then, he ate in a Chinese restaurant.

(309) The day was beautiful. Mary started reading a book.

Another problematic aspect is related to the distinction between the semantic and pragmatic coherence relations, which is sometimes difficult to establish. As a matter of fact, there are some examples adduced by the authors where the illocutionary relation between the two text segments is not evident (cf. (310), for instance)).

(310) You will have to take into account that there are sharks along the whole Yugoslavian coast, although this is certainly not shouted from the rooftops. (Sanders *et al.* (1992: 15))

Furthermore, Sanders *et al.* (1994) fail to prove that coherence relations are indeed psychologically real. Furthermore, grounding a theory of discourse interpretation on linguistic evidence does not entail that the process of interpreting the discourse does not carry a psychological component. In fact, the discourse relations, as advocated by Asher and Lascarides (2003: 450), for instance, have semantic contents that relate to fundamental conceptual categories used to organise our beliefs.

3.2.4. A Theory of Discourse Coherence (Kehler (2002))

Kehler (2002) advocates that in order to adequately interpret language one has to acknowledge the central role of coherence. As such, according to him, as we establish

syntactic and semantic relationships when analysing a sequence of words, we should also establish coherence relationships when confronted with a sequence of utterances. This process of determining the coherence relations, called coherence establishment, is an inferential process based on a set of principles and of linguistically relevant tools.

The theory that Kehler puts forward merges previous proposals (Hobbs (1985), Sanders *et al.* (1992)), for instance) in a cross modular framework that aims at relating the description of the features of some linguistic phenomena, such as VP-ellipsis, gapping construction, extraction from the coordinate structures, pronoun interpretation and tense interpretation, with the results of discursive processes used to establish coherence.

In this revision, after looking into some aspects of the proposed theory of coherence relations, we concentrate on how the tense interpretation phenomenon can be explained and predicted by this analysis.

According to the author, the explanation of the mentioned phenomena follows directly from the constraints imposed by coherence relations, described as composites of more basic underlying features. Kehler (2002:15) chooses to classify them following Humes's types of "connection among ideas": Resemblance relations, Cause-Effect relations and Contiguity relations. These three groups are distinguished according to different properties which are related to the type of arguments and to the type of inference process involved.

As such, in the Resemblance relations, the arguments are common or contrasting relations (p) that apply over sets of entities, (a_1, ..., a_n) (b_1, ..., b_n), from the first and second sentences. In its turn, the Cause-Effect relations have as arguments propositions (P and Q). As to the type of inference process, in the first case, the operations performed are based on categorisation, comparison, generalisation and subsumptive reasoning, and, in the second case, the operations are grounded on implication, understood as "could plausibly follow from". With respect to the Contiguity relations, the arguments are roughly defined in terms of eventualities centred on a system of entities and the inference process relies heavily on world knowledge.

In a nutshell, the Resemblance relations emerge when there are similarities or contrasts among corresponding set of entities. The Cause-Effect relations are applied when there is a causal link between two propositions. The Contiguity relations are

inferred when the sentences describe a sequence of eventualities related to a universe of entities. Each group includes different coherence relations defined and exemplified in the following table.

Types of relations	**Relations**	**Constraints**	**Examples**
Resemblance	Parallel	$p(p_1)$ and $p(p_2)$, $q_i(a_i)$ and $q_i(b_i)$	John bought Ann a book and Peter bought her a perfume.
	Contrast	$p(p_1)$ and $\neg p(p_2)$, $q_i(a_i)$ and $q_i(b_i)$ $p(p_1)$ and $p(p_2)$, $q_i(a_i)$ and $\neg q_i(b_i)$	John loves Ann, but Mary hates her.
	Exemplification	$p(p_1)$ and $p(p_2)$; $q_i(a_i) \subset q_i(b_i)$	Young lovers often buy many presents. For instance, Peter bought Mary a perfume.
	Generalization	$p(p_1)$ and $p(p_2)$; $q_i(b_i) \subset q_i(a_i)$	Peter bought Mary a perfume. Young lovers often buy many presents.
	Exception	$p(p_1)$ and $\neg p(p_2)$, $q_i(a_i) \subset q_i(b_i)$ $p(p_1)$ and $\neg p(p_2)$, $q_i(b_i) \subset q_i(a_i)$	Young lovers often buy many presents. However, Peter hasn't bought Ann anything.
	Elaboration	$p_1 = p_2$, $a_i = b_i$	Peter bought Ann a perfume. He tried many in the store and chose a sweet perfume.
Types of relations	**Relations**	**Presuppose**	**Examples**
Cause-Effect	Result	$P \rightarrow Q$	George is a politician, and therefore he's dishonest. (Kehler (2002:21))
	Explanation	$Q \rightarrow P$	George is dishonest. He is a politician. (*Ibidem*)
	Violated Expectation	$P \rightarrow \neg Q$	George is a politician, but he's honest. (*Ibidem*)
	Denial of Preventer	$Q \rightarrow \neg P$	George is honest, even though he is a politician. (*Ibidem*)
Types of relations	**Relations**	**Definition**	**Examples**
Contiguity	Occasion	(i) Infer a change of state for a system of entities from S_1, inferring the final state for this system from S_2. (ii) Infer a change of state for a system of entities from S_2, inferring the initial state for this system from S_1.	George picked up the speech. He began to read. (Kehler (2002:22))

Table 39. Kehler's proposal of coherence relations

Having set the coherence relations, we need to address the question of how they are inferred. In Kehler's proposal, the process of coherence establishment relies greatly on world knowledge, being more intuitive than scientifically grounded. During the process of determining the correct coherence relation, the different possible interpretations are considered simultaneously by trial and error. The author

acknowledges that there are some shortcomings as far as the formalisation of the inference process is concerned, but nothing that compromises the success and effectiveness of the theory, at least regarding his purposes.

The only suggested tests to infer the adequate coherence relation are the paraphrase tests with conjunctions or complex connectives, because they are associated with specific types of relations. For instance, confronted with example (311), one can infer the coherence relation trying to paraphrase it by using different connectors and evaluating which conveys a more coherent meaning to the discourse.

(311) Max spilt a bucket of water. He tripped on his shoelace.
a. ??Max spilt a bucket of water and he tripped on his shoelace.
b. ??Max spilt a bucket of water and as a result he tripped on his shoelace.
c. Max spilt a bucket of water because he tripped on his shoelace.
(Kehler (2002: 193))

In this particular case, the conjunction "because" is indicative of the coherence relation Explanation.

Although there is not a one-to-one association between coherence relations and connectors, it is possible to establish that relation for many of them. Furthermore, when the connector does not pinpoint the exact coherence relation, it can narrow it down, because it is marked regarding the order and polarity of the clause. For example, while "and" is marked with standard order and positive polarity, "but" is marked with standard order and negative polarity.

The strategy that Kehler uses to motivate the coherence relations is proving their relevance to account for many linguistic phenomena, namely tense interpretation. In order to properly explain this phenomenon, Kehler argues that it is mandatory to combine two approaches, the coherence relations based approach and a tense based approach. He begins by comparing two instances of both approaches, Hinrichs (1986) and Lascarides and Asher (1993), and he observes that in both approaches, that is, the approach where tense interpretation is accounted for by its anaphoric properties, and the approach where tense interpretation follows from the constraints imposed by the coherence relations, there are some problems that need to be dealt with. According to

the author, both fail to account for all the data or in certain cases they add new unmotivated stipulations to the theory[11].

Kehler's account of the temporal relations results instead from the interaction of the constraints imposed by tense and those imposed by coherence relations without the need for further unmotivated conditions. Therefore, to determine the correct temporal relations one has to consider the contributions of tense and of coherence relations. The first is only considered in the context of absolute-relative tenses, as defined by Comrie (1985)[12], that is, in the presence of tenses which involve a reference point and, hence, are anaphoric, such as the Past Perfect and Future Perfect. Only in these cases, tense imposes a temporal ordering between the event time and the reference time. It follows that the temporal constraints imposed by the coherence relation must be consistent with those imposed by tense. In (312), tense carries the information that the second situation is anterior to the first and the coherence relation inferred cannot contradict this temporal relation, as, in fact, it does not, since the temporal constraint of Explanation predicts the same temporal relation.

(312) Max slipped. He had split a bucket of water. (Kehler (2002: 187))

In the case of the absolute tenses, such as Simple Present, Simple Past and Future, the tense itself only relates the situation to the speech time without conveying any specific temporal ordering as far as the relation with other intervals is concerned. In these cases, the coherence relation is solely responsible for establishing the temporal order, as illustrated by example (313).

(313) Max slipped. He split a bucket of water. (Kehler (2002: 187))

All in all, the theory of discourse coherence formulated by Kehler (2002) constitutes an important contribution as far as motivating the coherence relations and justifying their relevance not only in discursive studies, but also in syntactic and semantic investigations. For the first time, a systematisation of the linguistic phenomena

[11] For a description of the main problems with the analyses in both approaches, see Kehler (2002: 182-188).
[12] See section 2.2.1.2., pages 98-99, of this work for the distinction between absolute and absolute-relative tenses in Comrie (1985).

that can be accounted for by a framework which combines the description of the linguistic features of structures/ phenomena with the processes used to establish coherence is put forward, highlighting the relevance of coherence relations in interpreting discourses. Generally speaking, the set of principles and tools he uses allows a straightforward and effective analysis of the aforementioned linguistic phenomena, namely tense interpretation.

However, as he himself admits, his proposal is not fully developed and, from our standpoint, it lacks some important theoretical explanations/ principles with respect to two major aspects: the process of inference of the coherence relations and the constraints of the coherence relations. Regarding the first aspect, the explanation of the procedure and of the sources involved in the determination of the coherence relations only scratches the surface of the problem. Kehler bases the whole process on an intuitive model lacking scientific proof.

As to the second aspect, although the author refers to the constraints imposed by coherence relations, they are not completely explained or formalised. This is particularly true for the temporal constraints, which are discussed when motivating the use of coherence relations to derive the correct temporal interpretations. For instance, Kehler stipulates that the coherence relation Explanation imposes a temporal ordering where $E_1 > E_2$. Nevertheless, there are examples related by the same coherence relation where such a temporal interpretation does not apply. This is the case of example (314), presented by the author to illustrate Explanation.

(314) George is dishonest. He is a politician. (Kehler (2002: 21))

Although he circumscribes the data to sentences with accomplishments and achievements represented by the Simple Past and Past Perfect, he does not envisage the possibility of other temporal constraints dependent on the tense and aspect of the situations.

3.2.5. Segmented Discourse Representation Theory (Asher and Lascarides (2003))

Asher and Lascarides (2003) present a formal theory of discourse interpretation named *Segmented Discourse Representation Theory* (SDRT, hereafter). Asher (1993) developed this theory first as an extension of the *Discourse Representation Theory* (DRT), from Kamp and Reyle (1993), so that it could incorporate the contributions of other dynamic semantic proposals and capture some inferences about the content derived from the discursive cohesion treated within pragmatics.

In fact, the perception that there were limitations on the coverage of the existing semantic and pragmatic approaches justified such a proposal. With respect to the dynamic semantic approaches, such as DRT, they fail to solve some linguistic problems, among which anaphoric resolution and temporal anaphora, because, in the first case, the theory's constraints overgenerate or undergenerate possible antecedents and, in the second case, the anaphoric view of tense produces wrong temporal relations in contexts in which the sentences have a similar syntactic structure with the same verb tense and aspectual features (cf. (315)).

(315) a. Max fell. John helped him up.
b. Max fell. John pushed him.

(Asher and Lascarides (2003: 62))

Actually, the initial motivation[13] and one of the strongest for the proposal under discussion was precisely the need to explain different temporal relations in such contexts[14].

To solve these problems and to obtain the correct discourse interpretation, the authors claim that a richer notion of discourse structure is required, which can be attained by introducing into the theoretical framework the concept of rhetorical

[13] As Kehler (2002), Asher and Lascarides (2003) also advocate that, besides nominal anaphora and temporal structure, their theory also explains other linguistic phenomena, namely VP ellipsis, bridging, presuppositions, lexical ambiguity and implicature in dialogues. Nevertheless, being the purpose of this work to propose an analysis of the temporal relations and rhetorical relations in adverbial subordination, we will only revise their account of the phenomenon *temporal structure*.

[14] The first attempts to put forward SDRT were mainly or exclusively concerned with explaining different temporal readings in sequences of non-complex sentences. See, for instance, Lascarides and Oberlander (1993), Oberlander and Lascarides (1991; 1993).

relations. According to the authors, these depict the interaction between the meaning of discourse and its structure better and, because of that, they allow for a more accurate discourse update than simply the append-based process applied in DRT. Furthermore, the rhetorical relations, used to "link together the utterances – or, more accurately, the meanings or "contents" those utterances convey" (Asher e Lascarides 2003: 3), provide more solid constraints, which can predict the right readings for pronominal anaphora and temporal anaphora.

The shortcomings of the prevailing dynamic semantic analyses lead the authors to argue for an extension with some contributions from pragmatic models of discourse interpretation. However, these contributions are subjected to an important proviso: the role of the cognitive states in the interpretation of discourse must be limited, so that the theory can be a linguistic theory with linguistic explanations. In order to achieve this aim, they propose to: (i) model the linguistic meaning of the texts and the most superficial linguistic comprehension of the speaker; (ii) resort to the intentions and wishes of the speakers only when necessary; and (iii) infer information about the cognitive states from what is said by the speaker and not the other way around.

As a result, the theory considers two relevant sorts of knowledge: the linguistic knowledge and the non-linguistic knowledge, which translate into different information sources, namely the lexicon, compositional semantics as far as the first type is concerned, and world knowledge and the cognitive states of the participants with respect to the second type of knowledge. Although the non-linguistic sources can help to solve underspecification caused by the grammar, the linguistic knowledge is taken to be the most relevant and, hence, our trust in it should be maximised.

These knowledge sources, in combination with the semantics of the rhetorical relations, provide the necessary information to compute the rhetorical relation that links two utterances, and, consequently to update the discourse. In Asher and Lascarides' model (2003), this computation process of a rhetorical relation results from a complex defeasible reasoning which can be used to: (i) "model the pragmatic interpretation of the text, (ii) choose among several possible semantic representations of the text and (iii) dynamically construct the semantic structure of text" (Lascarides and Oberlander (1993:1)). Notice further that the notion of defeasible reasoning must be based on the

notion of non-monotonic logic in order to get the right predictions when there are incompatible knowledge sources.

How does this defeasible reasoning work? The SDRT separates the different knowledge or information sources into distinct reasoning modules with different but interactive logics[15]. The connection between all the modules and logics is carried out by the glue logic or the logic of information packaging, which, however, has limited access to the inferences from other logics, so that information can be computable. The following schema illustrates the interaction between the different logics.

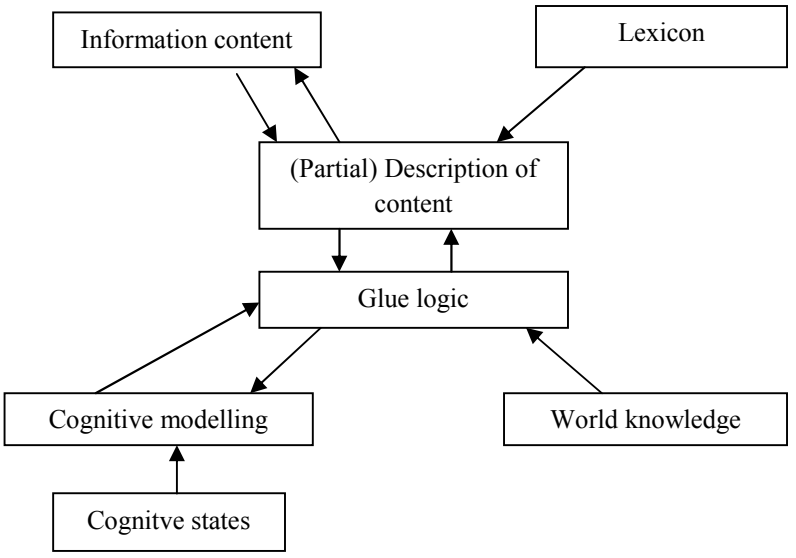


Figure 6. The interaction of the logics that contribute to discourse interpretation (adapted from Asher and Lascarides (2003: 431))

It is in the glue logic, which is propositional[16], that the logical form of discourse is built, and, hence, that the rhetorical relations are inferred. According to the syntax of the glue language, the rhetorical relations are inferred using axiom schemata, which are normally default rules. These settle how the inference of a particular rhetorical relation follows from the information gathered from the different knowledge sources. The general schema for the axioms is the following:

[15] Asher and Lascarides (2003) present in detail the formal languages with their syntax and vocabulary for each of the logics, some being propositional, modal and high order logics. Nevertheless, because in our own analysis we decided not to formalise the information provided by the knowledge sources, we will not represent them here.

[16] For full formal details of the syntax and semantics of the glue language, see Asher and Lascarides (2003: 186-194).

(316) $(?(\alpha, \beta, \lambda) \wedge \text{some stuff}) > R(\alpha, \beta, \lambda)$

where *α, β, λ* are metalinguistic variables over labels; *some stuff* concerns the well-formed formulae that define the properties of *α, β, λ*; and ∧ and > are logical connectives, meaning "and" and "then, normally", respectively. This schema axiom can be glossed as follows: if *β* is attached to *α* with a discourse relation in some constituent *λ*, and "some stuff" about *α, β* and *λ* holds, then, normally, the discourse relation is *R*.

During the process of inference, there may be some competing information. Whenever the clues supplied by the knowledge sources are conflicting, the glue's logic applies some principles to solve the problem. For instance, the *Specificity Principle* (or *Penguin Principle*) states that in case there are incompatible axioms, the most specific axiom prevails. The *Principle of Maximising Discourse Coherence* states that a discourse is more coherent when there is as many rhetorical relations as possible and when there are as few underspecified conditions as possible. In addition to these, the principles *Defeasible Modus Ponens* and *Nixon Diamond* also model patterns of inference validated by the glue logic. The first states that if one axiom has its antecedent verified, then its consequent is defeasibly inferred, and the second predicts that when conflicting default rules apply, but none is more specific than the other, then the consequent of those default rules cannot be inferred.

As to the logical form of discourse, Asher and Lascarides (2003) extend the DRT language including namely rhetorical relations. The syntax of the discourse language resorts to labels of the type π_1, π_2,..., which tag the content of a clause, of a sentence or more extensive linguistic units. They are treated as speech acts discourse referents[17]. Since the rhetorical relations relate these labels, ultimately the former define types of speech acts.

The SDRT proposes the following extended language (Asher and Lascarides (2003: 138)) to represent the discourse content in *Segmented Discourse Representation Structures* (SDRSs, henceforth).

[17] See chapter 2, section 2.4.1.7., pages 156-158, for the notion of discourse referents.

(317)

Well-formed SDRs-Formulae
SDRSs are constructed from the following vocabulary:
vocab-1. microstructure: A set Ψ of logical forms for atomic natural language clauses (eg. DRSs).
vocab-2. labels π , π_1, π_2, etc.
vocab-3. a set of relation symbols for discourse relations: R, R_1, R_2, etc.

The set Φ of well-formed SDRs-formulae is defined as follows:
1. $\Psi \subseteq \Phi$
2. If R is an n-ary discourse relation symbol and π_1,..., π_n are labels, then $R(\pi_1,..., \pi_2) \in \Phi$.
3. For $\varnothing, \varnothing' \in \Phi$, $(\varnothing \wedge \varnothing')$, $\neg \varnothing \in \Phi$, where $\wedge$ is understood dynamically.

(318)

Discourse structure
A discourse structure or SDRS is a triple $<A, F, LAST>$, where:
- A is a set of labels; i.e. $A \subseteq$ vocab-2.
- *LAST* is a label in A (intuitively, this is the label of the content of the last clause that was added to the logical form); and
- F is a function which assigns each member of A a member of Φ.

The authors limit the discourse relations symbols to binary symbols, where π immediately outscopes a label π' whenever $F(\pi)$ comprises the formula $R(\pi', \pi'')$ or $R(\pi'', \pi')$ for some discourse relation R. So, the discourse structure is featured as hierarchical. In fact, the representational form of the discourse in DRT-style or in a SDRS graph-style reflects this hierarchical structure. In addition to the outscoping relation between the labels, the distinction between coordinating and subordinating relations enforces this hierarchical discourse structure. However, this distinction is not a clear-cut distinction, because, depending on punctuation or on discourse particles, for instance, the same relation can be coordinating or subordinating. Regardless of this proviso, it is possible to establish a more or less stable classification assuming, as Asher and Lascarides (2003) and Asher and Vieu (2005)[18], that Narration is the prototypical coordinating relation and that Elaboration is the prototypical subordinating relation.

When building the logical form of discourse, there are two types of underspecification that must be solved: one concerning the range of rhetorical relations

[18] See Asher and Vieu (2005) for four linguistic tests that provide a more precise means of distinguishing between coordinating and subordinating relations.

that can connect them to the previous sentences; and the other concerning the available attachment points to which the sentences can be linked. In both cases, the underspecification arises as a result of the lack of grammatical information creating holes that are filled in through discourse update.

In order to solve the second type of underspecification, one has to proceed as follows.

(319)

Available Attachment Points
Suppose that β is to be attached to a constituent in the SDRS *<A, F, LAST>*. Then the available attachment points are:
1. The label α = LAST;
2. Any label γ such that:
   (a) *i-outscopes*(γ, α); or
   (b) *R(*γ, α) is a conjunct in F(λ) for some label λ, where R is a subordinating discourse relation, i.e. $\alpha < \gamma$.
3. Transitive closure: any label γ that dominates α through a sequence of labels $\gamma_1, ..., \gamma_n$ such that $\alpha < \gamma_1$, $\gamma_1 < \gamma_2$, ..., $\gamma_n < \gamma$.

(Adapted from Asher and Lascarides (2003: 148-149))

In English, this means that the available attachment points are the previous clause or sentence α and any label γ that dominates α through outscoping relations and/or subordinating relations[19]. The definition of the available attachment points reflects the so-called Right Frontier constraint, which governs anaphora resolution. This constraint defines which referents are available and are possible discourse continuations by stipulating the nodes open for the attachments of new constituents. According to the Right Frontier constraint, we must follow the path that goes from the last label to the topmost constituent.

As to the first underspecification, the one concerning the inference of the rhetorical relation, it is necessary to take into account the rhetorical relations' semantics, which will be the core of our foregoing analysis.

[19] Notice that the SDRS syntax allows for two labels to be arguments of more than one rhetorical relation in accordance with the *Principle of Maximising Discourse Coherence*.

The rhetorical relations convey truth conditional[20] results applied by the SDRS to verify the contributions of compositional semantics and to ascertain whether the SDRSs labelled by the rhetorical relations' arguments change the context or not. It should be noted that in the SDRT, as in other dynamic semantic theories, the notion of meaning is defined in terms of the relation between the set of the input contexts and the set of output contexts. This relational notion of meaning, called *Context Change Potential* (CCP), is captured by the truth conditional effects which underlie rhetorical relations.

In order to be capable of reflecting the context change, it is necessary to guarantee that, whenever *R* holds between α and β, the output assignments of K_α[21] are available to the interpretation of K_β. The authors ensure this pre-requisite by adding the feature *veridical* to the rhetorical relations. As such, a rhetorical relation is veridical if and only if $R(\alpha, \beta) \Rightarrow (K_\alpha \wedge K_\beta)$ is valid[22]. Furthermore, Asher and Lascarides establish the following *Satisfaction Schema for Veridical Rhetorical Relations*:

(320) **Satisfaction Schema for Veridical Rhetorical Relations**

$(w, f)\ [[R(\pi_1, \pi_2)]]_M(w', g)$ iff

$(w, f)\ [[K_{\pi 1} \wedge K_{\pi 2} \wedge \emptyset_{R(\pi 1, \pi 2)}]]_M(w', g)$

where $\wedge$ is a dynamic conjunction and $\emptyset_{R(\pi 1, \pi 2)}$ are the special semantic constraints of a particular discourse relation $R(\pi_1, \pi_2)$.

(Asher and Lascarides (2003: 156))

As it is possible to deduce from the formula, the semantic constraints play a very relevant role in the inference of a rhetorical relation. Before unfolding them, however, we will present the classification of the rhetorical relations put forward by the authors. According to them, there are five classes of rhetorical relations: content-level relations, text structuring relations, cognitive-level relations, divergent relations and metatalk relations. The first group includes relations that are defined in terms of the situations

[20] Asher and Lascarides (2003: 145) claim that the limitation of interpretation to truth conditional content allows for a justification of a set of rhetorical relations: "we should countenance R as a distinct discourse relation only if there is evidence that it affects the truth conditions of the elements it connects, and these effects can't be explained by other means." The adoption of this view eschews an intuitive and arbitrary definition of the rhetorical relations.

[21] *K* is used to represent an SDRS.

[22] Not all rhetorical relations are veridical due to their semantic constraints. For instance, Alternation, Def-Consequence and relations that have as one argument a question are examples of non-veridical relations.

and individuals that are introduced. This first set is further divided into content-level relations for indicatives, content-level relations involving interrogatives and content-level relations involving imperatives. The second is related to the structure in which the situations and individuals are represented. The third group comprises relations that can be inferred in dialogues and they are defined partly in terms of the intentions and beliefs of the dialogue agents. Tough the divergent relations are specified in terms of the structure of their constituents (like the second set), their semantics is related to disputes, normally in dialogues. Finally, the last group, the metatalk relations, relates the content of one utterance to the performance of uttering another, thus focussing on speech acts related goals.

Bearing in mind the purposes of this work, we will summarise only those that are more related to the data that we will be analysing in the next chapter, namely the content-level relations for indicatives and the text structuring relations, forwarding to Asher and Lascarides (2003: 463-471) for further explanations of the other groups.

Table 40 includes an informal definition of the rhetorical relations' semantics[23], a more formal definition with the meaning postulates and examples (cf. Asher and Lascarides (2003: 459-466)).

[23] The rhetorical relations represented in the table constitute an open set. What amounts to say that more relations can be added to this set and defined within the SDRT's framework.

Classes of relations	Relations	Definition	Examples
Content-level Relations for Indicatives	Alternation(α, β)	R equivalent to *or*. (w, f)[[Alternation(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha \vee K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g)) R is scalar.	Mary has brown hair or Mac has green eyes. (Asher and Lascarides (2003: 460))
	Background(α, β)	R holds whenever one constituent provides information about the surrounding state of affairs in which the eventuality mentioned in the other constituent occurred. The arguments of R share the same topic. Temporal Consequence: ØBackground(α, β)⇒overlap(e_α, e_β) R is sensitive to aspectual classes. R is scalar.	Max opened the door. The room was pitch dark. (Background$_{backward}$)[24] (*Ibidem*) It was pouring with rain. Mary came home. (Background$_{forward}$) Asher *et al.* (2008: 7)
	Consequence(α, β)	R corresponds to dynamic ⇒. (w, f)[[Consequence(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha \Rightarrow K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g))	If there is a bathroom, then it's in a funny place. (*Ibidem:* 461)
	Continuation(α, β)	R like narration but without the spatio-temporal consequences. R subjected to the topic constraint.	a) The teacher asked the students to look for the last cat. b) John looked under the table. c) Mary looked in the garden. Continuation(b, c) (*Ibidem*)
	Def-Consequence(α, β)	R stands for defeasible consequence. (w, f)[[Def-Consequence(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha > K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g))	If John scuba dives, he'll bring his regulator. Def- Consequence(α, β_∂) where α = John dives β_∂ = John has a regulator (it is presupposed) (*Ibidem*)

[24] There are two types of Background, one in which the background is represented by the first argument (Background$_{forward}$) and another in which is represented by the second argument (Background$_{backward}$). Although the SDRT uses a single relation *Background*, the Background$_{forward}$ brings some problems concerning the rules of attachment and the Right Frontier constraint. Asher *et al.* (2008) attempt to solve these problems proposing two different discourse structures. Accordingly, the Background$_{backward}$ is represented as having two constituents related by the rhetorical relation Background. The Background$_{forward}$ introduces a more complex structure with an additional *Framing Topic* constituent linked to the background by the relation Background and to the foreground by the relation Elaboration.

	Elaboration(α, β)	R holds when the eventualities of the second argument are a mereological part of its first argument. R is transitive. Temporal consequence: ØElaboration(α, β)⇒Part-of(e_β,e_α)	Alexis did really well in school this year. She got *As* in every subject. (*Ibidem*:159)
	Explanation(α, β)	R is the dual to result. Temporal consequence: (a) ØExplanation(α, β)⇒($\neg e_\alpha \prec e_\beta$)[25] (b) ØExplanation(α, β)⇒(event(e_β)⇒$e_\beta \prec e_\alpha$)	Max fell. John pushed him. (*Ibidem*:462)
	Narration(α, β)	R holds if the constituents express eventualities that occur in the sequence in which they were described. A and β share a contingent common topic, and the more informative the topic, the better the narration (hence, narration is scalar). Spatiotemporal Consequence of Narration: ØNarration(α, β)⇒overlap(prestate(e_β), Adv_β[26]poststate(e_α))), i.e., where things are in space and time at the end of e_α is where they are at the beginning of e_β.	Max fell. John helped him up. (*Ibidem*:162)
	Result(α, β)	R connects a cause to its effect. ØResult(α, β)⇒cause(e_α e_β)	John pushed Max. He fell. (*Ibidem*:463)
Text Structuring Relations	Contrast	R holds when K_α and K_β have similar semantic structures and when it is established between them a contrasting theme. R is scalar.	John loves sport. But he hates football. (*Ibidem*)
	Parallel	R holds when K_α and K_β have similar semantic structures and when it is established between them a common theme. R is scalar.	John loves sport. Bill loves sports too. (*Ibidem*: 466)

Table 40. The set of rhetorical relations in the SDRT (Asher and Lascarides (2003))

[25] The symbol $\prec$ is used to represent temporal anteriority.
[26] Adv_β is an adverbial function that shifts the poststate of e_α to the spatiotemporal location denoted by the frame (or locating) adverbials, whenever they are present.

With all the notions in place, we are ready to build the logical form of the discourse presented in (321).

(321) π_1. John had a great evening last night.
π_2. He had a great meal.
π_3. He ate salmon.
π_4. He devoured lots of cheese.
π_5. He then won a dancing competition.

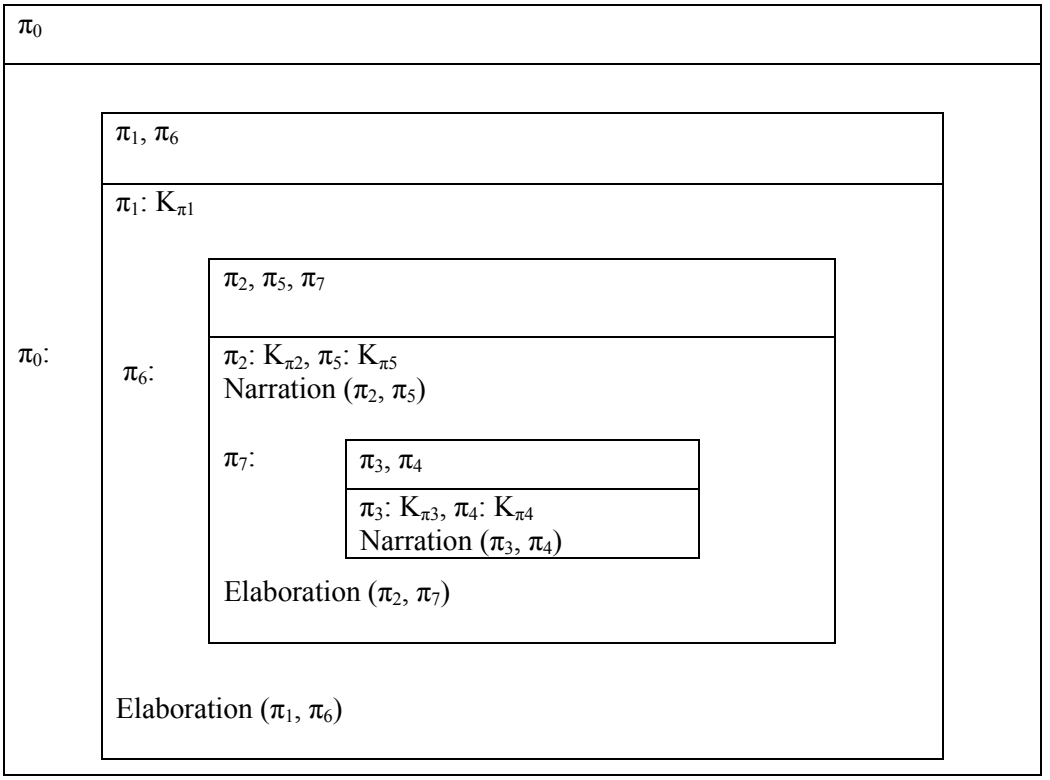
(Asher e Lascarides (2003: 139))

We can represent this discourse in a DRT-style SDRS (cf. (322a) and (322b)) or in a graph-style SDRS (cf. (322c)).

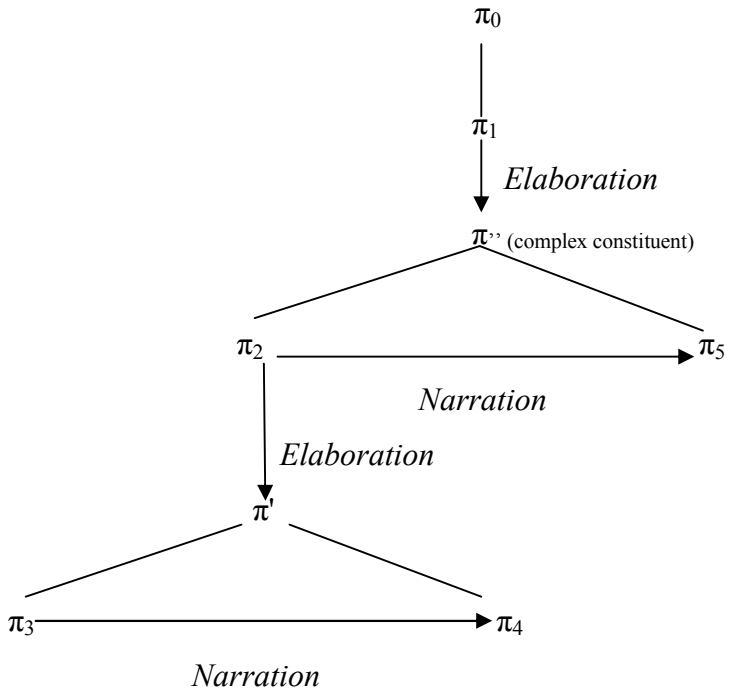
(322a) $\langle A, F, LAST\rangle$

- $A = \{\pi_0, \pi_1, \pi_2, \pi_3, \pi_4, \pi_5, \pi_6, \pi_7\}$
- $F(\pi_1) = K_{\pi 1}$
  $F(\pi_2) = K_{\pi 2}$
  $F(\pi_3) = K_{\pi 3}$
  $F(\pi_4) = K_{\pi 4}$
  $F(\pi_5) = K_{\pi 5}$
  $F(\pi_6) = K_{\pi 6}$
  $F(\pi_7) = K_{\pi 7}$
  $F(\pi_0) = \text{Elaboration}(\pi_1, \pi_6)$
  $F(\pi_6) = \text{Narration}(\pi_2, \pi_5) \wedge \text{Elaboration}(\pi_2, \pi_7)$
  $F(\pi_7) = \text{Narration}(\pi_3, \pi_4)$
- $LAST = \pi_5$

(322b)


π_0
π_0:
π_1, π_6
π_1: $K_{\pi 1}$
π_6:
π_2, π_5, π_7
π_2: $K_{\pi 2}$, π_5: $K_{\pi 5}$
Narration (π_2, π_5)
π_7:
π_3, π_4
π_3: $K_{\pi 3}$, π_4: $K_{\pi 4}$
Narration (π_3, π_4)
Elaboration (π_2, π_7)
Elaboration (π_1, π_6)

(322c)


π_0
π_1
Elaboration
π'' (complex constituent)
π_2
π_5
Narration
Elaboration
π'
π_3
π_4
Narration

The first sentence to be processed is π_1. Then, we process π_2. According to the definition of availability the only available site is π_1, hence, we attach it to this point. The next step is to infer which rhetorical relation connects the two arguments (?(π_1, π_2, π_0)). So, we have to look into the glue logic axioms which encode all the information from the knowledge sources. Let us assume that those axioms carry the information from the world knowledge source of what people normally do in the evenings. Being one of those things having a meal, we can monotonically infer that there is a subtype relation between π_2 and π_1. The relation Elaboration is nonmonotonically inferred in the glue logic via *Defeasible Modus Ponens*.

The attachment of label π_3 is more problematic, because there are three available sites, namely π_2, since it was the last added information; π_1, since it dominates π_2 through the relation Elaboration; and π_0, since it is the top node. We have to carefully weigh the choices in order to obtain the most coherent discourse (Principle of *Maximising Discourse Coherence*). If we attach π_3 to π_1, although we get a subtype relation, we lose any rhetorical connection between π_2 and π_3 and if we choose to attach it to π_0, we do not have enough information to infer a rhetorical relation. As to the last possibility, attaching it to π_2, it seems the most cohesive, because it allows to link via a relation of Elaboration π_3 to π_2, which is already represented as a subpart of the eventuality described by π_1.

The available sites to attach π_4 are in greater number: π_3, since it is the last added information; π_2, since it dominates π_3 through the relation Elaboration; π_1, since it dominates π_2 through the relation Elaboration; and π_0, since it is the top node. If we do not attach π_4 to π_3, the rhetorical connection Narration between the two is lost. Furthermore, if we do connect them, and consider that the topic is represented by π_2, we can obtain more rhetorical relations, maximising discourse coherence. So, besides Narration(π_3, π_4), we also get Elaboration(π_2, π'), where π' is the complex constituent (π_3, π_4).

Finally, we attach π_5. Once again the available sites for attachment are many, all, in fact, with the exception of π_3, which is blocked by π_4. However, the information gathered by the glue logic yields once more the most coherent interpretation: *winning a dance competition* and *eating a great meal* are part of *having a great evening*, so they

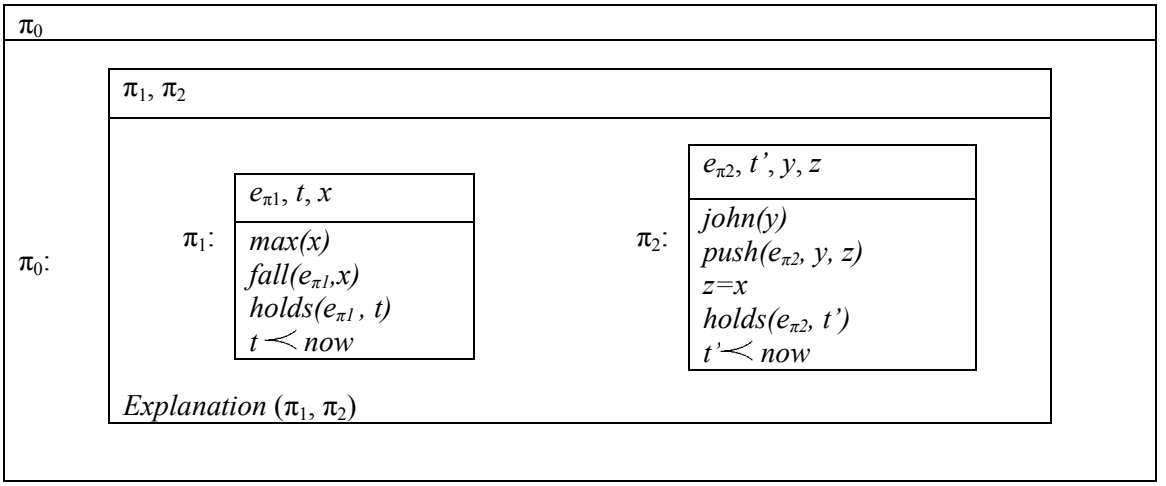
both share the same topic. This means that there is the relation Elaboration(π_1, π_5) and Narration(π_2, π_5).

It should be noted that, although the SDRSs represented above do not specify the conditions and discourse referents for each *K*, the temporal relation between the eventualities does not need to be represented by any formula because the meaning postulates of the rhetorical relations already encode that information.

Let us take for instance the discourse (323) and the SDRS (323')[27].

(323) Max fell. John pushed him.

(323')



Notice that the temporal information concerning the relation between the two eventualities is not encoded in the SDRS because the semantic constraints of Explanation establish that the temporal consequence is $\pi_2 \prec \pi_1$, that is, the second eventuality precedes the first.

In conclusion, SDRT is a dynamic semantic theory that captures the relations between semantic and pragmatic contributions in an exact and detailed manner. Moreover, this theory enriches the discourse analysis with the tools of formal compositional semantics. Its framework is characterised by very intricate and robust principles and mechanisms that allow for a well-structured discourse representation, contrary to some of the aforementioned discursive theories.

[27] Apart from the presence of the rhetorical relations, of labels and of the update mechanisms, the SDRS is very similar to the DRT as far as the language is concerned. For the main aspects of the DRSs, see chapter 2, section 2.4.1.7., pages 156-158.

The formalisation of the process of interpretation of discourse with the different principles and axioms prevents arbitrary and more subjective inferences, and, instead the most cohesive interpretation is derived. In this process, the role of the semantic constraints of the rhetorical relations is of utmost importance. In fact, one of the upsides of the SDRT is precisely the in-depth investigation of the rhetorical relations, which results in more elaborated definitions and characterisations. This precision and completeness is crucial in the choice of the correct interpretation. What is more, their characterisation is mainly semantic and stemming from linguistic features (and not of intended intentions by the speakers, as in RST, which are by far more subjective and speculative).

All in all, bearing in mind all the discourse theories revised, SDRT's detailed formalisation of the implicated elements in discourse interpretation coupled with the stipulation of semantic temporal constraints for the rhetorical relations endows this theory with the most complete and grounded framework to analyse discourse. All these reasons coupled with the shortcomings of all the other revised theories justify our choice of the SDRT as the theoretical framework by which we will develop our analysis in the next chapter.

3.2.6. Intrinsic and extrinsic rhetorical relations (Silvano and Cunha (2009))

According to Asher and Lascarides' proposal, the process of inference of the rhetorical relations relies on different sources. However, there are certain rhetorical relations that rely more than others on different sources. As a matter of fact, the observation and scrutiny of the data validates the conclusion that, depending on the rhetorical relation, the process of inference may rely more on temporal organisation or other sources of lexicon, compositional semantics and world knowledge that ultimately are responsible for temporal organisation. In the first case, the relation of semantic interdependence is weak, whereas, in the second case, there is a strong degree of semantic interdependence between the two situations.

The existence of different features regarding the degree of semantic interdependence observed in sentences with *when*-clauses motivates Silvano and Cunha's (2009) proposal of dividing the rhetorical relations from SDRT into two

groups: extrinsic relations and intrinsic relations. In the first group, which includes such as rhetorical relations of Narration, Background and Continuation, the rhetorical relation is inferred by default and it is established at the level of the external structure of the predications. In the second group, which integrates the rhetorical relations of Result, Explanation and Elaboration, the discursive relation between the two situations is determined by strong semantic ties and it is established at the level of the internal structure of the predications.

The distinguishing features of these two groups of rhetorical relations are found on the process of inference: while the inference of the extrinsic rhetorical relations relies mainly on the temporal organisation of the situations, and less on other sources, the inference of the intrinsic rhetorical relations involves the interaction of different sources (lexicon, compositional semantics and world knowledge), which will determine the temporal organisation.

Despite the fact that the distinction between intrinsic and extrinsic rhetorical relations was motivated by the observation of data with *when*-clauses, we argue that it is, nonetheless, a general feature of rhetorical relations regardless of the data they are applied to. Table 44 schematises this distinction.

Types of rhetorical relations	**Definitions**	**Examples of rhetorical relations**
Extrinsic rhetorical relations	R holds when the semantic link between α and β is weak and when the process of inference relies more on temporal organisation.	Narration Background Continuation
Intrinsic rhetorical relations	R holds when the semantic link between α and β is strong and when the process of inference relies more on the interaction of other sources and less on temporal organisation.	Result Explanation Elaboration

Table 41. Classification of rhetorical relations based on the sources of information (Silvano and Cunha (2009))

This proposal serves the aim of, on the one hand, understanding better how the process of inference works and which the relevant sources are and, on the other hand, endow us with more distinctive features of rhetorical relations.

3.3. The Interaction between Temporal Relations and Rhetorical Relations in the SDRT

The interaction between temporal and rhetorical relations within the framework of the SDRT is quite complex in the sense it operates in a bidirectional manner. On the one hand, some rhetorical relations are used to explain certain temporal readings. On the other hand, the temporal relations determined via the linguistic evidence such as tense, aspect and cue-phrases are, in certain contexts, an important source to infer the adequate rhetorical relation. In other words, the rhetorical relations are used to explain different temporal relations and the temporal relations are used to explain different rhetorical relations. In this sense, the relation between them is bidirectional or of mutual implication.

We will begin by looking into the first type of relation, that is, the type according to which the rhetorical relations explain temporal relations.

The different theories of rhetorical relations reflect different approaches to discourse interpretation: some are mainly concerned with the rhetorical structure of discourse and others, in addition to this preoccupation, are also concerned with deriving an adequate semantic description of linguistic phenomena. One of the linguistic phenomena that benefits largely from an analysis within a rhetorical relations' framework is the phenomenon of temporal relations[28].

In fact, one of the main motivations for integrating rhetorical relations in formal discourse representations, such as SDRT, was the insufficiency of the prevailing analysis of temporal relations based exclusively on tense and aspect. Soon, theorists realised that in addition to tense and aspect there were other important factors that influenced temporal organisation.

Two of those theorists were Kamp and Reyle (1993), whose proposal predicts that whenever the situation being processed is eventive, it is located after the reference time available in the context and, whenever it is stative, it includes that reference time.

[28] Lascarides *et al.* (1992: 1) argue that "two essential parts of discourse interpretation involve (i) determining the rhetorical role each sentence plays in the texts; and (ii) determining the temporal relations between the events". What is interesting is that both are intertwined in the sense that, in order to infer the correct relation, the information concerning tense and aspect is relevant and, in order to get the correct temporal relation, the rhetorical relation is also crucial.

In terms of temporal relations such an analysis means that in a sentence with events, like (324), there is a relation of posteriority, whereas in a sentence with an event followed by a state, like (325), the latter is included in the former.

(324) A man entered the White Hart. Bill served him a beer. The man paid.

(325) A man entered the White Hart. He was wearing a black jacket.

(Adapted from Kamp and Reyle (1993:526))

However, this is not always the case, as examples (326) and (327) prove it.

(326) He drank the beer. Some of it ran down his chin. (Adapted from Kamp and Reyle (1993:527))

(327) Bill served him a beer. The beer tasted awful. (Adapted from Kamp and Reyle 1993:528)

In example (326), although the last sentence describes an event, the temporal relation it establishes with the event from the first sentence is not a relation of posteriority but of overlapping. Kamp and Reyle (1993) argue that to attain the adequate temporal relation it is necessary to choose a discursive or rhetorical relation that links the two situations. The consideration of tense and aspect does not seem to suffice to obtain the proper interpretation of example (327), either. In this case, in spite of having a sequence of an event and a state, the temporal relation is not of overlapping, violating the principle put forward by the authors in what concerns stative-sentences. As it happens, the state is posterior to the event *Bill serving him a beer*.

Confronted with the exceptions to the rules for eventive and stative-sentences, the authors consider that in a coherent discourse the sentences which compose it maintain with the preceding discourse rhetorical relations that provide the necessary explanation for the temporal readings of the examples adduced above. Thus, for instance, the rhetorical relation in (326) would be Elaboration. Even so, since at the time there was not any solid theory of rhetorical relations, the authors did not develop this issue further.

Lascarides and Asher (1993) and Asher and Lascarides (2003) revise the DRT so that they could incorporate the rhetorical relations in the discourse formal representations and, thus, solve the problems that Kamp and Reyle (1993) are not able to solve. As a matter of fact, the SDRT is the one, among the others that were revised in this chapter, that addresses more fully the question of temporal organisation[29].

In order to explain how we obtain the proper temporal interpretations in discourse, the SDRT assumes that, when interpreting a discourse, a reader attempts to link together the different clauses, sentences or texts spans, that is, he/ she tries to infer a rhetorical relation. In that process of inference there are different knowledge sources that provide the necessary information to obtain the correct interpretation. One of those sources is of semantic nature and contributes with information related to lexicon, tense and aspect, among others, processed in a compositional manner. This information as well as the information from other sources such as world knowledge and cognitive states of participants flow to a module where it is filtered and processed. The formal representation of the discourse reflects the interpretation made and, since it is built incrementally, it allows us to observe how the whole process of interpretation operates, how the underspecification is solved and how the discourse is updated.

It is in this process that temporal relations can be used to justify the inference of a particular rhetorical relation, because some rhetorical relations, as shown in table 40, comprise in their definitions temporal consequences. Bearing in mind these, once we know how the situations relate temporally, we must find a rhetorical relation that satisfies the temporal constraint. However, in order to obtain the correct temporal relation, which will allow us to infer the correct rhetorical relation, one has to consider different types of elements which influence the final temporal interpretation of a sentence, namely tense, aspect, time adverbials, cue-phrases, among others. On the other hand, these elements can also benefit from an analysis from a rhetorical relations' perspective.

This mutual implication shows how intricate the relation between temporal and rhetorical relations can be.

[29] Taboada and Mann (2006) consider that one major important development in SDRT relates to the way rhetorical relations explain linguistic phenomena such as temporal relations.

3.4. Rhetorical and Temporal Relations: Semantic Sources

The process of inferring rhetorical and temporal relations is indeed quite complex, but it is more computable if we rely mainly on linguistic evidence, instead of on more obscure and subjective sources. For this reason, the most thorough and detailed is the understanding of the influence of the linguistic material in the whole process, the most accurate will be the interpretation.

In the previous section, we have seen that there is a close interaction between temporal and rhetorical relations and that there are certain elements, such as tense, aspect, time adverbials and cue-phrases that, on the one hand, can contribute to the inference of the correct temporal and rhetorical relation and, on the other hand, be explained within a rhetorical relations' framework. The analysis of the connection between these elements and the temporal and rhetorical relations can contribute to a better understanding of all these linguistic/ discursive phenomena.

3.4.1. Tense

The role of tense and aspectual features is not always relevant in the choice of the rhetorical relations, as we have already discussed in section 2.2.5. with the following examples, here numbered (328) and (329).

(328) Max fell. John helped him up.

(329) Max fell. John pushed him.

(Asher and Lascarides (2003: 62))

In these examples, not only the tense is the same but also the aspectual class of the situations is equal and, so, the tense and aspectual information does not account for the choice of a particular rhetorical relation. It follows that the information from lexicon and the world knowledge sources is more pertinent and it is responsible for inferring in the first case the relation Narration and in the second case the relation Explanation. Once we have inferred the rhetorical relations, the justification for the two different

temporal structures is naturally derived in the SDRT's framework: Narration implies that the second situation is posterior to the first and Explanation that the second situation precedes the first situation.

However, there is more to the meaning postulates associated with each rhetorical structure than those predicted within the SDRT. For instance, the relation Explanation is described as having only two temporal consequences: an anteriority relation between e_β and e_α, when the situations are eventive, and an overlapping relation, when the second situation is stative, as in (330).

(330) John got a lung infection. He had AIDS. (Asher and Lascarides (2003: 161))

In addition to the influence of the presence of a state[30], the authors justify the overlapping relation, which is not prototypical of Explanation, arguing that there is also a Background relation. It is, nonetheless, left without explanation how the combination of the two rhetorical relations renders an overlapping temporal relation and not an anteriority relation. In fact, these two readings are predicted by the axiom for Explanation, presented in table 40, and repeated here in (331).

(331) Temporal Consequence of Explanation
(a) $\text{ØExplanation}(\alpha, \beta) \Rightarrow (\neg e_\alpha \prec e_\beta)$
(b) $\text{ØExplanation}(\alpha, \beta) \Rightarrow (\text{event}(e_\beta) \Rightarrow e_\beta \prec e_\alpha)$

Part (a) of the axiom predicts that the first eventuality does not occur before the second, whereas the second stipulates that the second eventuality occurs before the first.

But, if we look into other data, we come to the conclusion that not all the temporal consequences are included in the above axiom. For instance, a discourse as the one in (332) shows that there is another temporal consequence, where the second situation is posterior to the first.

(332) John bought a suitcase. He is going to travel.

[30] Martin (2009) carries out a study regarding the compatible pairs of rhetorical relations involving stative representations. He investigates which pairs of rhetorical relations can link simultaneously two utterances, when the one that occurs in the final position describes a state. We will return to his work in the following section.

In this case, the construction with *to go* followed by the main verb has a future temporal reading. The lexicon, namely the fact that "suitcase" and "travel" belong to the same lexical domain, and our world knowledge that, whenever someone travels, a suitcase is normally needed leads to the interpretation that the second sentence represents the cause for the situation represented by the first sentence[31].

One may argue that also in this case there is a relation of Background, argument to which we do not object, because the situation represented by the second sentence could also be interpreted as setting the scenario for the first situation. However, such an observation does not account for the posteriority relation, because, as it is in table 40, the axiom for Background comprises only one temporal consequence (cf. 333).

(333) Temporal Consequence of Background
ØBackground(α, β)⇒overlap(e_α, e_β)

The only foreseeable explanation is linking the second relation to the first by the relation Narration. This does not solve the problem, either. Assuming that the weakest rhetorical link is the one conveyed by Narration, we wonder why the posteriority relation is the one that prevails and not the one featured by Explanation. Apart from this, it is very troublesome having in the same discourse two rhetorical relations whose temporal consequences are dissimilar.

We will return to this issue on chapter four.

Another interesting question concerns the temporal characterisation of each situation and the relation that are established between the relevant intervals and how this interferes with the inference of rhetorical relations. In example (329), repeated here as (334) both situations have as TPpt the time of utterance and establish with it a relation of anteriority. In this case, the temporal features only convey the information that the eventualities are located before *n*, leaving the temporal ordering between them to the information from the lexicon and the world knowledge.

[31] The causes involved in these three different readings are of different nature and only in one of those cases (example (329)) is Explanation dual to Result. The situations in the second sentences of example (330) and (332) represent the reasons, and not so much the causes, for the situations in the first sentences, while in (329) there is a relation of cause-effect, which is shared by the relation Result, tough in a different ordering.

(334) Max fell. John pushed him.

However, if the configuration was one in which the temporal features of the second situation were <*the TPpt precedes the utterance time*> and <*the described eventuality is anterior to TPpt*>, like in (335), the temporal features would be more informative as to the ordering of the situations.

(335) Max fell. John had pushed him.

From the analysis of these two examples ((334) and (335)), we can register the following:

(i) we can establish rhetorical relations between situations which are directly bounded;

(ii) the temporal ordering between them and the inference of the rhetorical relation may rely more or less on semantic information and/ or world knowledge depending on the verb tenses used.

It would be useful for a better understanding of the rhetorical relations to verify further whether the presence or absence of certain temporal features of discourse determines the inference of different rhetorical relations and whether there are some constraints as to the compatibility of certain rhetorical relations with certain temporal features. For instance, in an example like (336), from Asher and Lascarides (2003: 62), the second situation establishes a relation of Background with the first situation. If we, however, change the verb tense of the second sentence, as in (337), the relation Background is not as easily inferred.

(336) Max entered the room. The room was dark.

(337) ??Max entered the room. The room is dark.

If we accept the sequence as grammatical, we attempt to link together the meaning of the two sentences in order to obtain a coherent discourse. So, we can still infer the

rhetorical relation Background. The reason for having some difficulties processing the second situation as establishing a background for the first situation stems from the temporal features of *the room is dark*. The state does not only overlap the situation described by the first sentence, but also the utterance time. Actually, the state's TPpt is a time interval that includes the time interval where the first situation is located and the time interval that corresponds to *n*. In this sense, sequences as the ones in (337) behave similarly to double access sentences[32].

The difficulty in inferring Background seems to point to the constraint that this relation is more easily inferred in discourses which represent the situations in the same time sphere, contrarily to Explanation, for instance (cf. (334)).

3.4.2. Aspect

In some of the examples presented above, we pinpointed the interference of aspect in the final temporal interpretation and in determining the rhetorical relation. As it is well known, besides tense, aspect also plays an important function as far as the establishment of temporal relations are concerned, and, since some rhetorical relations have temporal consequences, it also is ultimately responsible for the inference of rhetorical relations. In examples (338) and (339), the aspectual properties of the situations are largely responsible for inferring the rhetorical relations of Narration and Background.

(338) Peter woke up. He went to work.

(339) John went into the old house. The silence was breathtaking.

In the first example, the situations are events, what means in aspectual terms that they are included in their location time, and in the absence of a stronger link of semantic interdependence, the relation of temporal posteriority of the second situation towards the first is the only available, hence, the rhetorical relation Narration. In the second example, the first situation is an event and the second a state. The predication *the*

[32] For more information about double access sentences, cf. Ogihara (1995), Abusch (1997) and Silvano (2002), among others.

silence was breathtaking is a state represented in the Simple Past, that has a non-terminative reading. Since the first situation is an event which is located in a delimited time interval, before the utterance time, the only available temporal relation is of overlapping. Once more, in the absence of a more intertwined semantic link (such as cause-effect), and bearing in mind the temporal relation, the most plausible rhetorical relation is Background.

As to the SDRT and the aspectual analysis, this theory does not provide a fine-grained analysis of the aspectual features of the rhetorical relations. They only refer to the cases of Background and of Explanation. In the first case, the argument that sets the scenario for the other argument must be stative. In the second case, when the argument that contains the explanation is stative the temporal relation with the first argument is an overlapping relation.

The studies concerning the role of aspect in the inference of rhetorical relations are very few, as far as we know. Silvano (2007), Silvano (2008), Silvano and Cunha (2009) look into the aspectual restrictions in rhetorical relations within complex sentences with *when*-clauses. Oliveira, Cunha and Silvano (2010) investigate the contribution of aspect in the process of inference of rhetorical relations in texts. In all of the above investigations, aspect comes as an important source for the determination of rhetorical relations.

Cunha (2004) undertook an investigation of the impact of statives in the temporal and rhetorical organisation of discourses. Although his study is more focussed on the temporal relations and how they result from the aspectual properties of the situations, he maps certain rhetorical relations to different subclasses of states, though not in a systematic way. For instance, he considers that the individual phase states combined with events favour an inclusion reading of the states, when the latter comes first in the sentence (cf. 340), and a posteriority relation, when they come after the events (cf. 341).

(340) O meu cão foi agressivo. Mordeu a perna ao carteiro.
The my dog was(Perf) aggressive. Bit(Perf) the leg to-the mailman.
My dog was aggressive. He bit the mailman's leg.

(341) A Rita saiu de casa. Viveu na Holanda durante 3 anos.
The Rita left(Perf) from home. Lived(Perf) in Holland during 3 years.
Rita left home. She lived in Holland for 3 years.

(Cunha (2004: 321))

According to the author, the initial position of the state leads more commonly to the interpretation of a relation of Elaboration or Explanation. In the case of example (340), the author argues that the rhetorical relation is of Elaboration. However, first, we seriously doubt that the rhetorical relation between these two situations is Elaboration, it is more a case of $\text{Background}_{\text{forward;}}$ second, we do not agree that this relation is the most common in this context, because we can easily think of an example in which the temporal relation is different (cf. 342).

(342) O meu cão foi agressivo com o meu vizinho. As autoridades abateram-no.
The my dog was(Perf) aggressive with the my neighbour. The authorities put-down (Perf) it.
My dog was aggressive with my neighbour. The authorities put it down.

In this example, although the individual phase stative is in an initial position, the event of the second sentence establishes with the first situation a relation of posteriority and not of inclusion, and, thus, the rhetorical relation is Result[33].

So, the data points to the observation that there are contexts in which what was expected due to the situations' aspectual features is not fulfilled (cf. (326), (327) and (342), for instance). What amounts to say that the weight of a particular source in the

[33] In a footnote (n. 157, page 321), the author advocates that there are contexts in which the temporal relations, and hence, the influence of the aspectual features, vary in combinations of the same aspectual sort. He attributes this variation to the role played by rhetorical relations in this type of configurations. Nevertheless, this variation as far as temporal relation is concerned is not the result of the role of rhetorical relations, but of the lexicon involved in those particular predications, which lead to the inference of different rhetorical relations. For instance, in examples (i) and (ii) the tenses and aspectual classes are the same. What varies is the lexical nature of the second predication, which is the main responsible for inferring in (i) $\text{Background}_{\text{forward}}$ and in (ii) Result.

(i) O meu cão foi agressivo. Mordeu a perna ao carteiro. (Cunha (2004: n.157)
My dog was aggressive. He bit the mailman's leg.
(ii) O meu cão foi agressivo. As autoridades abateram-no.
My dog was aggressive. The authorities put it down.

process of determining a rhetorical relation varies from context to context and one must rely on the interaction of all the sources to get the correct interpretation.

Martin (2009) also analyses discourses with one stative predication and one eventive predication. He explores the differences between sequences in which the state is the first argument and in which it is the second as far as the rhetorical relations and the temporal relations are concerned. He considers that the relations Commentary[34] ('Commentaire'), Background ('Arriére-Plan') and Elaboration ('Élaboration') are compatible with stative descriptions and that the following combinations of rhetorical relations linking the same discourse are possible: Commentary + Background, Elaboration + Background and Commentary + Elaboration. Example (343) illustrates the first combination.

(343) Pierre exhiba son dernier chapeau. Il etait beau. (Martin (2009: 223))

The idea underlying Martin's investigation is quite interesting. However, it leaves out some of the most complex cases concerning: not only other temporal relations besides temporal inclusion or overlapping, such as posteriority relation (cf. (327), (342), for instance); but also other viable combinations of rhetorical relations, such Background + Explanation or Narration + Background, whose semantic compatibility is more difficult to account for (cf. (330), for instance).

All in all, a more developed characterisation of the aspectual features of the rhetorical relations can contribute to a better understanding of the rhetorical relations. Being one of the meaning postulates of some rhetorical relations associated with temporal consequences and being some temporal relations derived from the aspectual features of the eventualities, more specified constraints for the rhetorical relations would facilitate the process of inference.

[34] The relation Commentary is not part of the list provided by Asher and Lascarides (2003), but it is defined in Asher (1993). According to him, Commentary links two utterances when one describes a situation that is object of evaluation (commentary) in the other utterance.

(i) Human life expectancy gets longer and longer. At first glance this seems like good news.
(Asher (1993: 340))

3.4.3. Cue-phrases

The majority of the authors that work with rhetorical relations acknowledge the role of the cue-phrases in the inference of rhetorical relations, although depending on the proposal the significance attributed to them in this process varies. Ideally, there would be a linear correspondence between cue-phrases and rhetorical relations. However, the question is not as straightforward as one would like, because not all rhetorical relations can be signalled by a cue-phrase and there are cue-phrases that signal more than one rhetorical relation.

Nevertheless, the problems posed do not mean that a more detailed study of certain words or expressions that contribute with important input in the process of inference of, not only temporal, but also rhetorical relations is not necessary. In fact, the results stemming from such an investigation can be useful in two different, but intertwined fields. On the one hand, the lexical information conveyed by the cue-phrases can be very valuable to stipulate more constraints for rhetorical relations, optimising the process of interpreting the rhetorical structure of discourse. On the other hand, this study will provide more tools and scientific background to describe and explain the semantics of this type of words or expressions, in particular what the temporal constraints imposed by or associated with them are.

Although the SDRT does not incorporate a cue-phrases' taxonomy and/ or does not establish a systematic relation between them and the rhetorical relations, there are studies that do so.

One of the studies which involve the treatment of cue-phrases in the context of rhetorical relations is of Knott and Dale (1994). They follow the proposal of Sanders *et al.* (1992) adopting a psychological approach. They differ from them, however, by arguing in favour of motivating the coherence relations from the inquiry of linguistic evidence of cognitive strategies. They hypothesised that "if people actually use a particular set of relations when constructing and interpreting text, it is likely that the language they speak contains the resources to signal those particular relations explicitly" (Knott and Dale (1994: 13)). Having accepted this assumption, the authors investigate cue-phrases, understood as phrases whose function is to link text spans together. So, the group of the cue-phrases considered is very vast and heterogeneous

semantic and syntactically, including coordinating (*and*, *but*) and subordinating (*because*, *although*) connectors, adverbial expressions (*however*, *later*) and expressions that select sentential complements (*it follows that, it may seem that*).

The taxonomy is organised in diagrams and labelled according to the parameters established by Sanders *et al.* (1992): basic operation (causal *vs* additive), source of coherence (semantic *vs* pragmatic), order of the segments (basic order *vs* non-basic order) and polarity (positive *vs* negative). The hierarchical structure of the diagrams is derived from different types of substitutability relationships between two cue-phrases (*X* and *Y*), namely: (i) *X* and *Y* are synonymous, so they can be substituted by one another; (ii) *X* and *Y* are exclusive, thus, they are not intersubstitutable; (iii) *X* is a hypernym of *Y* and *Y* is an hyponym of *X*, hence, when *Y* can be used, so can *X*, but there are some contexts where *Y* cannot be used instead of *X*; (iv) *X* and *Y* are contingently substitutable if there are contexts where they can be substituted, other where *X* can be used and not *Y* and the other way around.

In what follows, we will illustrate this organisation with some examples of positive causal relations. We will begin with the presentation of a diagram from Knott and Sanders (1998: 156) and then we will explain its hierarchical structure.

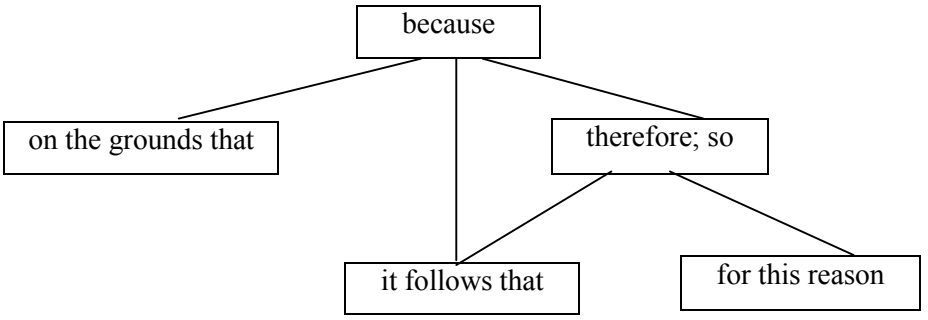


Diagram 1. Positive causal cue-phrases.

The cue-phrase *because* is a prototypical example of a positive causal cue-phrase. All the phrases establish between them different relationships. For instance, *on the grounds that*, *therefore*/ *so*, *it follows that* and *for this reason* are all hyponyms of *because*. *On the grounds that* and *therefore*/ *so* are contingently substitutable, as examples (344)-(346) prove.

(344) The teacher punished the student because/ on the grounds that/*therefore/*so he did not obey her.

(345) a. Because/ on the grounds that John did not obey the teacher, she punished him.
b. John did not obey the teacher, therefore/ so she punished him.

(346) a. Because/ *on the grounds that it was a bird with an orange chest and light belly, it must have been a robin.
b. It was a bird with an orange chest and light belly, therefore/ so it must have been a robin. (Knott and Dale (1994: 155))

From the observation of these examples, we can register some features of the phrases under scrutiny, namely that *therefore* and *so* can only signal basic order relations and that *on the grounds that* can only refer to semantic relations.

With respect to the phrase *it follows that* and *for this reason*, they are both hyponyms of *therefore* and *so*, and hence, there are also contingently substitutable and both as well as *on the grounds that* are exclusive.

The importance of the role of cue-phrases in determining or even defining the coherence relation has been recognised by many different authors (cf. Grosz and Sidner (1986), Taboada and Mann (2006), among others). Hobbs (1985: 32), for instance, considers that "conjunctions and sentential adverbials impose constraints on the propositional content of the clauses they link or modify, and in many cases these constraints are almost the same as those imposed by some coherence relation". Webber *et al.* (1999) showed, that the semantic of certain discourse markers, in this particular case of *but*, can contribute to a more fine-grained semantics for the rhetorical relations. Miltsakaki *et al.* (2004) propose the establishment of rhetorical relations in a *corpus* from the *Wall Street Journal* based on lexical information, more precisely on the clausal and sentential connectors (cf. *Penn Discourse Tree Bank*[35]).

The contribution of certain cue-phrases to the inference of certain coherence relations is more or less undisputable. The problem resides in the fact that the mapping between the rhetorical relations and the cue-phrases is not straightforward: not all the rhetorical relations are signalled by cue phrases and what is more the same cue-phrase may signal different rhetorical relations. For this reason, the consideration of other

[35] Cf. http://www.seas.upenn.edu/~pdtb/.

linguistic sources (such as tense, aspect, among others) is necessary to solve the underspecification one comes across when building a discourse representation.

3.4.4. Temporal adverbials

One of the word classes that can act as cue-phrases is of temporal adverbials. Since some rhetorical relations include in their meaning postulates temporal consequences, the temporal adverbials can contribute with relevant information to temporally organise the discourse and, ultimately, to infer the correct rhetorical relation.

In example (347), the temporal adverbial "after" conveys the information that the second situation occurs in a posterior time interval with respect to the first situation. In the absence of a link of causality, the temporal adverbial plays an important role inferring the rhetorical relation Narration.

(347) John went to the cinema. After he met with Jane in a café nearby.

Notwithstanding the fact that, in the analysis we will carry out in the next chapter, we will not take into account the role of temporal phrase adverbials[36] in the process of inferring rhetorical relations, we believe that a brief foray into this issue helps to prove the productivity and the validity of the SDRT[37], or more overtly, of the analysis of semantic phenomena within a rhetorical relations' framework.

Temporal adverbials[38] carry information concerning the location, duration, frequency and number of the situation represented by a sentence, which can facilitate the inference of rhetorical relations. For instance, the interpretation of example (348a.) is facilitated with the presence of the adverbial *after*, as in (348b.).

[36] In this section we are only referring to time phrase adverbials, that is, adverbs and adverbial expressions, and not to adverbial time clauses.
[37] Asher and Lascarides (2003) do not consider, at least explicitly, how temporal adverbials may, or may not, influence the process of determining the rhetorical structure of discourse. In fact, implicitly, the time adverbials are considered when Asher and Lascarides (2003) stipulate that one of the sources of knowledge to determine the correct rhetorical relation is compositional semantics and when they refer to the role of cue-phrases such as *after* in the process of inference.
[38] For a semantic analysis of these types of time adverbials in European Portuguese, cf. Matos (1999), Móia (2000) and Oliveira (2003).

(348) a. John went to the cinema. He met with Jane in a café nearby.

b. John went to the cinema. After he met with Jane in a café nearby.

In (348a.), the sentence is ambiguous between a reading in which the second situation is anterior to the first situation and one reading in which it is posterior. The presence of the temporal adverbial in b. disambiguates the discourse, making it clear that the meeting with Jane is in a time interval posterior to the cinema's session.

Temporal adverbials, and in particular anaphoric temporal adverbials, are likely to make the discourse more coherent and the whole process of defining temporal and rhetorical structure easier. However, this is not always the case, as shown by Alves (2002) with respect to the European Portuguese.

Although in certain contexts the information conveyed by temporal adverbials can be crucial to the inference of the adequate temporal and rhetorical relation, in others the presence of the adverbial is of no significance to the inference of the temporal and rhetorical relation.

Selecting as theoretical background the SDRT from Lascarides and Asher (1991; 1993), Alves (2002) investigates the interaction between temporal adverbials such as *on the same day* ('no mesmo dia'), *before/after that* ('antes/depois disso'), *then* ('nessa altura'), among others, and the rhetorical relations. One of her claims is that there are anaphoric locating adverbials that are compatible with certain rhetorical relations and others that are not. In these cases, they can originate an ungrammatical discourse or a different interpretation with another rhetorical relation. Examples from (349)-(350) (Alves 2004: 248-250) illustrate the three possibilities:

(349) a. O Paulo chegou tarde à Faculdade na segunda-feira. Teve um furo.
The Paulo arrived late at-the Faculty on Monday. Had a flat-tyre.
Paulo arrived late at the Faculty on Monday. He had a flat tyre.

b. O Paulo chegou tarde à Faculdade na segunda-feira. Teve um furo nesse dia.
The Paulo arrived late at-the Faculty on Monday. Had a flat-tyre on-that day.
Paulo arrived late at the Faculty on Monday. He had a flat tyre on that day.

c. O Paulo chegou tarde à Faculdade na segunda-feira. Teve um furo no mesmo dia.
The Paulo arrived late at-the Faculty on Monday. Had a flat-tyre on-the same day.
Paulo arrived late at the Faculty on Monday. He had a flat tyre on the same day.

(350) a. A Ana visitou Roma pela primeira vez em 1987. Tinha 22 anos.
The Ana visited Rome for first time in 1987. Was 22 years.
Ana visited Rome for the first time in 1987. She was 22 years old.

b. A Ana visitou Roma pela primeira vez em 1987. Tinha 22 anos na altura.
The Ana visited Rome for first time in 1987. Was 22 years at-the time.
Ana visited Rome for the first time in 1987. She was 22 years old at the time.

c. *A Ana visitou Roma pela primeira vez em 1987. Tinha 22 anos na mesma altura.
The Ana visited Rome for first time in 1987. Was 22 years by-the same time.
Ana visited Rome for the first time in 1987. She was 22 years old by the same time.

The pairs a./b. from examples (349) and (350) show that the presence of the temporal locating adverbial does not change the rhetorical relation, Explanation and Background, respectively. However, when in examples c., we introduce a different temporal locating adverbial, the results differ: whereas in (349) the relation of Explanation is no longer available and another can be inferred (Continuation, according to the author), in (350) the discourse becomes incoherent because there is not a rhetorical relation to link the two propositions.

The examples demonstrate that, depending on their type, the anaphoric temporal adverbials can play a more or less important role in the temporal organisation of the situations. If in some cases it is the semantics of the rhetorical relation that is responsible for sequencing the eventualities in the discourse (cf. (349b.) and (350b.)), in other cases, that function is shared with the semantics of the anaphoric temporal adverbials (cf. (349c.)).

Another interesting conclusion from Alves's study is that there are temporal locating adverbials which express temporal overlapping that are compatible with

rhetorical relations whose semantics impose a different temporal organisation. For instance, the temporal adverbial *nessa altura* ('at that time'/ 'then') conveys the temporal information of overlapping and, nevertheless, it is compatible with the rhetorical relation Result, that stipulates that the second situation occurs after the first one (cf. (351) from Alves (2002: 286)).

(351) A câmara construiu o viaduto da Av. da República em 1987. Resolveu nessa altura os problemas de trânsito nessa via.
The city-hall built the viaduct of-the Av. da República in 1987. Solved at-that time the problems of traffic on-that road.
The city hall built the viaduct of Av. da República in 1987. It solved at that time the problems of traffic on that road.

Alves does not explain the discrepancy observed in these cases. However, for examples that involve Narration with the same type of temporal locating adverbials, like (352), she argues that the apparent contradiction fades away if we consider that the time interval that is described by the adverbial is the result state of the first situation.

(352) A Ana chegou a casa à meia-noite. Telefonou nessa altura à irmã para lhe dizer que tinha chegado.
The Ana arrived at home at midnight. Phoned on that time to-the sister to her tell that had arrived.
Ana arrived home at midnight. She phoned her sister then to tell her that she had arrived.

Accordingly, the phone call occurs in the result state of Ana's arrival and, hence, the e_β is posterior to e_α. As a matter of fact, the axiom proposed by Asher and Lascarides (2003) to feature Narration already predicts this possibility (cf. (353)).

(353) $\text{ØNarration}(\alpha, \beta) \Rightarrow \text{overlap}(\text{prestate}(e_\beta), \text{poststate}(e_\alpha))$

In addition to phrase temporal adverbials as the ones used in the examples adduced above, Alves includes temporal adverbial clauses headed by *quando* ('when') and *enquanto* ('while) in the group of locating adverbials which express overlapping

relations[39]. Since both are compatible with a wide range of rhetorical relations, they cannot be featured as signalling specific types.

The observation that in certain contexts the rhetorical relation can be inferred whether the temporal adverbials are present or absent, on the one hand, and the possibility that some temporal locating adverbials that express temporal overlapping can occur with rhetorical relations with different temporal axioms, on the other hand, constitute strong evidence for the complex nature of the inference process of rhetorical relations.

Conclusions

In this chapter, it we aimed at (i) investigating the rhetorical relations and the main proposals that include them in their frameworks and (ii) raise come relevant questions related to the process of inference of the rhetorical relations.

To reach these objectives, in the first section, we looked into how different proposals define and feature rhetorical relations.

In the following section, we presented our critical analysis of the main discursive theories or proposals in order to obtain a broader understanding of the role of rhetorical relations in explaining not only discourse structure but also different linguistic phenomena such as temporal relations.

Since our analysis of the data will focus on temporal and rhetorical relations, in section 3.3. we discussed the interaction between these two types of relations.

Finally, we considered different semantic sources that are relevant for the determination of temporal and rhetorical relations, namely tense, aspect, cue-phrases and temporal adverbials.

[39] We will return to the analysis of the interaction between the *when* and *while*-clauses with the rhetorical relations proposed by Alves (2002) in the next chapter.

After the analysis we pursued, we can conclude that:

(i) As far as the definition of the rhetorical relations, we observed that their designation, definition, nature and arguments vary according to the theoretical framework in which they are integrated.

(ii) The most well equipped theory within those that include rhetorical relations is SDRT, from Asher and Lascarides (2003).

   a. Nonetheless, as we pointed out in the final sections of this chapter, there are some characteristics of this theory that need further investigation, namely those referring to the temporal consequences of rhetorical relations.

   b. Furthermore, it would also be interesting to verify the validity of the proposed theory with different data, such as complex sentences[40]. As we have already described, Asher and Lascarides (2003) are mainly concerned with sequence of single-sentences and, as far as we know, there is not a complete study of the inference of rhetorical relations in the context of complex sentences. These objects of study pose, necessarily, new problems due to their specificities, but their semantic characterisation may benefit from an analysis within this framework.

(iii) There is a much intertwined interaction between temporal and rhetorical relations.

(iv) There are important semantic sources which can reduce underspecification in the process of inferring rhetorical relations and which can play a significant role in determining temporal relations, namely tense, aspect, cue-phrases and temporal adverbials.

[40] Professor Alex Lascarides (p.c.) agreed that SDRT's framework could be applied in such analysis.

Chapter 4

For a Semantic Analysis of Complex Sentences with Adverbial Clauses

Introduction

Part one – Theoretical questions

Before going into the analysis of complex sentences with adverbial clauses, some questions regarding the delimitation of the object of study and the theoretical model in which the object will be studied are in need of clarification.

4.1. The object of study

In the first chapter, we circumscribed the five types of adverbial clauses for which a new semantic approach will be purposed: time clauses, clauses of reason, concessive clauses, conditional clauses and clauses of purpose. The delimitation of this set of adverbial clauses is justified by their shared semantic and syntactic features.

However, even after this delimitation, the treatment of all subtypes of clauses is not viable given the nature of the present work. Furthermore, the consideration of all possible tenses and aspectual classes' combinations represents an impractically large undertaking.

For that reason, we have deemed it best to confine our object of study to the most prototypical and frequent subtypes. As such, as to time clauses, we will investigate the ones introduced by *quando* ('when'), *antes de* ('before'), *depois de* ('after') and *enquanto* ('while'), because they convey different temporal and rhetorical values. Concerning the clauses of reason, we will survey the clauses with *porque* ('because'), which is the most frequent connector within this type of clauses. In regards to clauses of purpose, we will be concerned with clauses headed by *para* ('so').

Finally, we are left with the concessive and conditional clauses. We will analyse data with *embora* ('although'), for the first group, and with *se* ('if'), as to the second group. As we concluded from the revision in chapter 1[1], these two groups of adverbial clauses express different values of factuality depending on the verb tenses and on the connectors used. However, because our first concern is to put forward a sufficiently general analysis of temporality and of rhetorical relations that is able to account for different types of adverbial subordination, at this stage, we decided only to explore the sentences with *embora* and *se* which convey a factual interpretation. So, for now, we aim at characterising temporally the situations represented in those types of sentences, checking the temporal characterisation of the situations, and at uncovering the primary rhetorical link established between the two clauses in those sentences. The investigation of the different modal readings would imply going into the semantics of modality and the assignment of a different dimension to the rhetorical relations. We leave it for future research.

The same decision applies to the distinction between content or *de re* clauses and enunciation or *de dicto* clauses. That is, since, in this approach to a semantic model of treatment of adverbial subordination, we intend to unveil the temporal features of the clauses and relate these to the rhetorical relations, we leave other specificities for future works.

It should be noted that it is not our goal to present a detail account of each type of adverbial clause, but to demonstrate how the semantic features of this object of study concerning temporality and rhetorical meaning can be represented in an integrated manner. So, for each of the subtypes which we have already discriminated, we will draw attention to the main temporal and discursive characteristics, knowing that in most cases we have not exhausted all the possible temporal and rhetorical relations.

We will begin by looking at sentences with time clauses introduced by *quando*, *antes de*, *depois de* and *enquanto*. The analysis of this subtype of adverbial clauses will be the most extensive because it behaves differently as far as temporal interpretation is concerned, spurring interesting questions. In particular, the sentences with clauses introduced by *quando* reveal themselves quite troublesome because, on the one hand, the connector does not impose any specific temporal relation and, on the other hand, it does not signal a specific rhetorical relation, either. The connectors of the other

[1] Cf. sections 1.3.2. and 1.3.3..

adverbial clauses mark a specific temporal relation or a certain rhetorical relation or both, as we will show. So, after the time clauses, we will analyse the sentences with clauses introduced by *porque*, followed by those with *embora*. The following sections will deal with sentences with *se* and *para*.

The examples will be largely fabricated, because this method will permit us to manipulate the different variables under scrutiny (i.e., verb tenses, aspectual classes, connectors). Furthermore, the examples from the *corpus* most of the times integrate more than one subordinate or coordinate clause and are quite long, which makes it difficult to single out the semantic features of a particular type of adverbial clause. Nonetheless, we have built a *corpus*[2] composed of different *corpora*, each with two hundred occurrences of sentences with the connectors referred to above. Some of the examples are fabricated based on that *corpus*.

4.1.1. Some problems of analysis of the adverbial subordination within the SDRT

In chapter 3, we revised some of the main proposals which resorted to rhetorical relations and some criticism was voiced regarding different shortcomings of those proposals. We came to the conclusion that the best equipped theory to treat temporal and rhetorical relations was the *Segmented Discourse Representation Theory* (SDRT), by Asher and Lascarides (2003).

However, we have also observed that the SDRT require further developments in order to be able to account for the different temporal relations and for the different types of data. A more detailed account of these questions will certainly contribute to a better knowledge of the interpretation of discourse composed of complex sentences and not only of single sentences. For that, we need to pinpoint the specificities of the data, so that we can deal with them within the theory.

Since the object of study in this research is sentences with adverbial subordinate clauses, in what follows, we will address the main problems posed by their treatment within the SDRT. It should be noted that Asher and Lascarides (2003) are mainly

[2] The *corpus* was built from *CETEMPúblico* 1.7 anotado 2.0, available at http://www.linguateca.pt/, during the years 2005-2007.

concerned with discourses composed of two or more non-complex sentences and, therefore, they do not consider, at least explicitly and systematically, those problems.

First, the data under scrutiny are complex sentences representing two or more situations. So, the unit of analysis does not correspond syntactically to a sentence, but to a clause. However, the fact that the minimal unit is a clause does not represent any problem. There are still two propositions representing two situations which are linked by a specific rhetorical link.

Secondly, the adverbial clauses under study are headed by a connector, which in principle could act as cue-word/phrase in the process of inference. This assumption may be valid for some cases of adverbial subordination, but it is not valid for all types of adverbial subordinate clauses, as we will demonstrate. For example, the clauses with *quando* (*when*-clauses) are traditionally described as conveying a temporal meaning. Although they are not studied in Asher and Lascarides (2003), Asher *et al.* (2008: 13), in a posterior work, argue that the connector *when* in fronted adverbial clauses is a marker of the $\text{Background}_{\text{forward}}$ relation (cf. (354)).

(354) When a great man is happy, he always sings. (Asher *et al.* (2008: 12))

Nonetheless, the observation of the data points to the conclusion that they can express different temporal relations and different rhetorical meanings. For instance, in examples (355) and (356), the situations do not only establish different temporal relations, but also different rhetorical relations. In the first sentence, the second situation is posterior to the first situation and establishes with the first a relation of Narration. In the second example, the second situation is anterior to the first situation and is linked to the first by a relation of Explanation.

(355) Quando o João acordou, tomou banho.
When the João woke-up, took bath.
When João woke up, he took a bath.

(356) Quando o João caiu, tropeçou no cabo da televisão.
When the João fell, tripped over-the cable of-the television.
When João fell, he tripped over the television cable.

So, we have to ascertain the different temporal and rhetorical relations and account for them.

Furthermore, even those connectors, such as *depois de*, that could act as cue-words/ phrases of certain rhetorical relations, in this case, Narration, sometimes do not, as we will demonstrate. In fact, there are connectors that by default determine the inference of certain rhetorical relations and others that allow for different rhetorical relations.

Third, a closer look at data with the subordinate clauses in the final position or in the initial position raises another troublesome issue, which concerns the directionality of the arguments' linkage. The SDRT stipulates the Right Frontier constraint, according to which in order to link rhetorically the arguments we must follow the path that goes from the last label to the topmost constituent. This procedure is naturally applied to examples with non-complex sentences. However, what procedure should we use with complex sentences? Can the order of the clauses lead to different temporal and rhetorical relations or must we interpret the subordinate clause with respect to the main clause? Is the procedure the same or depends on the type of adverbial clause?

The last foreseeable problem concerning the type of data is related to the previous one, that is, the order of the arguments. The fronted or final positions of the adverbial clauses imply different interpretations at another level, the structural level, i.e., the fronted or final positions are not irrelevant to the structural organisation of discourse. Even conveying the same rhetorical relation at the content level[3], they do not convey the same information at a structural level. So, we have to consider not only a content level, but also a structural level in the process of inference of rhetorical relations. It should be noted that Asher and Lascarides (2003) consider text structuring relations, that is, relations related to the structure in which the situations and individuals are represented. However, as we will see shortly, none of those proposed by them captures the discursive difference between sentences with subordinate clauses in an initial or final position.

As demonstrated in chapter 3, sections 3.4.1. and 3.4.2., SDRT does not fully characterise rhetorical relations as to their temporal consequences and sometimes, in order to justify different temporal consequences, they combine rhetorical relations with different temporal features. This is the case of Explanation, for instance, that, according

[3] Cf. chapter 3, section 3.2.5., pages 203-204 for the definition of content-level relations.

to the authors, can link situations that overlap each other. So, they propose that those situations are also linked by Background. However, how can we justify that the combination of two distinct temporal relations, anteriority and overlapping, can result only in overlapping? Furthermore, the temporal consequences predicted for some rhetorical relations do not encompass all the possibilities. We could just add the other temporal consequences to the meaning postulates of the rhetorical relations, but this would mean that the temporal relation that could be unveiled by the rhetorical relation would be in most cases underspecified. We will refer to this problem during the analysis of the data with *porque* and we will put forward a proposal to be applied to the analysis of the other types of sentences.

The constraints of lexical nature will be confined to those related to the connectors. We will show that, although it is possible to map some connectors onto certain rhetorical relations, not all syntactic configurations allow for that correspondence and that there are connectors that are not marked rhetorically.

Handling the problems sketched above and developing a mechanism that allow for the articulation of all the dimensions (temporal and rhetorical) will certainly provide a suitable semantic treatment of sentences with adverbial subordination.

4.2. Description of the theoretical framework

Bearing in mind the observations made previously and the nature of the object of study, we argue that in order to put forward a semantic analysis of sentences with adverbial clauses within SDRT there are some enhancements to the theory and some new proposals we need to put forward. These developments have two dimensions: one regarding the temporal treatment and the other regarding the rhetorical interpretation. Our proposal is the result of the path made during the previous chapters. The revision of the main semantic proposals concerning adverbial subordination, tense and rhetorical relations led to the discovery of the upsides and downsides of the different theories and to the necessity of thinking of a model that would overcome those limitations.

In the following sections of the first part, we intend to define a model for the analysis of the data, that is, sentences with adverbial clauses.

4.2.1. The temporal parameters

The temporal parameters we intend to consider refer not only to temporal features of each situation represented by the complex sentence, but also to time spheres' constraints imposed by each type of adverbial sentence, to temporal relations established between them and to temporal processes of situations linkage. In order to achieve this aim, we extend Silvano's approach (2002). This proposal combines principles and notions of Declerck (1991) and Kamp and Reyle (1993).

We argue that to adequately explain the temporal features of discourses in general, and of sentences with adverbial subordination in particular, we have to consider different time intervals and relations. To begin with, we have to identify the temporal perspective point of the eventuality (TPpt, hence), defined as the time interval from which the eventuality is perspectivised. By default, the TPpt of the first situation to be processed is the utterance time (*now*). The second situation to be processed can choose two different time intervals to act as its TPpt: the [$speech_{time}$] or the [$eventuality_{time}$], that is, the TPpt of an $eventuality_{\beta}$ can be the time interval that corresponds to the speech/ utterance time (*now*) or the time interval in which $eventuality_{\alpha}$ is located, where $eventuality_{\beta}$ refers to the situation that co-occurs with $eventuality_{\alpha}$. In the first case, because the situation in question does not establish a direct temporal bound with the situation with which is combined, there is creation of a new temporal domain[4]. In the second case, the situation in question integrates the temporal domain of the other situation, and, thus, there is temporal subordination[5]. Table 42 sums up the proposal for the different values of TPpt.

Being γ the perspective point,
• if $\gamma = [speech_{time}]$, then TPpt := n [-Temporal subordination]
• if $\gamma = [eventuality_{time}]$, then TPpt := e_{α} [+Temporal subordination]

Table 42. TPpt's values

[4] It should be noted that whenever the situations are represented in the *Presente* ('Simple Present') the TPpt of the first situation to be processed is *n* and as the TPpt of the second processed situation is the time interval where the first situation occurs, then the TPpt of the second situation is also *n*. However, in these cases, there is temporal subordination because the second situation to be processed integrates the temporal domain of the first situation.

[5] For a detailed analysis of this proposal, see chapter 2, section 2.4.1.8., pages 158-160 and section 2.4.2., pages 162-163.

In addition to the identification of the TPpt, we will have to identify the Rpt. By default, as we have already discussed in chapter 2[6], the Rpt can be any time interval or situation which has already been processed in the discourse.

In the case of sentences with adverbial subordination, since the adverbial clauses are syntactically subordinated to a main clause, we will assume that, regardless of the linear order of the discourse, the Rpt is by default provided by the main clause, with the exception of the sentences with time clauses[7].

A short note should be added as far as the Rpt in time clauses is concerned. Kamp and Reyle (1993: 655) argue that in processing time clauses no Rpt is needed because "they describe eventualities that can be identified or recognized by independent means (...) and which consequently already have their determinate plan in the temporal order". Moreover, they consider that when the main clause is in an initial position no Rpt is chosen, as it happens with initial non-complex sentences. Such analysis differs from others such as Partee (1984), Hinrichs (1986), Carecho (1996) and Cunha (2000), which argue that the *when*-clause provides the Rpt for the situation of the main clause. In fact, we should stress that the choice of the time clause as the Rpt for the main clause accords well with the locating function of this type of subordinate clauses.

Bearing in mind these differences and the discussion of the next section, we will interpret the Rpt defined by Kamp and Reyle (1993) in a more loosely way and we will consider that the Rpt can be any situation or time interval available in the discourse.

Being λ the reference point of β, where β is a new eventuality,
• λ_β = [eventuality$_\alpha$], where α is a discourse referent in the discourse. or • λ_β = [time$_\alpha$], where α is a discourse referent in the discourse.

Table 43. Rpt's values

Another step in the temporal characterisation of the situation in complex sentences with adverbial clauses will be to identify the temporal relation between the TPpt and the location time of the situation (*t*), which can be of anteriority, posteriority

[6] Cf. section 2.4.2., pages 162-163.

[7] This analysis is in accordance with our proposal of how the sentences with adverbial subordination are processed presented in the next section of this chapter. According to our analysis the main clause is always the first to be processed, with the exception of the time clauses (cf. section 4.2.2.).

and overlapping or inclusion. These temporal features concern each situation, because even when representing sentences with subordinate clauses, each situation must be temporally described individually and it is processed one at a time. The temporal relation between the two situations is unveiled by the rhetorical relations.

We will also ascertain if there are, or not, any constraints as to the location of the situations in different time spheres, that is, if one situation can be represented as occurring in a past time sphere and another one in a future time sphere, for instance.

In what concerns the verb tenses combinations, we will enquiry about those that are responsible for different kinds of temporal relations and different mechanisms of temporal linkage of situations. There are clauses that necessarily integrate verb tenses from the Subjunctive mood or the *Infinitivo* and, thus, we will combine those with other verb tenses. Generally speaking, the verb tenses which will be tested are the *Presente*, the *Pretérito Perfeito*, the *Pretérito Imperfeito*, the *Pretérito-mais-que-perfeito* from the Indicative mood and the *Futuro* with the verb *ir* (‘go´) in the *Presente* followed by the *Infinitivo*. However, we will put together other verb tenses which can originate distinct temporal interpretations, whenever the configurations require it. For instance, in sentences with *embora*, we are obliged to analyse examples with tenses of Subjunctive mood, since the connector requires it. This investigation will enable us to characterise more accurately the semantics of sentences with adverbial clauses and verify some constraints of rhetorical relations.

Another parameter to be included in the adopted model of analysis concerns the aspectual characterisation of the situations that are represented in the sentences. Bearing in mind the study carried out in chapter 2, section 2.2.2.[8], we will follow, whenever necessary, an aspectual class typology which results from the merger between two proposals, Moens (1987) and Moens and Steedman (1988) with Cunha (1998; 2004). Table 44 summarises the adopted aspectual classification.

[8] Cf. pages 104-113 of this work.

Aspectual classes	
Eventive situations	Processes
	Culminated Processes
	Culminations
	Points
Stative situations	Individual level phase state
	Individual level non-phase state
	Stage level phase state
	Stage level non-phase state

Table 44. Aspectual classification

However, because our main aim is not to present an in-depth investigation of the aspectual features of the situations in sentences with adverbial subordination, we will only punctually distinguish between these aspectual classes. For the majority of the subtypes of sentences with adverbial clauses, we will test the possibility of the following combinations: event + event; event + state; state + event; and state + state, without distinguishing between the different eventive and stative subclasses. We will only make that distinction when analysing data with *quando* in sequences of *Pretéritos Perfeitos* to explain the different temporal relations.

In the SDRSs, we just use *s* for state and *e* for event, following Kamp and Reyle (1993).

4.2.2. The rhetorical relations' parameter

As far as the rhetorical relations' parameter, we will follow SDRT overall. However, in order to deal with the problems pointed out in section 4.1.1., we will add some extra stipulations.

The major issue has to do with the order of interpretation of the situations. In discourses with non-complex sentences, the situations are processed according to the linear order of the discourse and, so, the last situation is always the one to be linked to the previous one rhetorically. However, with complex sentences with adverbial subordination, in addition to having one clause syntactically subordinated to another, which in most cases can occupy different positions in the sentences, most adverbial clauses are introduced by a connector that is marked lexically for a specific rhetorical

relation. Therefore, the same procedure of linking the last situation in the discourse to the first used for sequences of non-complex sentences cannot be followed.

In the absence of some conclusive studies of how the complex sentences are processed, we will assume that by default the main clause is the first to be interpreted and then we process the subordinate clause because the former integrates the connector and it is the subordinated clause, regardless of the linear order in the discourse. Assuming, as Asher and Lascarides (2003), that the rhetorical relation is established from the last situation to be processed to the first one, then, the rhetorical relation is established from the subordinate clause to the main clause. There is, however, an exception: the sentences with time clauses. Due to their semantic function of temporal locators, we will argue in section 4.3. in favour of an analysis in which the subordinate time clauses are the first to be processed and only then we process the main clause. So, in these cases with time clauses, since the last situation to be processed is the one in the main clause, then it is the main clause that establishes the rhetorical link with the subordinate clause.

It should be noted that this problem of attachment points in complex sentences, in particular in *when*-clauses, is already noticed by Asher *et al.* (2008) while discussing the rhetorical relation $\text{Background}_{\text{forward}}$, in sentences such as (357). They consider that it is the *when*-clause that is linked by a rhetorical relation to the main clause and not the other way around.

(357) When a great man is happy, he always sings.

They suggest that a possibility of handling the question of arguments switching is relaxing the information about attachment:

> "All that is known typically in the inference to a rhetorical relation is that two constituents must be attached but it is not yet known by which relation. We can augment the underspecification, and also assume the order is not known. This modification to the Glue Logic formalism introduces only a slight increase in underspecification, which the Glue Logic language is any case designed to accommodate."

However, this hypothesis raises serious problems for non-complex sentences, namely, concerning referents' availability of anaphoric co-reference, because the

antecedent for the pronoun is no longer on the right frontier of the graph. In (358), "a man" is no longer available for anaphoric co-reference.

(358) a. A man was sitting in the bench.
b. A woman walked over to him.

(Asher *et al.* (2008:12))

In spite of the objection of referents' availability, the hypothesis of extending underspecification to the order of the arguments and, thus, of loosening the rules of attachment should not be left out. In fact, although the objection may be valid for the cases of Background and others in non-complex sentences, it does not apply to complex sentences with adverbial subordinate clauses. Asher *et al.* (2008: n8) admit that, since anaphora behaves differently in this type of sentences, the hypothesis put forward could be the solution to deal with this phenomenon of argument switching[9].

Nevertheless, they attempt to accommodate the interpretation of (357) into the attachment rules by motivating a more complex structure with an additional Framing Topic constituent linked to the background by the relation Background and to the foreground by the relation Elaboration, as already explained in chapter 3, footnote 24[10].

Regardless of that, we consider it best to follow the solution of loosening the attachment rules because it is more productive, it does not overload the semantic representation of the sentences with complex structures of rhetorical relations and it will allow for a more accurate semantic description of the sentences.

The second enhancement to the SDRT we need to explain refers to another level of rhetorical relations. The particularities of sentences with adverbial subordination, more specifically, the possibility of the subordinate clauses occupying initial or final positions, points to the fact that a complete rhetorical interpretation requires the consideration of not only rhetorical relations at the content level, but also at a text

[9] This approach can be grounded on syntactic reasons, but we will not develop them here. We will just assume that, because anaphora has a different behaviour in sentences with adverbial clauses, the question of referents' availability is no longer pertinent. Notice that contrary to (ii), in (i) the arguments switching does not originate ungrammaticality.

(i) a. John works in a hospital because he likes helping people.
b. Because he likes helping people, John works in a hospital.

(ii) a. John works in a hospital. He likes helping people.
b. *He likes helping people. John works in a hospital.

[10] Cf. page 205.

structuring level. For instance, examples in (359) and (360) have different rhetorical meanings regarding a text structuring level.

(359) O João tomou banho quando acordou.
The João had bath when woke-up.
João had a bath when he woke up.

(360) Quando o João acordou, tomou banho.
When the João woke-up, had bath.
When João woke up, he had a bath.

So, we argue that the placement of the adverbial subordinate clause in a fronted or final position in the complex sentence imposes different interpretations as far as text structuring relations are concerned. It should be noted that SDRT's framework predicts the possibility of connecting rhetorically two situations by more than one rhetorical or discursive relation. In this particular case, it seems that in a macro-structural level (of text organisation) the role of the subordinate clause changes depending on its position in the sentence as evidenced by the two examples presented earlier (cf. (359) and (360)).

As we have referred before, the set of text structuring relations proposed by Asher and Lascarides (2003) does not include any rhetorical relation that captures the semantics of the discursive link of the examples under analysis[11]. For this reason, we put forward two new relations[12]: *Frame* and *Specification*, which will allow us to capture the interpretation of sentences with adverbial clauses. In view of the fact that we are at the structural level, there are no temporal consequences for these two rhetorical relations.

[11] Asher and Lascarides (2003) only propose two text structuring relations: Parallel and Contrast (cf. chapter 3, section 3.2.5., page 206, for their definitions).
[12] We recall that the authors themselves recognise that the set of rhetorical relations is not a closed one.

Class of rhetorical relations	Rhetorical Relations	Definition	Example
Text Structuring Relations	**Frame**	R holds when K_α describes a situation that frames the situation described by K_β, where α is represented by a subordinate clause and β by a main clause and K_α is in the initial position.	When João woke up, he had a bath.
	Specification	R holds when K_α describes a situation that provides more details about the situation described by K_β, where α is represented by a subordinate clause and β by a main clause and K_α is in the final position.	João had a bath when he woke up.

Table 45. Text structuring rhetorical relations

We observe that, while in the first example of the table 45, in a macro-structural level, the clause introduced by *when* frames the situation described by the main clause, in the second example, the situation represented by the subordinate clause specifies or particularises on the situation of the main clause. The two different interpretations result from the two different positions occupied by the clause with the connector *when*. Whenever the subordinate clause occupies the initial position, the situation represented by it establishes a relation of Frame with the situation of the main clause. Whenever it occupies the final position, the situation of the subordinate clause is linked to the situation of the main clause by the relation of Specification.

4.2.3. The integration of the parameters into a logic form of discourse representation

Having described the parameters of analysis and some of the necessary developments to theoretical principles of SDRT, we need to explain how they are going to be integrated in a logical form of discourse representation. In chapter 3[13], we referred to two possibilities of representing discourse: a DRT-style SDRS or a graph-style SDRS. In our analysis, we will use the DRT-style SDRS, but we will introduce the aforementioned justified changes.

[13] Cf. pages 207 and 208.

Regarding the temporal and aspectual parameters, in a DRT-style SDRS, in addition to the discursive referents and the conditions already proposed by Asher and Lascarides (2003), we will include others to represent the temporal and aspectual features of the eventualities. Thus, we will introduce two conditions with the following form:

(i) TPpt:=α

(ii) e:=β

The first one refers to the identification of the *Temporal Perspective Point* of the situation and the choice is between the speech time (*n*) or the eventuality with which it is combined (*e*). The second represents the aspectual class of the situations and the values for this condition are the following: e (eventuality):= e (event); e:= s (state).

Insofar as the changes concerning rhetorical relations, the directionality will assume two values, $R(\pi_1, \pi_2)$ or $R(\pi_2, \pi_1)$, depending on the order of the clauses. Furthermore, the information as to the structuring text relation will be added to the SDRS.

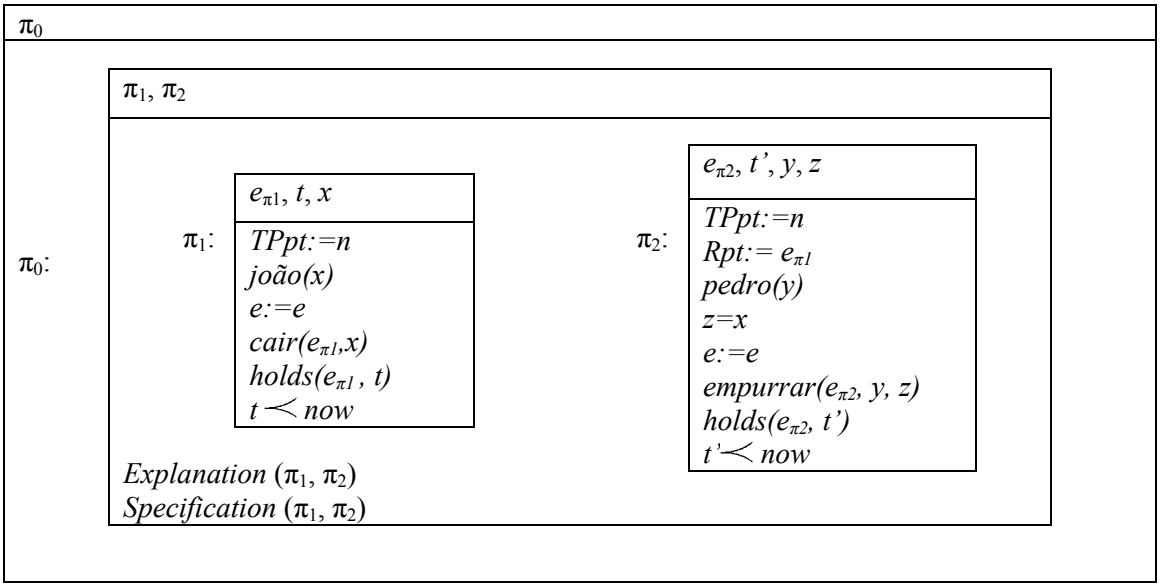
We will simplify the SDRS by not representing some of the conditions with discursive referents and agglutinating them in the condition referring to the eventuality. For instance, in a sentence such as *A Maria viajou para Paris de avião* ('Maria travelled to Paris by plane'), instead of decomposing the eventuality *viajar para Paris de avião* ('travel to Paris by plane') into several conditions, for sake of simplicity, we will just represent the condition *viajar para Paris de avião(e, x)*, where *x* represents Maria.

SDRSs (361a) and (362a) illustrate the discursive representation forms for sentences in (361) and (362), respectively.

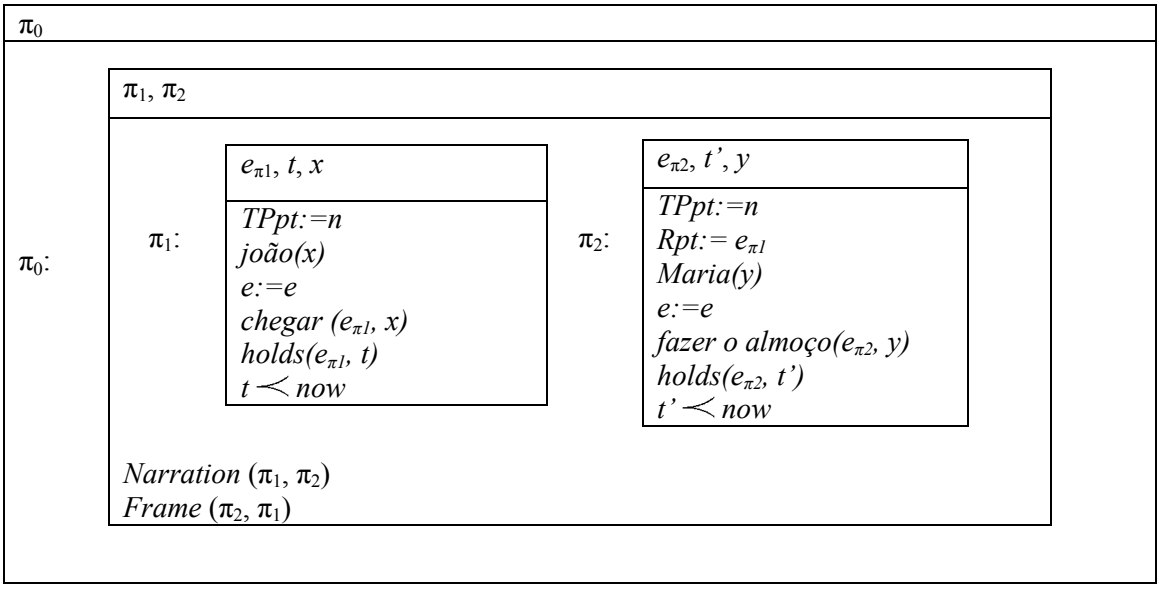
(361) O João caiu porque o Pedro o empurrou.
The João fell because the Pedro him pushed.
João fell because Pedro pushed him.

(362) Quando o João chegou, a Maria fez o almoço.
When the João arrived, the Maria made the lunch.
When João arrived, Maria cooked lunch for him

(361a)[14]



(362a)



Both SDRS represent the temporal and rhetorical structure/ features of sentences in (361) and (362). The condition *TPpt:= n* in π_1 and π_2 conveys the information that the *Temporal Perspective Point* of each situation is the speech time, which means that the situation described by the subordinate clause is not temporally subordinated to the

[14] For the time being, we will just say that in this case the rhetorical relation is Explanation. However, we will see later on that a reformulation of Explanation will be needed in order to properly represent the data, namely sentences with *porque*.

situation of the main clause. Both situations, *o João caiu* and *o Pedro empurrou-o*, are events, hence the condition *e:= e*.

The conditions *Explanation* (π_1, π_2) from (361a) and *Narration* (π_1, π_2) from (362a) represent the rhetorical relation: in the first case, π_2 establishes with π_1 a relation of Explanation; and in the second case, a relation of Narration.

Finally, the last condition in π_0, specifies the text structuring relation, which is Specification in (361a) and Frame in (362a).

To sum up, for the time being, we propose the following additional stipulations to SDRT:

(i) Adding two conditions to the SDRSs to represent more completely the temporal and aspectual properties of the situations:

a. TPpt:=α, where the *Temporal Perspective Point* has two values:

i. TPpt := n, that is, *now*, the speech time.

ii. TPpt := e_α, that is, situation that occurs with the situation that is being processed.

b. e:=β, where the eventuality has two values:

i. e:=e, that is, the eventuality is an event.

ii. e:=s that is, the eventuality is a state.

c. Rpt:= e_α, that is, the reference time is the situation with which the situation being processed co-occurs.

(ii) Loosening the rules of attachment points to deal with data with complex sentences, namely those with adverbial clauses.

a. Accordingly, we propose that the rhetorical relations (and temporal relations) are established from the subordinate clause to the main clause. Since the subordinate clauses are syntactically subordinated to the main clauses and they integrate a connector that many times is marked for a specific rhetorical relation, we assume that the first to be processed are the main clauses and then the subordinate clauses. Because the SDRT predicts that the rhetorical relation is established from the last situation to be processed to the first, then the directionality of the rhetorical relation is from the subordinate clause to the main clause.

b. In the case of sentences with time clauses, because of their locating function, the subordinate clauses are the first to be processed and, so, the rhetorical relations are established from the last clause to be processed, that is, the main clause to the subordinate clause.

(iii) Adding two new rhetorical relations at the text structuring level, to be included in the SDRSs:

a. Frame

b. Specification

Part two – The analysis of sentences with adverbial subordination

Having dealt with some of the theoretical problems, we are apt to tackle the data. We have organised part two in different sections, each corresponding to a subtype of adverbial clauses: sentences with clauses introduced by *quando*, by *antes de*, by *depois de*, by *enquanto*, by *porque*, by *embora*, by *se* and by *para*.

We will begin by presenting the data which is, on the one hand, more representative of the possible temporal relations and, on the other hand, of the possible rhetorical relations. Afterwards, we will describe and explain the semantic characteristics of the examples in order to represent them in a SDRS.

This part will end with the systematisation of the temporal and rhetorical analysis of sentences with adverbial clauses selected as our object of analysis.

4.3. Sentences with time clauses

The time clauses have some semantic characteristics that distinguish them from the other types of adverbial clauses, not only in terms of temporal relations but also of rhetorical relations. Being temporal locators, these adverbial clauses also impose different mechanisms of interpretation when compared with other sentences with adverbial clauses. For these reasons, we will discuss more thoroughly this class of adverbial clauses, in particular the ones introduced by *quando*.

We will begin by investigating sentences with *quando*, which constitute a very challenging object of study due to the variety of temporal relations and rhetorical meanings they can convey. The clauses introduced by *antes de* and *depois de*, although much more limitative with respect to the possible temporal and rhetorical relations, raise other relevant problems, namely the use of the *Infinitivo* in the subordinate clause. This section will end with the analysis of sentence with *enquanto*, which like *antes de* and *depois de*, is responsible for imposing a specific temporal relation, but, that, nonetheless, allows more rhetorical relations than the other two.

Before going into the analysis, we have to justify the proposal of interpreting first the subordinate clause and then the main clause, as far as temporal and rhetorical relations are concerned. In the literature, time clauses are described as locating adverbials, that is, as establishing the temporal localisation of the situation represented by the main clause. In terms of the interpretation process, this description implies for many authors that the main clause is always interpreted before the *when*-clause, regardless of the discourse linear order (cf. Hinrichs (1986) and Kamp and Reyle (1993), for instance)[15]. Accordingly, in both examples, in (363) and (364), the situation *João tomou banho* is interpreted before the situation *João acordou*.

(363) O João tomou banho quando acordou.
The João had bath when woke-up.
João had a bath when he woke up.

(364) Quando o João acordou, tomou banho.
When the João woke-up, had bath.
When João woke up, he had a bath.

However, the same authors locate the situation of the main clause in relation to the situation of the subordinate clause, which implies that one has to process first the subordinate clause and then the main clause. Notice that, for instance, Moens and Steedman (1988), Carecho (1996) and Sandström's (1993) locate the main clause with

[15] However, this analysis is not consensual. Carecho (1996) follows this principle but admits the possibility of the *when*-clause being processed before the main clause in certain contexts. Partee (1984) disagrees with the generalisation that the main clause is always the first to be interpreted but does not present an alternative description.

respect to the subordinate clause[16]. So, in fact, if we follow this analysis, we should say that the time clause is always the first to be processed and the directionality of the temporal relation is from the main clause to the subordinate clause.

Such an analysis does not raise many problems in some works because the authors restrict the object of study to the fronted time clauses (cf. (364)) and in these cases the directionality of the temporal relations coincides with the linear order of the discourse.

Interestingly, Kamp and Reyle (1993) seem to link the last clause in the linear order of the discourse to the first as far as rhetorical relations are concerned. While discussing the two examples (1993: 656-657) in (365) and (366), they assert that, in the first case, *Bill arriving* is the cause for *Mary leaving* and, in the second case, the main clause is an Elaboration of the subordinate clause.

(365) Mary left when Bill arrived.

(366) When they built the new bridge, they placed an enormous crane right in the middle of the river.

(Kamp and Reyle (1993: 656-657))

The two different strategies concerning the processing of the clauses when inferring the temporal relations and when inferring the rhetorical relations raise some methodological questions.

If we assume that the processing of sentences with time clauses follows the discursive linear order, that is, from the last clause to the first clause and develop a semantic representation accordingly, we fail to capture the locating function of the time clauses. One argument we can adduce in favour of the claim that the first to be interpreted is always the subordinate clause is the way we process time clauses in sentences with *that*-clauses (cf. (367))[17].

(367) a. O João disse que quando foi à livraria a Maria comprou um livro.

The João said that when went to-the bookshop the Maria bought a book.

João said that when she went to the bookshop Maria bought a book.

[16] Cf. Chapter 1, section 1.3.1.4., pages 59-66.

[17] I am indebted to Professor Fátima Oliveira for this argument.

b. O João disse que a Maria comprou um livro quando foi à livraria.
The João said that the Maria bought a book when went to-the bookshop.
João said that Maria bought a book when she went to the bookshop.

In both examples, the situation *Maria comprou um livro* can only be interpreted after the processing of the subordinate clause introduced by *quando*. This condition is even more obvious when in the main clause there is a tense such as the *Pretérito Imperfeito*[18], as in (368).

(368) a. O Pedro disse que quando o João saiu a Maria estava em casa.
The Pedro said that when the João left the Maria was at home.
Pedro said that when João left Maria was(Imp) at home.

b.O Pedro disse que a Maria estava em casa quando o João saiu.
The Pedro said that the Maria was at home when the João left.
Pedro said that Maria was(Imp) at home when João left.

In both examples, the TPpt of the situation *Maria was at home* is the time interval in which the situation represented by the *when*-clause occurs, and not the time interval in which we locate the situation *Pedro disse*.

Bearing in mind what was presented, we will argue that:

(i) we process first the time clause and then the main clause.

(ii) assuming that the rhetorical relations is established from the last clause to be processed to the first, this means that as far as rhetorical relations are concerned the link is always established from the main clause to the subordinate clause, regardless of the order in the discourse.

[18] The abbreviation *Imp* will be added to the verb form of the Simple Past with an Imperfective value so that the non-native Portuguese reader can distinguish between the Terminative and Imperfective value of the Simple Past. Whenever the Simple Past is used and the abbreviation *Imp* does not appear, the reader should assume that it is the Terminative form of the Simple Past. We recall that, although the English uses the same verb form for both values, the European Portuguese has two distinct forms (cf. section 2.3.1. pages 121-126.

4.3.1. Sentences with clauses introduced by *quando*

The sentences with *when*-clauses have been largely studied from a semantic perspective, as demonstrated in chapter 1, section 1.3.1.4.[19]. Nonetheless, we have also come to the conclusion that the different proposals did not account for all the problems raised by this type of adverbial clauses, namely the different temporal relations and their semantic meanings. In this section, we will address those problems.

We will start by going over some tenses' combinations in order to unfold the different temporal relations. Although, as far as the European Portuguese, there are some temporal descriptions of *when*-clauses[20], their approach differs from the one we adopt here, not only in terms of the theoretical framework, but also regarding the semantic properties studied.

4.3.1.1. Temporal features

The range of tense combinations[21] in complex sentences with *when*-clauses is quite varied, both in the order main clause + subordinate clause and in the order subordinate clause + main clause. One possible combination of tenses is *Pretérito Perfeito* + *Pretérito Perfeito* (cf. (369)). Another possibility of tenses' combinations is *Pretérito Perfeito* in the subordinate clause with *Pretérito Imperfeito* in the main clause, as illustrated by examples (370). The *Pretérito Perfeito* is also compatible with the *Pretérito-mais-que-perfeito*, as in (371). Example (372) illustrates another viable combination, *Futuro do Conjuntivo* + *Futuro/ Presente* with a future interpretation.

(369) a. A Maria foi ao hospital quando partiu o braço.
The Maria went to-the hospital when broke the arm.
Maria went to the hospital when she broke her arm.

b. Quando a Maria partiu o braço, foi ao hospital
When the Maria broke the arm, went to-the hospital.
When Maria broke her arm, she went to the hospital.

[19] Cf. pages 59-66.
[20] Cf. Chapter 1, section 1.3.1.4, pages 59-66, for the revision of those proposals.
[21] For a more detailed list of possible combinations of verb tenses with *when*-clauses in European Portuguese, see table 9, chapter 1, page 65.

(370) a. A Maria tomava banho quando o telefone tocou.
The Maria had(Imp) a bath when the phone rang.
Maria was having a bath when the phone rang.

b. Quando o telefone tocou, a Maria tomava banho.
When the phone rang, the Maria had(imp)bath.
When the phone rang, Maria was having a bath.

(371) a. A Maria tinha saído quando o João chegou.
The Maria had left when the João arrived.
Maria had left when João arrived.

b. Quando o João chegou, a Maria tinha saído.
When the João arrived, the Maria had left.
When João arrived, Maria had left.

(372) a. O trânsito vai melhorar/ melhora quando construírem o túnel.
The traffic is-going to-improve/ improves when build the tunnel.
The traffic is going to improve/ improves when they build the tunnel.

b. Quando construírem o túnel, o trânsito vai melhorar/ melhora.
When build the tunnel, the traffic is-going to-improve/ improves.
When they build the tunnel, the traffic is going to improve/ improves.

As far as the general temporal characterisation of this type of adverbial sentences is concerned, we can observe that:

(i) the verb tenses' combinations impose a restriction, that is, only verb tenses which belong to the same time sphere[22] can go together;

(ii) different temporal relations between the represented situations are viable;

(iii) different temporal mechanisms of situations' linkage, i.e., temporal subordination and creation of a new temporal domain can be used.

Regarding the first feature, the examples presented combine tenses that represent the situations in the past time sphere (cf. (369)-(371)) or in the future time sphere (cf. (372)). The representation of two situations in different time spheres renders ungrammatical results, as illustrated by examples in (373).

[22] The term of time sphere is used following the Declerck's proposal (1991). However, while he only considers the present and the past time spheres, we will take into account for the Portuguese data also the future time sphere. Cf. note 21 of chapter 2 of this work, page 114, for a more detailed explanation about this choice.

(373) a. *Quando a Maria saiu, o João chega[23].
When the Maria left, the João arrives.
**When Maria left, João arrives.*

b. *Quando a Maria sair, o João chegou.
When the Maria will leave, the João arrived.
**When Maria will leave, João arrived.*

(373a.) is ungrammatical because the situation of the *when*-clause is represented as occurring in a past time sphere, whereas the situation of the main clause is located in the present time sphere. (373b.) proves that the combination of a situation represented in the future time sphere with another represented in the past time sphere is not feasible in sentences with *when*-clauses[24].

In spite of this restriction, the different tense combinations allow for different temporal relations and even the same tense combination can originate different temporal interpretations. Although we always locate the situation of the main clause in relation to the *when*-clause, which acts as its Rpt, the temporal relations are different. We recall that, since the *when*-clause locates the situation of the main clause, we define the localisation of the latter in relation to the former. In example (369), the situation *ir ao hospital* is posterior to the situation *partir o braço*. In (370), the *o telefone tocar* is included in the state *Maria tomar um banho*. In (371), the *Pretérito-mais-que-perfeito* imposes a relation of anteriority between the situation of *Maria sair* and the situation of the *João chegar*. Finally, in (372), the situation of the main clause is located in a time interval posterior to the locating time interval of the situation of the subordinate clause.

With respect to the second temporal feature of sentences with *quando*, the possibility of linking temporally the two situations by temporal subordination or by creation of a new temporal domain, the analysis of the data points to the conclusion that both are possible. The realisation that the main clause is not always temporally subordinated to the subordinate clause may seem to contradict the semantic nature of

[23] This example is only acceptable if we interpret the Presente as a fictional narrative *Presente* with a past value.

[24] It is possible to encounter examples with the *Futuro do Conjuntivo* ('Future of the Subjunctive') combined with the *Presente* ('Simple Present'), as in (i).

(i) Quando o João sair, a Maria chega.
When the João will leave, the Maria arrives.
When João leaves, Maria arrives.

This could be a counter-argument to the proposed analysis, but, in fact, it is not, because the *Presente* has a future temporal interpretation in this context.

this type of adverbial clauses, even more, when much of the literature points to this stipulation (cf. Declerck (1991), for instance). In fact, in many works the term 'temporal dependency' is used very loosely and does not accurately portray the temporal features of sentences with *when*-clauses. If, on the one hand, the situations in the type of sentences at issue must indeed be represented in the same time sphere, on the other hand, the two situations may be, or not, temporally subordinated. So, there are two separate levels of analysis: (1) verifying if the two situations belong to the same time sphere and (2) verifying if they share, or not, the same temporal domain. The first analysis was already made. The foregoing discussion of the examples presented above and regrouped in (374)-(377) refers to the second level of analysis.

(374) Quando a Maria partiu o braço, foi ao hospital
When Maria broke her arm, she went to the hospital.

(375) Quando construírem o túnel, o trânsito vai melhorar/ melhora.
When they build the tunnel, the traffic is going to improve/ improves.

(376) Quando o telefone tocou, a Maria tomava banho.
When the phone rang, Maria was having a bath.

(377) Quando o João chegou, a Maria tinha saído.
When João arrived, Maria had left.

Since the last sentence to be processed is always the main clause, it is the situation of the subordinate clause that creates a temporal domain, which will be, or not, integrated by the situation of the main clause.

The first two examples illustrate the mechanism of creation of a new temporal domain, which is the most used in this type of sentences, while the examples (376)-(377) are evidence of another mechanism, temporal subordination. In (374), the TPpt of the situation of the clause introduced by *quando* is the utterance time and the eventuality occurs before that time interval. The situation represented by the main clause creates a new temporal domain because its TPpt is again the utterance time. The situation is anterior to the TPpt. In (375), both situations' TPpt is *n* and both are located after that time interval. In (376) and (377), the situations represented by the main clause integrate the temporal domain created by the situations of the subordinate clauses because their TPpt is the time interval in which the previous situations are located. The temporal relation between the situation and the TPpt differs due to the presence of

different verb tenses: while in (376) the state includes the utterance time, in (377) it is of anteriority.

To sum up, in sentences with adverbial clauses introduced by *quando*:

(i) different tenses' combinations are possible, such as *Pretérito Perfeito* + *Pretérito Perfeito*; *Pretérito Perfeito* + *Pretérito Imperfeito*; *Pretérito Perfeito* + *Pretérito-mais-que-perfeito*; and *Futuro do Conjuntivo* + *Futuro*/ *Presente*;

(ii) temporal relations of anteriority, simultaneity and posteriority can be observed;

(iii) there is the restriction of representing the situations in the same time spheres;

(iv) the two processes of temporal linkage of situations can be used: temporal subordination and creation of a new temporal domain.

4.3.1.2. Sequences of *Pretéritos Perfeitos*

In the previous section, we presented different tense combinations which impose temporal relations of successivity, anteriority or simultaneity. These tense combinations do not behave in the same manner as far as the possibility of producing different temporal readings. For instance, while the sequences of the *Pretérito Perfeito* + *Pretérito Imperfeito* and *Pretérito Perfeito* + *Pretérito-mais-que-perfeito* always impose a temporal order of overlapping and of anteriority, respectively, the sequence of the *Pretérito Perfeito* + *Pretérito Perfeito* or *Futuro do Conjuntivo* + *Futuro do Indicativo* may represent different temporal orderings. The fact that the same sequence of tenses can lead to diverse temporal relations raises some questions, namely: (i) which temporal relations arise; (ii) in which linguistic circumstances each temporal relation can occur; (iii) how those different temporal relations can be explained.

In order to investigate those questions we will focus our study on the sequence of *Pretéritos Perfeitos*. We don't consider the sequence of *Futuro do Conjuntivo* + *Futuro do Indicativo* because the verb tenses involved are not the same and do not

produce the same variety of temporal relations and of rhetorical relations as the sequence with *Pretéritos Perfeitos*.

4.3.1.2.1. Temporal and aspectual features

The data from (378) to (383) describe the situations in the main and subordinate clauses using the *Pretérito Perfeito,* and yet each one represents a different temporal ordering[25].

(378) Quando o João acordou, tomou banho.
When the João woke-up, took bath.
When João woke up, he took a bath.

(379) Quando o João tropeçou no cabo da televisão, caiu.
When the João tripped over-the cable of-the television, fell.
When João tripped over the television cable, he fell.

(380) Quando o João caiu, tropeçou no cabo da televisão.
When the João fell, tripped over-the cable of-the television.
When João fell, he tripped over the television cable.

(381) Quando a Helena viajou para Londres, reservou o voo pela Internet.
When the Helena travelled to London, booked the flight by-the Internet.
When Helena travelled to London, she booked the flight on the Internet.

(382) Quando a Maria fez a tarte de maçã, descascou as maçãs.
When Maria made a pie of apple, peeled the apples.
When Maria made an apple pie, she peeled the apples.

(383) Quando a Maria abanou o Pedro, foi agressiva.
When the Maria shook the Pedro, was aggressive.
When Maria shook Pedro, she was aggressive.

Although all the sentences describe situations in the *Pretérito Perfeito*, the temporal relations vary. In this group of examples, the clause introduced by *quando* ('when') refers to the temporal localisation of the situation described by the main

[25] Parts of this section were object of communications, some already published or in press: Silvano (2007; 2008). I am indebted to the referees and the participants for their comments.

clause, which does not amount to say that there is a temporal overlapping between the two situations, as we have already pointed out.

In (378), *João wakes up* and then *he takes a bath*. In (379), we process the situation *João falling* as occurring after *tripping over the television cable*. In (380), *tripping over the television cable* occurs in a time interval anterior to *João falling*[26]. In (381), the situation *booking the fight through the Internet* occurred before *Helena travelling to London*. In (382), the situation *peeling the apples* is included in the situation *making an apple pie*. In (383), the situation *being aggressive* overlaps the situation *Maria shaking Pedro*.

Different linguistic factors lead the reader to establish the different temporal relations. In many cases, the lexicon and our world knowledge play a very relevant role (cf. (381), for instance) and in others it is Aspect that is greatly responsible for the temporal organisation of the situations (cf. (383), for instance). In fact, some temporal relations are only licensed by certain combinations of aspectual classes. So, aiming at verifying some of the possible combinations of aspectual classes for each temporal relation, we will proceed to analyse some data.

The relation of temporal successivity in sequences of *Pretéritos Perfeitos* is compatible with different combinations of aspectual classes. The aspectual classes that occur more naturally in a successivity temporal relation are culminations, points and culminated processes. Processes can also be combined with other eventive classes and get a posteriority relation because the *Pretérito Perfeito* assigns them terminativity. However, in the configurations in which it is the *when*-clause that represents the process, due to the durativity associated with this aspectual class, different temporal relations may be inferred (cf. (384) from Cunha and Silvano (2009: 27)).

(384) Quando a mãe tocou piano, o bebé adormeceu.
When the mother played piano, the baby fell-asleep.
When the mother played the piano, the baby fell asleep.

(Cunha and Silvano (2009: 27))

In one of the interpretations, the second situation occurs during the first situation. This reading is possible because the processes are durative and homogeneous

[26] Although it is not the preferred interpretation, the temporal relation of the two situations in (380) can also be of posteriority.

(like states) and so the event can be included in that time interval. In a second interpretation, the situation of the *baby falling asleep* occurs in a time interval that is posterior to the process of *the mother playing the piano*. In a third interpretation, the situation of the main clause is located after the beginning of the situation represented by the *when*-clause. In this case, the *Pretérito Perfeito* represents the initial part of the process.

Still with respect to processes, the lack of an intrinsic terminal point makes it more difficult for a sequence of two processes to be interpreted as temporal successivity (cf. (385)-(386)). Although the *Pretérito Perfeito* perspectivises the situations as terminated, their durativity allows for other interpretations in which the situation of the main clause is included in the situation of the subordinate clause (cf. (386)).

(385) Quando a Maria discursou, todos a aplaudiram.
When the Maria discoursed, everyone her applauded.
When Maria discoursed, everyone applauded her.

(386) Quando a Maria viajou, passeou muito.
When the Maria travelled, walked a-lot.
When Maria travelled, she walked a lot.

The eventive classes can be combined with stative situations, and among these more easily with, individual level phase states (cf. (387), for instance) and stage level states[27].

(387) Quando chegou à festa, a Maria foi muito desagradável.
When arrived at-the party, the Maria was very unpleasant.
When she arrived at the party, Maria was very unpleasant.

(388) *Quando o João abandonou a Maria, ela foi muito jovem.[28]
When the João left the Maria, she was very young.
**When João left Maria, she was very young.*

[27] Cf. Cunha (2000) for a more detailed analysis of the differences between phase and non-phase states in *when*-clauses in European Portuguese.

[28] Non-phase individual-level states are more compatible with the *Pretérito Imperfeito* (cf. (i)).

(i) Quando o João abandonou a Maria, ela era muito jovem.
When the João left the Maria, she was very young.
When João left Maria, she was(Imp) very young.

Nonetheless, due to the aspectual features of the states, namely durativity and atelicity, it is difficult to obtain a temporal relation of posteriority when there is also a stative situation in the subordinate clause. When the two situations in this type of syntactic configurations are individual level states, phase or non-phase, the posteriority relation seems impossible. However, in a sequence of an individual level phase state with an event in the main clause, it is possible to obtain a posteriority reading (cf. (389)).

(389) Quando o Pedro foi violento com o irmão, o pai castigou-o.
When the Pedro was violent with the brother, the father punished-him.
When Pedro was violent to his brother, his father punished him.

The relation of anteriority in sequences of *Pretérito Perfeito* is only viable with a few aspectual classes' combinations, namely those that exhibit a phase structure. The combinations which allow more easily the temporal relation of anteriority have a culminated process in the *when*-clause (cf. (390)).

(390) Quando o João montou a estante, leu as instruções com atenção.
When the João set-up the bookcase, read the instructions with attention.
When João set up the bookcase, he read the instructions attentively.

The temporal relation of anteriority is not all unexpected and accords well with the aspectual features of this aspectual class. Since culminated processes include three phases, preparatory process, culmination and consequent state, they can be combined with situations which can be interpreted as representing the preparatory phase and, thus, as occurring in an anterior time interval. For instance, in (391), the situation of the main clause is interpreted as preparation of the situation *João writing the book about the Holocaust* and, hence, establishes with the latter a relation of anteriority. Once again, it must be said that, although the aspectual features of the situations enable such an interpretation, our world knowledge plays a more pertinent role in the inference of the temporal relation.

(391) Quando o João escreveu o livro sobre o Holocausto, falou com muitas vítimas.
When the João wrote the book about the Holocaust, talked to many victims.
When João wrote the book about the Holocaust, he talked to many victims.

Whenever a culmination (cf. (392)) or a process (cf. (393)) is used in the *when*-clause, despite the fact that there are many more restrictions in comparison with the examples in which a culminated process is in the subordinate clause, the anteriority relation is viable within certain combinations.

(392) Quando a Maria caiu, o João empurrou-a.
When the Maria fell, the João pushed-her.
When Maria fell, João pushed her.

(393) Quando o João discursou na rua, construiu um palco.
When the João discoursed in-the street, built a stage.
When João discoursed in the street, he built a stage.

All in all, we have observed that the anteriority relation is a marked temporal interpretation and it is enabled by the presence of lexical elements that can trigger such an interpretation, like words or expressions in the main clause that refer to a preparatory situation of the eventuality represented by the *when*-clause or by the presence of a structured multi-phase situation in the *when*-clause, as culminated processes.

The temporal relation of simultaneity, overlapping or inclusion, is highly influenced by the aspectual features of the situations represented in the sentences. In order to obtain a temporal relation of overlapping a culminated process in the *when*-clause must be combined with durative situations, such as other culminated processes (cf. (394)), processes (cf. (395)) or individual level phase states (cf. (396)).

(394) Quando o João lavou o carro, a Maria cortou a relva.
When the João washed the car, the Maria cut the grass.
When João washed the car, Maria cut the grass.

(395) Quando o João escreveu o livro sobre os melhores resorts, viajou muito.
When the João wrote the book about the best resorts, travelled a-lot.
When João wrote the book about the best resorts, he travelled a lot.

(396) Quando o João montou o computador, foi muito engenhoso.
When the João set-up the computer, was very ingenious.
When João set up the computer, he was very ingenious.

The aspectual restrictions associated to the temporal relation of simultaneity are justified by the fact that the culminated process is itself durative and if the situations with which it is combined are non-durative, the temporal relation will be inclusion, posteriority (cf. (397)) or anteriority (cf. (398)).

(397) Quando a Maria almoçou, saiu.
When the Maria lunched, left.
When Maria lunched, she left.

(398) Quando o João escreveu o livro, pediu licença sabática.
When the João wrote the book, asked leave sabbatical.
When João wrote the book, he asked for a sabbatical leave.

Whenever a culmination is in the *when*-clause, the combination with telic, non durative situations such as culminations (cf. (399)) or points (400) may render in certain cases a temporal relation of overlapping. The interpretation by default seems to be temporal successivity. It should be noted that, in both examples, some native speakers admit the temporal interpretation according to which the culmination and the point of the main clause establish an overlapping relation with the culmination of the *when*-clause. This interpretation is made available because in each case both situations are non-durative and telic.

(399) Quando a Maria chegou, o João saiu.
When the Maria arrived, the João left.
When Maria arrived, João left.

(400) Quando a Maria chegou, o telefone tocou.
When the Maria arrived, the phone rang.
When Maria arrived, the phone rang.

The sentences with points in the *when*-clause are more restrictive than those with culminations as far as the overlapping reading is concerned. Contrary to culminations that can be combined with points in the main clause, points do not render an

overlapping reading when combined with culminations in the main clause. One possible explanation for this behaviour is the absence of a consequent state of the points' phase structure. Similarly to culminations which can co-occur with situations of the same class in an overlapping relation, points can also come together with situations of the same aspectual nature, as in (401), and produce an overlapping interpretation. The combination with individual level phase state allows for an interpretation in which the two situations overlap, as well (cf. 402).

(401) Quando a Maria espirrou, o João tossiu.[29]
When the Maria sneezed, the João coughed.
When the Maria sneezed, the João coughed.

(402) Quando a Maria abanou o Pedro, foi agressiva.
When the Maria shook the Pedro, was aggressive.
When Maria shook Pedro, she was aggressive.

Processes can be combined with phase states (cf. (403)) and with situations of the same aspectual nature (cf. (404)). Being both durative and atelic, the overlapping relation is quite natural.

(403) Quando a Maria viajou com o João, ele foi muito divertido.
When the Maria travelled with João, he was very amusing.
When Maria travelled with João, he was very amusing.

(404) Quando o João correu, a Maria caminhou.
When the João ran the Maria walked.
When João ran, Maria walked.

Regarding states in the *when*-clause, they can be combined with other states and get an overlapping relation. A possible combination is with a stage level phase state and an individual level non-phase (cf. (405)), for instance. Once again the durativity and atelicity of the combined situations enable such a temporal interpretation.

(405) Quando a Maria viveu em Lisboa, foi muito feliz.
When the Maria lived in Lisbon, was very happy.
When Maria lived in Lisbon, she was very happy.

[29] In this case, there are also two available readings, of overlapping and posteriority.

The temporal inclusion interpretation can be found in sequences of culminated processes in the *when*-clause with another culminated process (cf. (406))[30], with a culmination (cf. (407)) or with point (cf. (408)) in the main clause. Being a durative situation, a culminated process can include non durative situations such as culminations and points, but being telic, makes it more difficult to include atelic situations such as processes.

(406) Quando o João limpou a casa, lavou os vidros das janelas.
When the João cleaned the house, washed the glasses of-the windows.
When João cleaned the house, he washed the window-glasses.

(407) Quando o João montou a antena parabólica no telhado, partiu muitas telhas.
When the João set-up the dish satellite on-the roof, broke many tiles.
When João set up the satellite dish on the roof, he broke many tiles.

(408) Quando o João visitou o jardim botânico, espirrou muito.
When the João visited the Botanic Garden, sneezed a-lot.
When the João visited the Botanic Garden, sneezed a lot.

As expected, culminations and points in *when*-clauses are the most restrictive eventive aspectual classes as far as co-occurrence with situations in sequences with a temporal inclusion relation is concerned.

The presence of a process in the *when*-clause licenses different combinations with a temporal reading of inclusion due to the feature of durativity and atelicity. As it happens, leaving aside non-phase states, which always render ungrammatical results, processes are compatible with all aspectual classes in the temporal relation in question (cf. (409)-(410)).

(409) Quando o Primeiro-Ministro discursou, atacou o líder da oposição.
When the Prime-Minister discoursed, attacked the leader of-the opposition.
When the Prime-Minister discoursed, he attacked the leader of the opposition.

[30] Notice, however, that in this interpretation our world knowledge plays a very relevant role.

(410) Quando o João passeou, caminhou pela praia, olhou o mar, fez yoga.
When the João strolled, walked by the beach, stared the sea, did yoga.
When João strolled, he walked along the beach, stared at the sea, did yoga.

The inclusion reading with states (mostly stage level states) in the *when*-clause emerges in sequences with culminated processes (cf. (411)), culminations, processes, points (cf. (412)) and other states (cf. (413)).

(411) Quando a Maria esteve em Paris, visitou o Museu do Louvre.
When the Maria was in Paris, visited the Museum of-the Louvre.
When Maria was in Paris, she visited the Louvre Museum.

(412) Quando a Maria esteve doente, tossiu muitas vezes.
When the Maria was ill, coughed many times.
When Maria was ill, she coughed many times.

(413) Quando a Maria viveu em Lisboa, esteve muito doente.
When the Maria lived in Lisbon, was very ill.
When Maria lived in Lisbon, she was very ill.

Overall, the sequences with *Pretéritos Perfeitos* in sentences with *quando* exhibit different temporal relations: posteriority, simultaneity and anteriority, although the latter is the most marked one. In many contexts, the temporal organisation of the situations is explained by the aspectual features of the situations put together. We presented and accounted for some of the possible aspectual classes' combinations for each temporal relation.

This section was intended to show that:

(i) sentences with *quando* can, even within the same sequence of tenses, establish different temporal relations;
(ii) one very relevant source of information in the inference of temporal relations is Aspect;
(iii) in certain contexts, there are other important sources such as lexicon and our world knowledge.

In the following two sections, we will try to show that the different temporal relations are associated to different relations of meaning or rhetorical relations which are established between the situations. This variety of temporal and rhetorical relations is licensed by the underspecification of the connector *quando*, whose lexical meaning does not influence any of the two aforementioned types of relations.

4.3.1.2.2. The temporal and rhetorical underspecification of *quando*

The different temporal interpretations we can encounter in sentences with *quando* with the *Pretérito Perfeito* indicates that, although the connector *quando* is associated with temporal localisation, it does not impose any specific temporal ordering between the situations which are represented. This temporal underspecification of *quando* is not extensible to other connectors that introduce time clauses. For instance, as we will confirm in section 4.3.2., *antes de* ('before) behaves differently because it always requires that the situation represented by the subordinate clause should occur after the situation of the main clause (cf. (414)).

(414) Antes de sair de casa, o João almoçou.
Before of leave from home, the João lunched.
Before leaving home, João had lunch.

The underspecification of the connector *quando* is even more obvious in sequences with the same verb tense, for instance, *Pretérito Perfeito*, in which different temporal relations may arise, despite the fact that the same tense is being used.

However, the underspecification of *quando* occurs at another level, namely at the level of rhetorical relations. As we have explained in chapter 3, in the SDRT's framework, during the process of inference of rhetorical relations, there is the interaction of different sources such as lexicon, compositional semantics and our world knowledge. When computing the information given by the lexicon, it is possible to find cue phrases, that is, words or expressions that can give us some insight of how to link rhetorically the two propositions. Many of the adverbial subordinate clauses include cue phrases that signal the rhetorical relations. The subordinate clauses of reason are one of these cases, as we will show.

(415) O João caiu porque tropeçou no cabo da televisão.
The João fell because tripped over-the cable of-the television.
João fell because he tripped over the television cable.

The presence of the cue word *porque* tells the reader or the listener that the information conveyed by the two clauses is causally related to each other (cf. Mills and Just (1994)). Similar studies (Knott (1994), Knott and Sanders (1998), Stevenson *et al.* (2000) and Morais (2006)) prove that cue phrases, namely connectives and conjunctions, constitute important markers of discursive relations and facilitate the processing of sentences.

Contrasting with *porque* ('because), the connector *quando* ('when'), apart from the information of temporal localisation, does not convey any other information that can give the reader cues on how to link rhetorically the two situations represented by the two clauses. Compare example (415) to (416).

(416) Quando o João caiu, tropeçou no cabo da televisão.
When the João fell, tripped over-the cable of-the television.
When João fell, he tripped over the television cable.

While, in (415), *porque* ('because') indicates that a cause or reason is going to be introduced, in (416), *quando* ('when') does not codify any causal or other semantic information, besides the one related to its locating function. Nonetheless, one can infer a relation of meaning between the situation of the main clause and that of the subordinate clause. The difference is that we must rely on other information sources such as the lexicon, temporal organisation and our world knowledge so that we can infer the correct rhetorical relation, as we will show in the next section.

In sum, the connector *quando* is underspecified because its lexical meaning does not integrate any information as to temporal and rhetorical features. As a consequence, the sentences with clauses introduced by *quando* can establish different temporal and rhetorical relations.

4.3.1.3. Rhetorical relations

4.3.1.3.1. Content level rhetorical relations

The rhetorical underspecification of *quando* enables the presence of different rhetorical relations in sentences with this connector. The analysis of examples (378)-(383), repeated here as (417)-(422), will illustrate this assertion.

(417) Quando o João acordou, tomou banho.
When João woke up, he took a bath.

(418) Quando o João tropeçou no cabo da televisão, caiu.
When João tripped over the television cable, he fell.

(419) Quando o João caiu, tropeçou no cabo da televisão.
When João fell, he tripped over the television cable.

(420) Quando a Helena viajou para Londres, reservou o voo pela Internet.
When Helena travelled to London, she booked the flight on the Internet.

(421) Quando a Maria fez a tarte de maçã, descascou as maçãs.
When Maria made an apple pie, she peeled the apples.

(422) Quando a Maria abanou o Pedro, foi agressiva.
When Maria shook Pedro, she was aggressive.

In order to establish a rhetorical link between the two situations represented in each sentence, we must recall the meaning postulates of the rhetorical relations proposed by Asher and Lascarides (2003) and exposed in chapter 3, section 3.2.5.[31]. For the sake of convenience, we will repeat in table 46 the definitions of the content rhetorical relations[32].

[31] Cf. pages 205 and 206 of this work.
[32] This list of rhetorical relations is only a starting point for the analysis of the examples. Although in the representation of the data with time clauses we will use them as defined by the authors, some will be added to the list and others will be reformulated later on.

Rhetorical Relations	Definition
Alternation(α, β)	R equivalent to *or*. (w, f)[[Alternation(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha \vee K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g)) R is scalar.
Background(α, β)	R holds whenever one constituent provides information about the surrounding state of affairs in which the eventuality mentioned in the other constituent occurred. The arguments of R share the same topic. Temporal Consequence: ØBackground(α, β)⇒overlap(e_α, e_β) R is sensitive to aspectual classes. R is scalar.
Consequence(α, β)	R corresponds to dynamic ⇒. (w, f)[[Consequence(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha \Rightarrow K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g))
Continuation(α, β)	R like narration but without the spatio-temporal consequences. R subjected to the topic constraint.
Def-Consequence(α, β)	R stands for defeasible consequence. (w, f)[[Def-Consequence(α, β)]]$_M$(w', g) iff (w, f) [[$K_\alpha > K_\beta$]]$_M$ (w', g) (and hence (w, f) = (w', g))
Elaboration(α, β)	R holds when the eventualities of the second argument are a mereological part of its first argument. R is transitive. Temporal consequence: ØElaboration(α, β)⇒Part-of(e_β,e_α)
Explanation(α, β)	R is the dual to result. Temporal consequence: (a) ØExplanation(α, β)⇒($\neg e_\alpha \prec e_\beta$) (b) ØExplanation(α, β)⇒(event(e_β)⇒$e_\beta \prec e_\alpha$)
Narration(α, β)	R holds if the constituents express eventualities that occur in the sequence in which they were described. α and β share a contingent common topic, and the more informative the topic, the better the narration (hence, narration is scalar). Spatiotemporal Consequence of Narration: ØNarration(α, β)⇒overlap(prestate(e_β), Adv_β (poststate(e_α))), i.e., where things are in space and time at the end of e_α is where they are at the beginning of e_β.
Result(α, β)	R connects a cause to its effect. ØResult(α, β)⇒cause(e_α e_β)

Table 46. Definitions of content rhetorical relations proposed by Asher and Lascarides (2003)

Bearing in mind the meaning postulates of the rhetorical relations in table 46, we can establish the rhetorical link between the two situations of the examples adduced above. In example (417), we interpret the two situations as describing João's actions and, hence, sharing the same topic. We locate the second situation, *João taking a bath*, as occurring after the first situation, *he waking up*. We observe that there is not any

causal relation between the two situations conveyed by the lexicon or our world knowledge. The only rhetorical relation that fits this description is Narration. In (418), the second situation also occurs after the first situation. However, information sources such as the lexicon (*tripping* and *falling*) and our world knowledge leads us to the conclusion that there is a causal link between the two situations, i.e., *João falling* is the effect of *João tripping over the television cable*. So, we can only infer the rhetorical relation of Result. In the next example, (419), the two situations are linked by a rhetorical relation that is dual to Result because the second situation constitutes the cause for the situation presented by the clause with *quando*. So, in this case, the two situations are related by Explanation[33]. In order to process example (421), different information sources are activated: the lexicon and world knowledge tell us that the two situations have a strong semantic relation and that the second situation is a part of the first situation, which means that temporally it is included in the first situation. These conditions satisfy the meaning postulates of Elaboration. In (422), the situation *being aggressive* overlaps the situation of *Maria shaking Pedro* and sets the scenario in which this last situation takes place. These meaning postulates correspond to the rhetorical relation Background[34].

Example (420) is the last to be examined because it raises some problems regarding the rhetorical link between the situations represented. Like example (419), the relation between the situations is of anteriority, which seems to be the most marked of the three possible temporal relations. In fact, the relation of anteriority in sequences with the *Pretérito Perfeito* seems to be highly dependent on lexical information and our world knowledge. Notice that in a sentence such as (423a.), if we alter the representation of the situations as in (423b.), the temporal relation of successivity does not change to a temporal relation of anteriority.

[33] The meaning postulates, including the temporal consequences, of Result and Explanation will be object of reformulation in the section 4.4. and 4.8., motivated by the data. In a nutshell, we will propose that both rhetorical relations do not have any temporal consequences and the temporal link is unveiled by their combination with other rhetorical relations as Narration, Background or Inverted Narration. In examples (418) and (419), we will say that, in addition to Result and Explanation, we also infer two other rhetorical relations, Narration and Inverted Narration, which allow us to explain the temporal relations.

[34] In this sentence, we can also interpret the state of the main clause as being linked to the situation of the subordinate clause by a rhetorical relation of Elaboration, in which case there is an inclusion temporal relation of the event in the state.

(423) a. Quando a Maria almoçou, saiu.
When the Maria lunched, left.
When Maria lunched, she left.

b. Quando a Maria saiu, almoçou.
When the Maria left, lunched.
When Maria left, she lunched.

In (423b.), since there is not any lexical information or world knowledge that imposes a temporal relation according to which the situation *Maria lunching* is located before the situation *Maria leaving*, the interpretation by default is the one in which the second situation in the linear order occurs after the first. The same is not true for (424), for instance.

(424) a. Quando o Rui comprou a casa, pediu um empréstimo ao banco.
When Rui bought the house, he asked for a loan to the bank.

b. Quando o Rui pediu um empréstimo ao banco, comprou a casa.
When Rui asked for a loan to the bank, he bought the house.

In this case, the lexical information and our world knowledge tell us that normally *asking for a loan* precedes the purchase of the house. So, when we alter the placement of the situations, as in (424b.), *asking for a loan* is also located before *buying the house*.

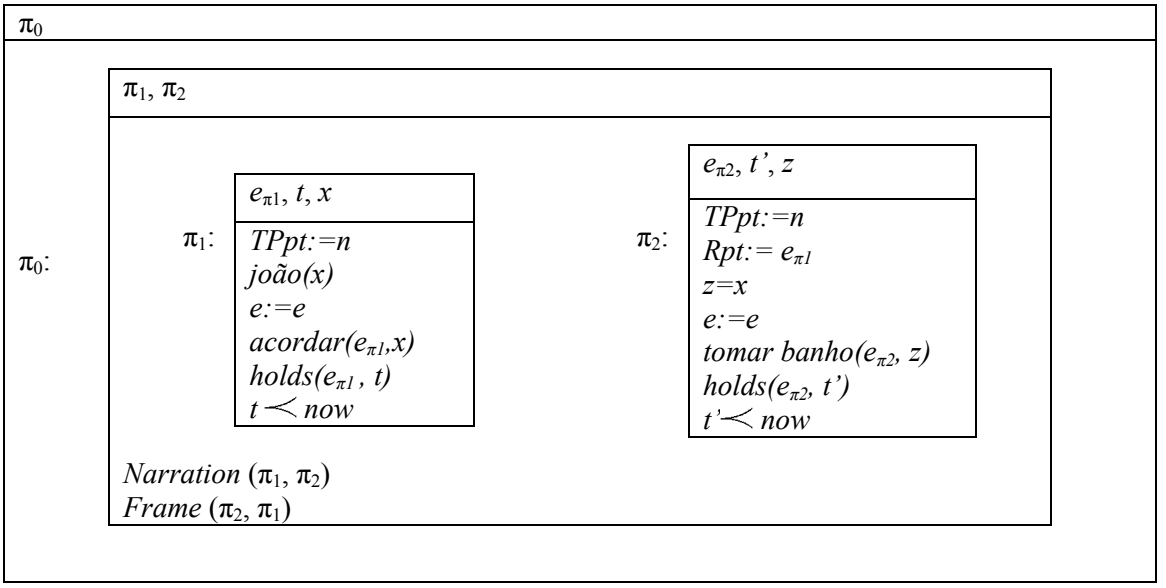
The only rhetorical relation that includes as its premise a relation of anteriority between the situations as the one observed in example (420) is Explanation. Nevertheless, in this example, we cannot interpret *Helena booking a flight on the Internet* as the cause for *her to travel to London*. In fact, as proposed in Cunha and Silvano (2003), both main clauses in (420) and (424a) describe acts that must be carried out in order to the situations represented by the *when*-clauses be fulfilled. Cunha and Silvano (2003) name this rhetorical relation Necessary Condition, but, here, we will be using the term Requirement, because the term Necessary Condition can be confused with the link in some types of conditional clauses. Following the same procedure used for the other rhetorical relations, we present the meaning postulates of Requirement on table 47.

Rhetorical Relation	Definition
Requirement (α, β)	R holds whenever the relevant constituent describes procedures which are required for the fulfilment of the situation described by the first constituent. Temporal Consequence: ØRequirement(α, β)⇒ $e_\beta \prec e_\alpha$

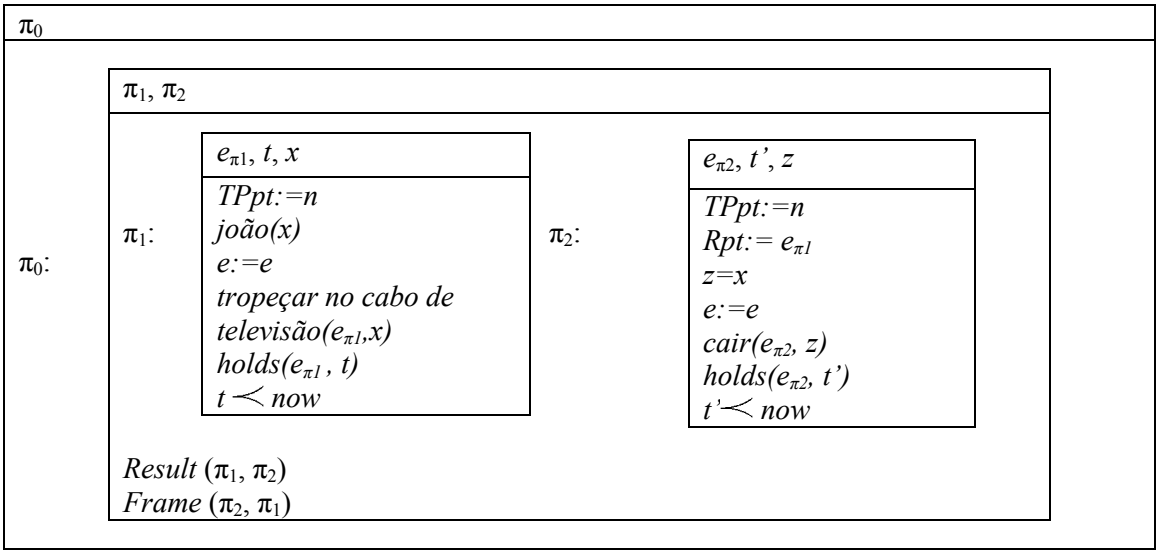
Table 47. Definition of the rhetorical relations Requirement

SDRSs (417a), (418a), (419a), (420a), (421a) and (422a) represent the semantic analysis for each example.

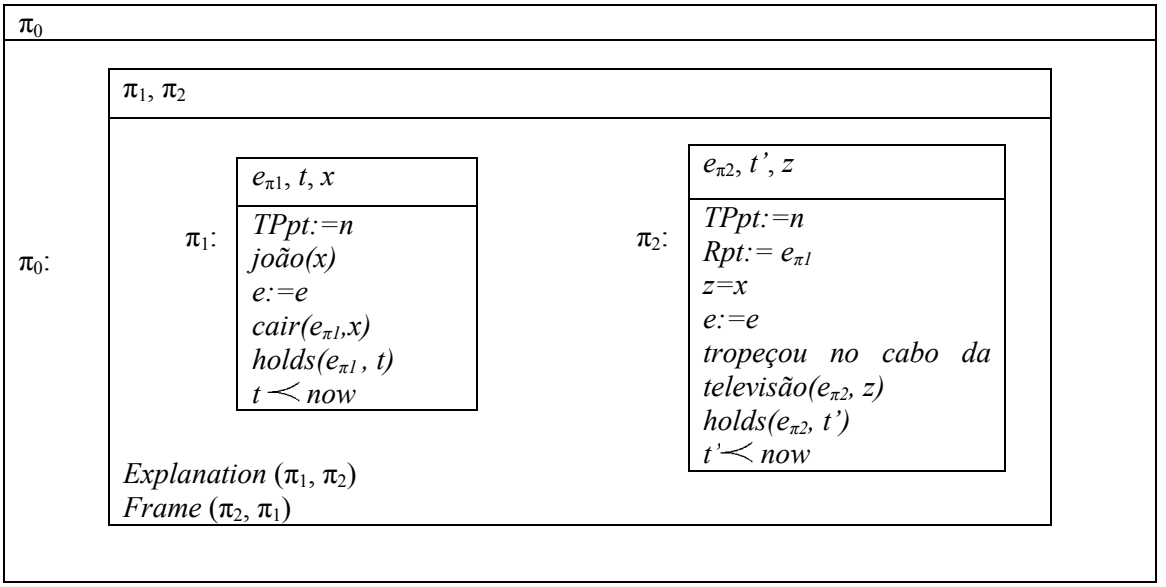
(417a)



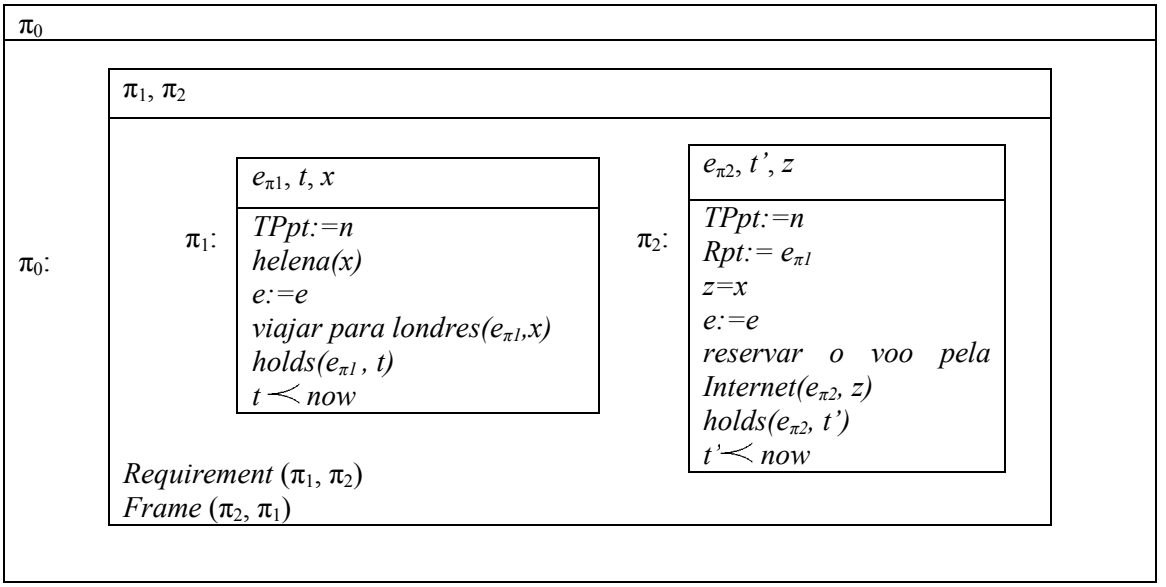
(418a)


π_0
π_1, π_2
π_0:
π_1:
$e_{\pi1}, t, x$
TPpt:=n
joão(x)
e:=e
tropeçar no cabo de televisão($e_{\pi1}$,x)
holds($e_{\pi1}$, t)
$t \prec now$
π_2:
$e_{\pi2}, t', z$
TPpt:=n
Rpt:= $e_{\pi1}$
z=x
e:=e
cair($e_{\pi2}$, z)
holds($e_{\pi2}$, t')
$t' \prec now$
Result (π_1, π_2)
Frame (π_2, π_1)

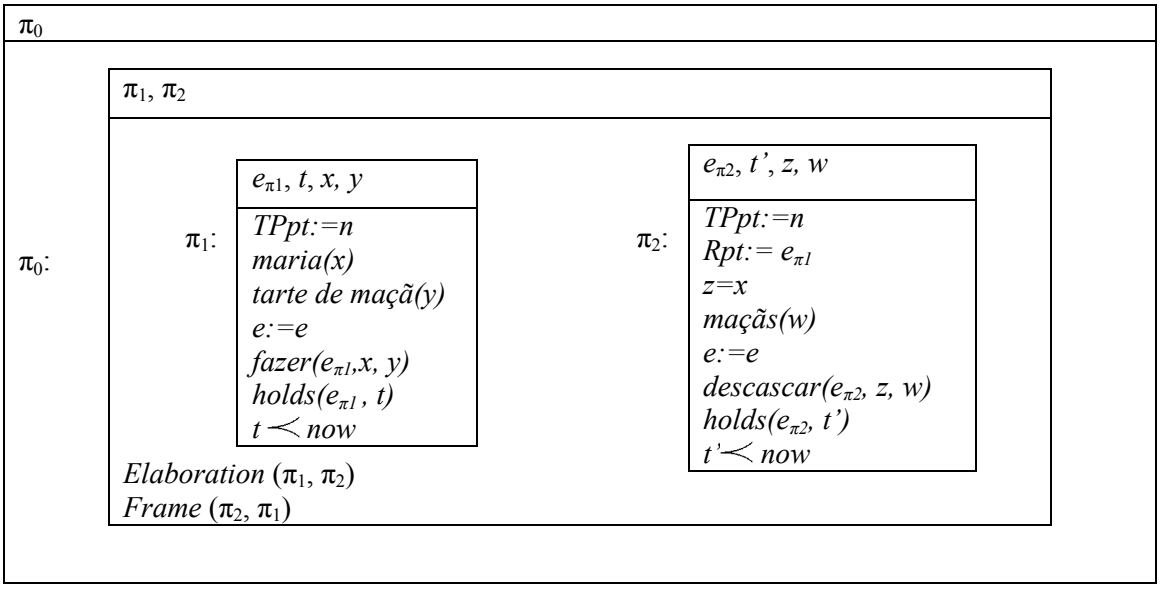
(419a)


π_0
π_1, π_2
π_0:
π_1:
$e_{\pi1}, t, x$
TPpt:=n
joão(x)
e:=e
cair($e_{\pi1}$,x)
holds($e_{\pi1}$, t)
$t \prec now$
π_2:
$e_{\pi2}, t', z$
TPpt:=n
Rpt:= $e_{\pi1}$
z=x
e:=e
tropeçou no cabo da televisão($e_{\pi2}$, z)
holds($e_{\pi2}$, t')
$t' \prec now$
Explanation (π_1, π_2)
Frame (π_2, π_1)

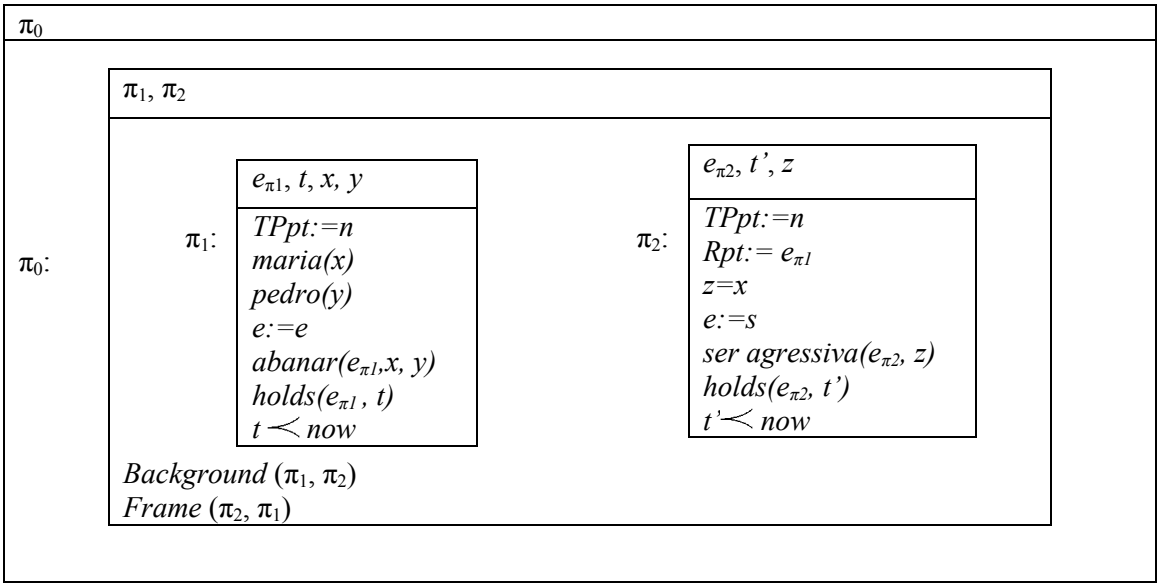
(420a)


π0
π1, π2
π0:
π1:
eπ1, t, x
TPpt:=n
helena(x)
e:=e
viajar para londres(eπ1,x)
holds(eπ1 , t)
t ≺ now
π2:
eπ2, t', z
TPpt:=n
Rpt:= eπ1
z=x
e:=e
reservar o voo pela Internet(eπ2, z)
holds(eπ2, t')
t'≺ now
Requirement (π1, π2)
Frame (π2, π1)

(421a)


π0
π1, π2
π0:
π1:
eπ1, t, x, y
TPpt:=n
maria(x)
tarte de maçã(y)
e:=e
fazer(eπ1,x, y)
holds(eπ1 , t)
t ≺ now
π2:
eπ2, t', z, w
TPpt:=n
Rpt:= eπ1
z=x
maçãs(w)
e:=e
descascar(eπ2, z, w)
holds(eπ2, t')
t'≺ now
Elaboration (π1, π2)
Frame (π2, π1)

(422a)



Other tense combinations can give rise to the same rhetorical relations or different. For instance, in example (372b) repeated here as (425), in which the *Futuro do Conjuntivo* is combined with the *Futuro/ Presente*, the rhetorical relation is, as in example (418), Result, since the *traffic improving* is an effect of *building the tunnel*. However, this tense combination can also convey a relation of Narration, as in (426), or of Elaboration, as in (427).

(425) Quando construírem o túnel, o trânsito vai melhorar/ melhora.
When they build the tunnel, the traffic is going to improve/ improves.

(426) Quando o João acordar, vai tomar/ toma banho.
When the João wake-up, is-going to-take/take bath.
When João wakes up, he is going to take/ takes a bath.

(427) Quando a Maria fizer a tarte de maçã, vai descascar/ descasca as maçãs.
When Maria make a pie of apple, is-going to-peel/ peels the apples.
When Maria makes an apple pie, she is going to peel/ peels the apples.

In these examples, the temporal relation between the two situations is of posteriority in the first two examples and inclusion in the last example. As far as temporal characterisation, the difference resides on the relation between the TPpt and the location time of the situations. So, instead of the SDRS condition $t \prec now$, we will have the condition $t \succ now$.

The combination of the *Pretérito Perfeito* with the *Pretérito Imperfeito* is more restrictive as to the rhetorical relations that can be inferred due to the aspectual features of the *Pretérito Imperfeito*. This tense can assign a stative reading to the situations with which occurs and thus represents them as durative and without any initial or final boundaries. Therefore, the most likely temporal interpretation in sequences with situations in the *Pretérito Perfeito* is of inclusion of the latter in the states represented by the *Pretérito Imperfeito*. The range of rhetorical relations that can be found in such contexts diminishes greatly when compared with sequences of *Pretéritos Perfeitos*, for instance. On the other hand, it enables more easily a rhetorical relation that cannot be observed so frequently in combinations of *Pretéritos Perfeitos*. The sentence in (370b), repeated here as (428), constitutes an example of such a rhetorical relation. In this case, the second situation includes the first situation. Furthermore, *Maria having a bath* describes the scenario in which the situation the *phone ringing* took place. According to table 46, these meaning postulates correspond to Background.

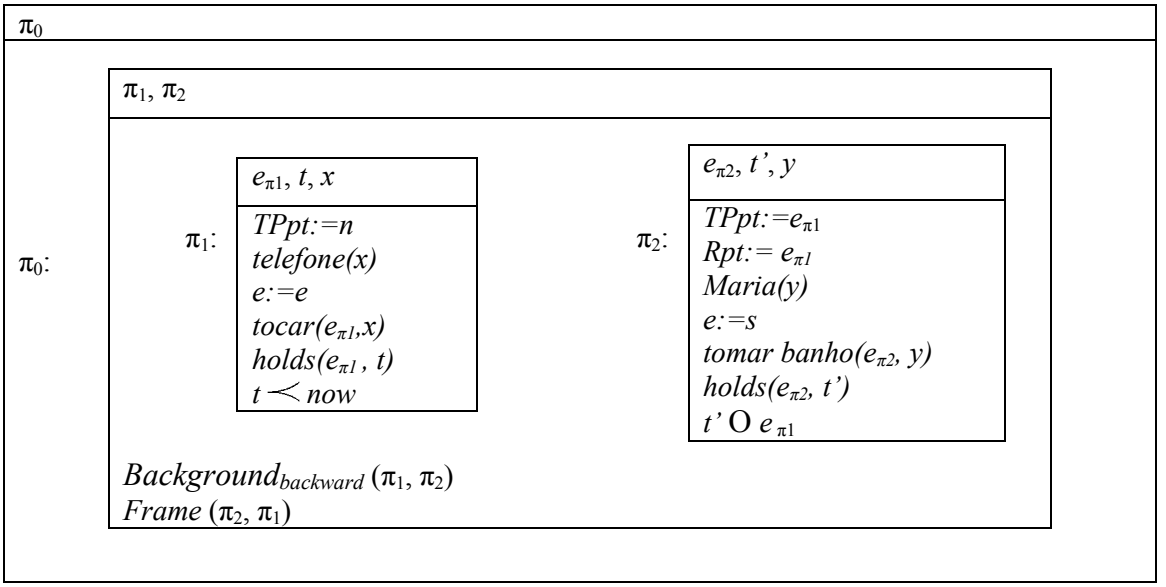
(428) Quando o telefone tocou, a Maria tomava banho.
When the phone rang, Maria was having a bath.

It should be noticed, however, that the type of Background illustrated by (428) differs from the one presented in (429).

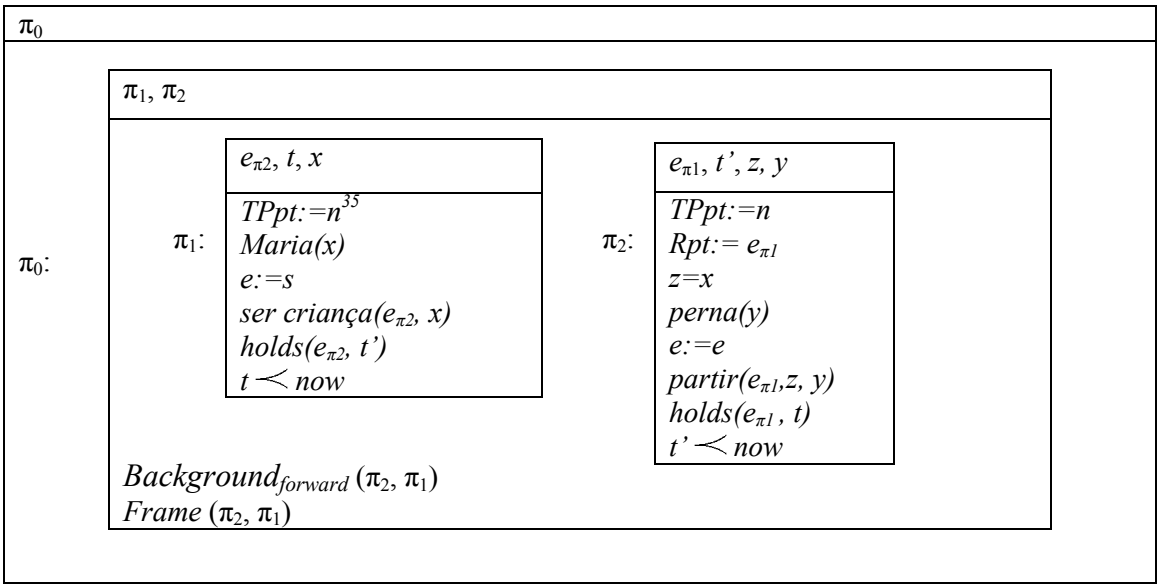
(429) Quando a Maria era criança, partiu uma perna.
When Maria was a child, she broke a leg.

In (428), it is the last situation that establishes the surroundings for the first situation, whereas, in (429), it is the first situation that sets the scenario for the last situation. As already pointed out in chapter 3, note 24, this difference is captured by the distinction between two Backgrounds, $\text{Background}_{\text{backward}}$ and $\text{Background}_{\text{forward}}$. In (428), the two situations are related by a relation of $\text{Background}_{\text{backward}}$ and in (429) by the relation of $\text{Background}_{\text{forward}}$. The SDRSs for each example is represented in (428a) and (429a), respectively.

(428a)



(429a)



[35] In this example, the use of the *Pretérito Imperfeito* is viable because it represents an individual level predicate, as already observed in chapter 2, pages 122-123. In this case, we can interpret the situation represented by the *Pretérito Imperfeito* as having as TPpt the utterance time and as establishing with it a relation of anteriority. The same is true for habitual states. With other types of states and with events in the *when*-clause, the *Pretérito Imperfeito* would result ungrammatical because it would require a previous time interval or situation to be the TPpt. The same observation is valid for the *Pretérito-mais-que-perfeito*, which results ungrammatical in the clause with *quando* since there is not an available time interval to be the TPpt.

Although the two examples under scrutiny use the same verb tenses, and since the main clause is the one to be linked to the subordinate clause, only in (428) is there temporal subordination. Condition *TPpt:*= $e_{\pi 1}$ in SDRS (428a) represents this feature, by contrast to the condition *TPpt:*= *n* in SDRS (429a), which means that the situation of the main clause creates a new temporal domain and it is not temporally subordinated to the situation of the subordinate clause. The temporal relation between the situations' location time and the TPpt is also different, as described by the conditions *t' O* $e_{\pi 1}$ and *t'* $\prec$ *now*, respectively.

The combination of the *Pretérito Perfeito* with the *Pretérito-mais-que-perfeito* in the main clause also limits the rhetorical relations that can occur because the latter imposes a temporal relation of anteriority, which narrows down the choices in the process of inference. Example (371b), repeated here as (430), was presented earlier as an instance of the tenses' combination.

(430) Quando o João chegou, a Maria tinha saído.
When João arrived, Maria had left.

In the processing of the second clause, we relate its topic to the one of the first clause, *what Maria did*; we establish a relation of anteriority between the two situations; but we do not encounter any causal link between the two. So, it cannot be Explanation since the second situation is not the cause for the first situation or Narration because the temporal relation is not temporal successivity. Once again, the list of rhetorical relations put forward by Asher and Lascarides, or for that matter, the lists by the other authors revised in chapter 3, do not include a rhetorical relation which can properly represent the discursive link between the two situations in question.

A closer look at the example allows us to observe that if the *Pretérito-mais-que-perfeito* was replaced by the *Pretérito Perfeito*, like in (431), we would infer a relation of Narration.

(431) Quando o João chegou, a Maria saiu.
When João arrived, Maria had left.

As a matter of fact, the two situations in (430) are linked by Narration, but in an inverted temporal order. For this reason, following Cunha, Leal and Silvano (2006;

2008), we will name this rhetorical relation Inverted Narration[36]. Its definition is presented in table 48.

Rhetorical Relation	Definition
Inverted Narration (α, β)	R holds if the constituents express eventualities that occur in the inverted sequence in which they are described. α and β share a contingent common topic, and the more informative the topic, the better the narration. Spatiotemporal Consequence of Narration: ØInverted Narration(α, β)⇒overlap(prestate(e_α), (poststate(e_β))), i.e., where things are in space and time at the end of e_β is where they are at the beginning of e_α.

Table 48. Definition of the rhetorical relation Inverted Narration

We have seen that in example (430) there was not a strong causal relation between the two situations that would license the inference of the rhetorical relation of Explanation. The same is not true for example (432).

(432) Quando o Rui se sentiu mal, tinha comido três hambúrgueres.
When the Rui himself felt unwell, had eaten three hamburgers.
When Rui felt unwell, he had eaten three hamburgers.

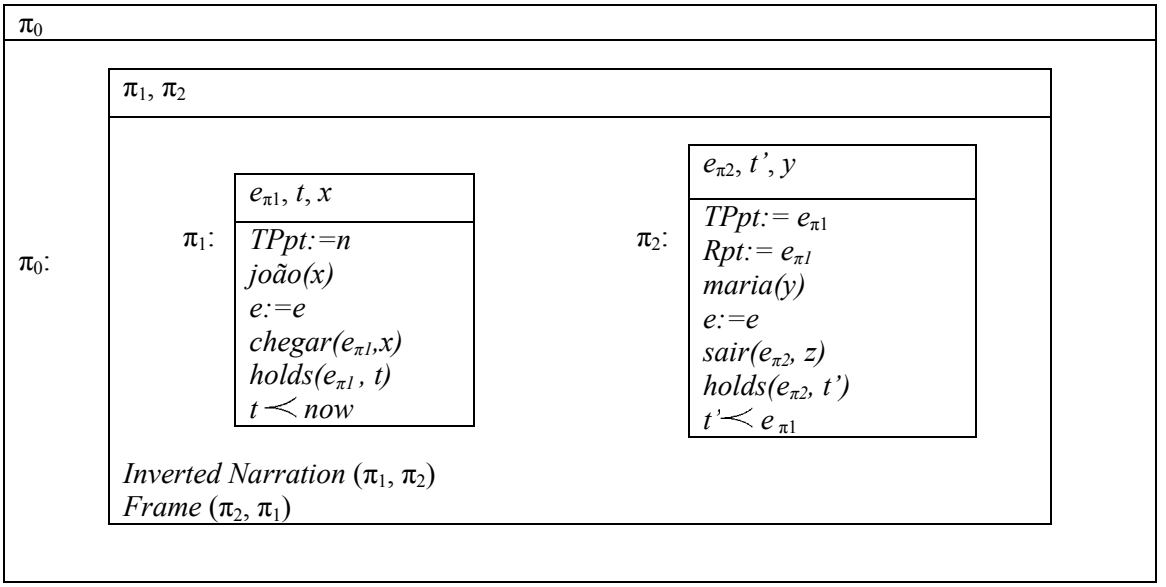
In this example, the lexicon and our world knowledge allow us to establish a relation of cause-effect between *eating three hamburgers* and *feeling unwell*. Since the situation of the main clause is represented by the *Pretérito-mais-que-perfeito* and the situation of the subordinate clause by the *Pretérito Perfeito* the temporal relation is necessarily of anteriority[37]. These conditions lead the reader to link the two situations with Explanation.

[36] Alves (2003: 272-281) proposes the same rhetorical relation, but with a different name, Retro-Narration, to describe the rhetorical link in a sequence of independent sentences in which the last one includes the temporal adverbial *antes* ('before'). Móia and Viotti (2004: 722) use this term to describe a rhetorical relation in examples of complex sentences with Gerund Perfect. Cunha, Leal and Silvano (2006; 2008) adopt the designation *Inverted Narration* to analyse sentences with the Perfect Gerund. We will follow the latter because the term is more transparent.

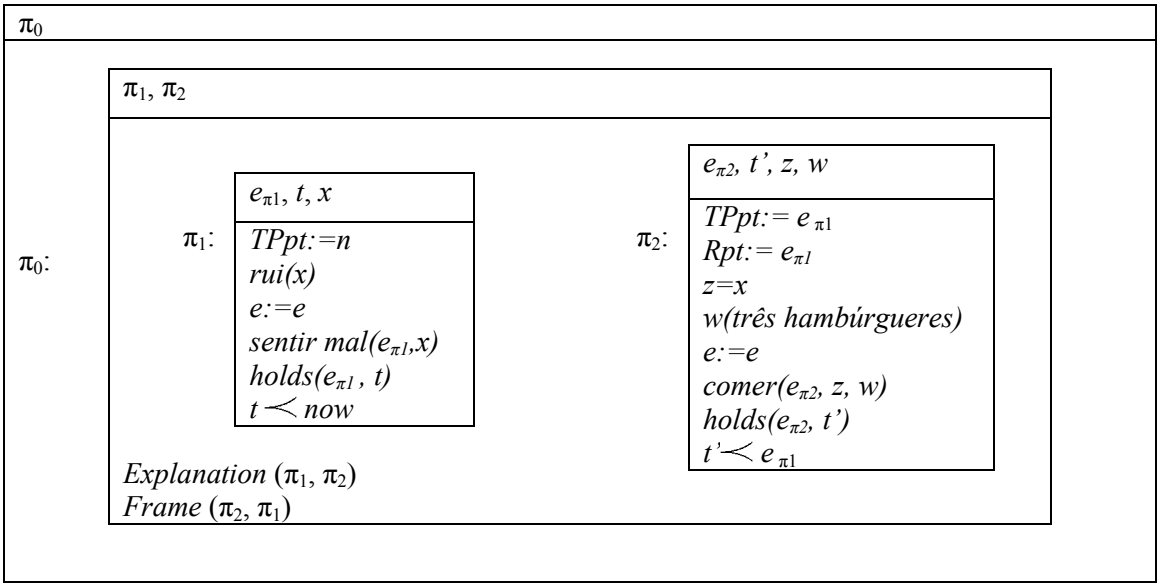
[37] If we assume in this example that the *Pretérito-mais-que-perfeito* has a resultative reading, the temporal and rhetorical relations are different than the ones we have just defined. If we focus on the result state of the situation of the main clause, then we interpret the situation *Rui feeling unwell* as occurring in the result state of *eating three hamburgers*, which means that the temporal relation with the result state is of inclusion or (partial) overlapping. The change of the temporal relation, in this case, means that the rhetorical relation cannot be the same. In point of fact, in this interpretation the situation represented by the main clause sets the scenario for the situation in the subordinate clause and we infer the relation

SDRs (430a) and (432a) include the missing conditions to complete the temporal and rhetorical analysis of examples (430) and (432), respectively.

(430a)



(432a)



In both examples, the second situation is integrated in the temporal domain created by the first subordination (cf. in both SDRS condition *TPpt:= e* $_{\pi 1}$), which means that there is temporal subordination.

Background. However, we adopt the analysis of the *Pretérito-mais-que-perfeito* as focusing on the event and not on the result state (cf. chapter 2, pages 126-131 for the reasons of this analysis).

To sum up, in sentences with adverbial clauses introduced by *quando*:

(i) the same sequence of verb tenses can represent eventive situations linked by different rhetorical relations;

(ii) one can infer the rhetorical relations Narration, Inverted Narration, $\text{Background}_{\text{backward}}$, $\text{Background}_{\text{forward}}$, Explanation, Result and Requirement at the content level.

4.3.1.3.2. Text structuring rhetorical relations

In the data we have been observing, the subordinate clause is always fronted. If we observe some of those examples with the opposite order in (433)-(439), we verify, nonetheless, that the rhetorical relations at the content level do not change. This is so because, in spite of the linear order and due to their semantics, the subordinate clause must be interpreted first and, so, it is the main clause that is linked rhetorically to the clause headed by *quando*, regardless of the linear order of discourse.

(433) O João tomou banho quando acordou. (**Narration**)
João took a bath when he woke up.

(434) O João caiu quando tropeçou no cabo da televisão. (**Resultado**)
João fell when he tripped over the television cable.

(435) O Rui pediu um empréstimo ao banco quando comprou a casa. (**Requirement**)
Rui asked for a loan to the bank when he bought the house.

(436) A Maria descascou as maçãs quando fez a tarte de maçã. (**Elaboration**)
Maria peeled the apples when she made an apple pie.

(437) A Maria tomava banho quando o telefone tocou. (**Background**)
Maria was having a bath when the phone rang.

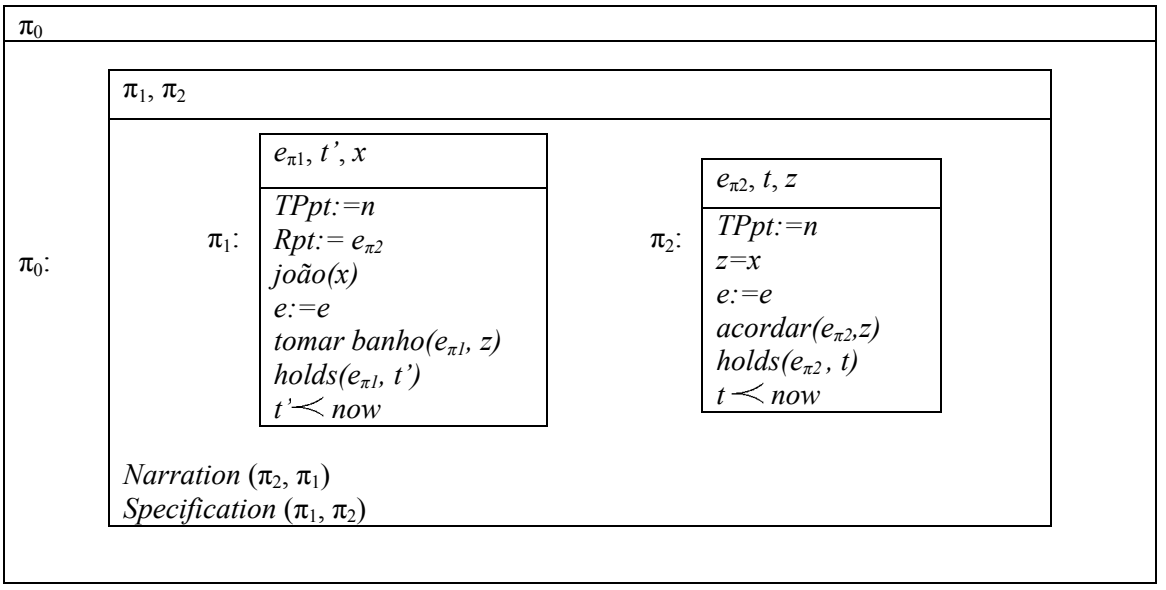
(438) A Maria tinha saído quando o João chegou. (**Inverted Narration**)
Maria had left when João arrived.

(439) O Rui tinha comido três hambúrgueres quando se sentiu mal. (**Explanation**)
Rui had eaten three hamburgers when he felt unwell.

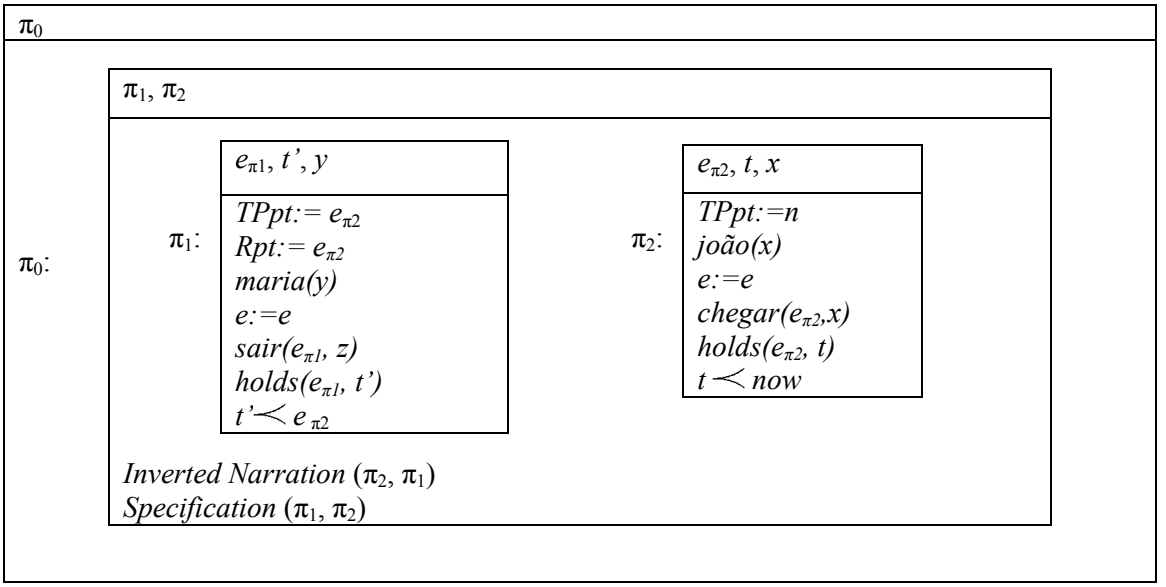
However, the placement of the clause with *quando* ('when') in a fronted or final position of the complex sentence imposes different interpretations as far as text structuring relations are concerned. While in the set of examples with the fronted subordinate clause examined in the previous sections, at a macro-structural level, the clause introduced by *quando* is framing the situation described by the main clause, in this second set of examples (433)-(439), the situation represented by the subordinate clause specifies or particularises on the situation of the main clause.

SDRSs (433a) and (438a) illustrate the representation of this type of configurations (cf. (433a) and (438a)).

(433a)



(438a)



To summarise, in sentences with adverbial clause headed by *quando*:

(i) the subordinate clause may occupy an initial or final position in the sentences;

(ii) the order of the clause does not imply any alteration of the rhetorical relations at the content level because it is always the main clause's situation to be linked to the subordinate clause's situation;

(iii) the order of the clauses has implication at the text structuring level: when the subordinate clause is in the initial position, the rhetorical relation is Frame and when it is in the final position, it is Specification;

(iv) the establishment of two levels of rhetorical relations enables us to encompass in the same analysis the different layers of their semantics.

4.3.1.4. The discursive mechanisms of complex sentences with *quando* and their non-complex counterparts

It has been suggested by many authors (cf. Matthiessen and Thompson (1988) and Cunha (2000), among others) that the same discursive mechanisms that are used in discourses with non-complex sentences are the same as the ones in complex sentences.

Nevertheless, as far as the sentences with *quando* are concerned, this observation is not entirely true.

If we commute the set of examples in a. into two non-complex sentences, as in b., in (440)-(446), we observe that the same rhetorical relations prevail in the strings of independent sentences.

(440) a. Quando o João acordou, tomou banho. (**Narration**)
When João woke up, he took a bath.
b. O João acordou. Tomou banho. (**Narration**)
João woke up. He took a bath.

(441) a. Quando o João tropeçou no cabo da televisão, caiu. (**Result**)
When João tripped over the television cable, he fell.
b. O João tropeçou no cabo da televisão. Caiu. (**Result**)
João tripped over the television cable. He fell.

(442) a. Quando o Rui comprou a casa, pediu um empréstimo ao banco. (**Requirement**)
When Rui bought the house, he asked for a loan to the bank.
b. O Rui comprou a casa. Pediu um empréstimo ao banco. (**Requirement**)
Rui bought the house. He asked for a loan to the bank.

(443) a. Quando a Maria fez a tarte de maçã, descascou as maçãs. **(Elaboration)**
When Maria made an apple pie, she peeled the apples.
b. A Maria fez a tarte de maçã. Descascou as maçãs. (**Elaboration**)
Maria made an apple pie. She peeled the apples.

(444) a. Quando o telefone tocou, a Maria tomava banho. **(Background$_{backward}$)**
When the phone rang, Maria was having a bath.
b. O telefone tocou. A Maria tomava banho. (**Background$_{backward}$**)
The phone rang. Maria was having a bath.

(445) a. Quando o João chegou, a Maria tinha saído. (**Inverted Narration**)
When João arrived, Maria had left.
b. O João chegou. A Maria tinha saído. (**Inverted Narration**)
João arrived. Maria had left.

(446) a. Quando o Rui se sentiu mal, tinha comido três hambúrgueres. **(Explanation)**
When Rui felt unwell, he had eaten three hamburgers.
b. O Rui sentiu-se mal. Tinha comido três hambúrgueres. (**Explanation**)
Rui felt unwell. He had eaten three hamburgers.

However, if we perform the same operation in configurations in which the subordinate clause occupies a final position, as in the version a. of examples (447)-(453), when interpreting their non-complex counterparts presented in b., we verify that for the most cases the rhetorical relations change.

(447) a. O João tomou banho quando acordou. (**Narration**)
João took a bath when he woke up.
b. O João tomou banho. Acordou (finalmente). (**Narration/ Result**)
João took a bath. He (finally) woke up.

(448) a. O João caiu quando tropeçou no cabo da televisão. (**Result**)
João fell when he tripped over the television cable.
b. O João caiu. Tropeçou no cabo da televisão. (**Explanation**)
João fell when he tripped over the television cable.

(449) a. O Rui pediu um empréstimo ao banco quando comprou a casa. (**Requirement**)
Rui asked for a loan to the bank when he bought the house.
b. O Rui pediu um empréstimo ao banco. Comprou a casa. (**Result**)
Rui asked for a loan to the bank. He bought the house.

(450) a. A Maria descascou as maçãs quando fez a tarte de maçã. **(Elaboration)**
Maria peeled the apples when she made an apple pie.
b. ?A Maria descascou as maçãs. Fez a tarte de maçã. (**Result**)
?Maria peeled the apples. She made an apple pie.

(451) a. A Maria tomava banho quando o telefone tocou. (**Background$_{backward}$**)
Maria was having a bath when the phone rang.
b. A Maria tomava banho. O telefone tocou. (**Background$_{forward}$**)
Maria was having a bath. The phone rang.

(452) a. A Maria tinha saído quando o João chegou. (**Inverted Narration**)
Maria had left when João arrived.
b. A Maria tinha saído. O João chegou. (**Narration**)
Maria had left. João arrived.

(453) a. O Rui tinha comido três hambúrgueres quando se sentiu mal. (**Explanation**)
Rui had eaten three hamburgers when he felt unwell.
b. O Rui tinha comido três hambúrgueres. Sentiu-se mal. (**Result**)
Rui had eaten three hamburgers. He felt unwell.

As we have already seen, in sentences with time clauses, the first clause to be interpreted is the subordinate clause (due to its locating function) and then we interpret

the main clause. Since the rhetorical relation is established from the last interpreted clause to the first, then, the rhetorical relation is always established from the main clause to the subordinate time clause. The discrepancy observed regarding the behaviour of the non-complex counterparts of sentences with *quando* in the initial and final position constitutes evidence of the semantic role of the time clauses. In fact, the absence of the connector *quando* and, consequently, of a situation whose function is locating another situation, removes the constraint of having to interpret the situation of the main clause in relation to the situation of the subordinate clause. As such, the situations represented by the two non-complex sentences are interpreted according to their linear order, that is, the second situation in the linear order is linked rhetorically to the first one. When the linear order of the situations changes, the rhetorical relations also change, because the temporal organisation is different. For instance, in (448b), the second sentence represents a situation that, according to our information sources (semantics, world knowledge), occurs before the situation described by the first sentence and constitutes a cause for the consequence of *falling* (hence, Explanation). In (448a), since it is the situation of the main clause that is linked to the situation of the subordinate clause, the situation of *falling* occurs after the situation of *tripping over the cable television* as a consequence (hence, Result). The different temporal orderings determine different content level rhetorical relations.

In the set of non-complex sentences, the same text structuring rhetorical relations cannot be inferred because there is not any subordinate clause that frames or particularises the situation of the other clause.

All in all, in spite of the fact that the sentences with clauses introduced by *quando* (and other time clauses, as we will demonstrate) exhibit the same behaviour as their non-complex counterparts regarding the discursive mechanisms when the directionality of interpretation matches the linear order, the analysis of the data reveals that they have certain discursive specificities which result from their semantic features, namely their function as locating adverbials.

4.3.2. Sentences with clauses introduced by *antes de* and *depois de*

The time clauses which will be object of analysis in this section are the ones that introduced by the phrases *antes*/ *depois de* and that are followed by the *Infinitivo* ('Infinitive').

Both connectors are responsible for the temporal organisation of the situations represented in the sentence, contrary to *quando* ('when'), which, as we have argued, does not determine the temporal relations between the situations. Nonetheless, as we have already pointed out in chapter 1, section 1.3.1.1.[38], sentences with *depois de* may convey a different temporal relation, depending on the aspectual class of the situation it represents.

Since they influence the temporal ordering and since the temporal features are an important source of information in the process of inference of the rhetorical relations, then we expect that the connectors act as relevant cue-phrases associated with certain rhetorical relations.

4.3.2.1. Temporal and some aspectual features

4.3.2.1.1. *antes de* and *depois de + Infinitivo*

The clauses introduced by *antes de* can be represented by the *Infinitivo* ('Infinitivo'). Examples from (454) to (473) illustrate some of the possible tenses' combinations within different aspectual classes' sequences.

(454) Antes de fazer o trabalho de casa, o João brincou.
Before of do the work of house, the João played.
Before doing the homework, João played.

(455) Antes de viajar, o João esteve doente.
Before of travel, the João was sick.
Before travelling, João was sick.

[38] Cf. pages 41-44.

(456) Antes de ser professor, o João trabalhou numa biblioteca.
Before of be teacher, the João worked in-a library.
Before being a teacher, João worked in a library.

(457) Antes de ser professor, o João foi bibliotecário.
Before of be teacher, the João was librarian.
Before being a teacher, João was a librarian.

(458) Antes de fazer o trabalho de casa, o João tinha brincado.
Before of do the work of house, the João had played.
Before doing the homework, João had played.

(459) Antes de viajar, o João tinha estado doente.
Before of travel, the João had been sick.
Before travelling, João had been sick.

(460) Antes de ser professor, o João tinha trabalhado numa biblioteca.
Before of be teacher, the João had worked in-a library.
Before being a teacher, João had worked in a library.

(461) Antes de ser professor, o João tinha sido bibliotecário.
Before of be teacher, the João had been librarian.
Before being a teacher, João had been a librarian.

(462) Antes de fazer o trabalho de casa, o João vai brincar.
Before of do the work of house, the João is-going to-play.
Before doing the homework, João is going to play.

(463) Antes de ir para o hospital, o João vai estar muito ansioso.
Before of go to the hospital, the João is going to-be very anxious.
Before going to the hospital, João is going to be very anxious.

(464) Antes de ser professor, o João vai trabalhar numa biblioteca.
Before of be teacher, the João is going to-work in-a library.
Before being a teacher, João is going to work in a library.

(465) Antes de ser professor, o João vai ser bibliotecário.
Before of be teacher, the João is going to-be librarian.
Before being a teacher, João is going to be a librarian.

(466) Antes de fazer o trabalho de casa, o João brincava.
Before of do the work of house, the João played.
Before doing the homework, João played(Imp).

(467) Antes de ir para a faculdade, o João era muito tímido.
Before of go to the university, the João was very shy.
Before going to college, João was(Imp) very shy.

(468) Antes de ser professor, o João trabalhava numa biblioteca.
Before of be teacher, the João worked in-a library.
Before being a teacher, João worked(Imp) in a library.

(469) Antes de ser professor, o João era bibliotecário.
Before of be teacher, the João was librarian.
Before being a teacher, João was(Imp) a librarian.

(470) Antes de fazer o trabalho de casa, o João brinca.
Before of do the work of house, the João plays.
Before doing the homework, João plays.

(471) Antes de viajar de avião, o João sente-se muito nervoso.
Before of travel of plane, the João feels very nervous.
Before travelling by plane, João feels very nervous.

(472) Antes de ser professor, o João trabalha numa biblioteca.
Before of be teacher, the João works in-a library.
Before being a teacher, João works in a library.

(473) Antes de ser professor, o João é bibliotecário.
Before of be teacher, the João is librarian.
Before being a teacher, João is a librarian.

The examples show that the *Infinitivo* is compatible with different verb tenses: the *Pretérito Perfeito* (cf. (454)-(457)), the *Pretérito-mais-que-perfeito* (cf. (458)-(461)), the *Future* or verb phrases with a future interpretation such as the one composed of the verb *ir* ('to go') followed by the *Infinitivo* (cf. (462)-(465)), the *Pretérito Imperfeito* (cf. (466)-(469)) and the *Presente* ((470)-(473)).

The examples adduced above reveal that the sentences with clauses introduced by *antes de* can combine two events (cf. (454), (458), (462), (466) and (470)), one event and one state (cf. (455), (459), (463), (467) and (471)), one state and one event (cf. (456), (460), (464), (468) and (472)) and two states (cf. (457), (461), (465), (469) and (473)).

The use of the *Infinitivo* in the subordinate clause raises some problems concerning the temporal characterisation of the situation and its representation in the SDRS. In the literature, the *Infinitivo* is normally characterised as having no temporal features (cf. Mateus *et al* (1989); Lluïsa Hernanz (1999), for instance) because by itself it does not carry any temporal information that allows the reader to locate the situation that it describes. However, this description is not true for all the occurrences of the

Infinitivo. Cunha and Silvano (2006; 2008) argue in favour of the existence of temporal features in the *Infinitivo* when it occurs in infinitive clauses selected by more or less neutral verbs such as *dizer* ('say') or *afirmar* ('state'). The central argument for this claim is that, when the verb which selects the infinitive clause is itself neutral regarding the localisation of the situation of the subordinate clause, it is possible to assign a specific temporal localisation to that situation (cf. (474)-(476) from Cunha and Silvano (2006: 308)).

(474) O terrorista afirmou transportar consigo uma bomba-relógio. (overlapping)
The terrorist stated transport(Inf) with him a bomb-time.
The terrorist stated that he transported with him a time-bomb.

(475) Uma testemunha afirmou ter visto um indivíduo armado a disparar. (anteriority)
A witness stated have seen an individual armed shooting.
A witness stated having seen an armed individual shooting.

(476) O suspeito disse ir comprar o estupefaciente em Lisboa. (posteriority)
The suspect said go buy the drug in Lisbon.
The suspect said he would go buy the drug in Lisbon.

(Cunha and Silvano (2006: 308))

In these cases, the situation of the subordinate clause can only be located due to the information conveyed by the *Infinitivo*. If the *Infinitivo* had not temporal features in these configurations, in (474) the situation *transportar consigo uma bomba-relógio* could be located in any time interval (anterior, overlapping, posterior), as a result of the neutral profile of the verb *afirmar* ('state'). So the authors propose that, contrary to finite tenses, which, as suggested by Kamp and Reyle (1993), determine the choice of a time interval as the situation's TPpt and locate the situation in relation to that TPpt, the *Infinitivo* is temporally defective because it is not able to perform the second task. In other words, the *Infinitivo* would be capable of establishing a relation between the situation it represents and the respective TPpt, which would always be the matrix verb.

The question we must address now is whether the *Infinitivo* in sentences with *antes de* and *depois de* can receive the same analysis, i.e., if it has also temporal features as in the infinitive clauses selected by neutral verbs. The first problem we encounter

concerns the syntactic configuration in which the *Infinitivo* occurs. The different nature of the syntactic subordination carries implications as far as the semantic treatment is concerned. While in the infinitive clause selected by verbs the Infinitive is dependent (syntactically and semantically) of the matrix verb, in infinitive time clauses under analysis, although the situation introduced by *antes de* or *depois de* is syntactically dependent of the situation represented by the main clause, semantically it is the situation of the main clause that depends on the situation of the subordinate clause to be located. This means that, contrary to the infinitive clauses selected by neutral verbs, the clauses with *antes de* and *depois de* cannot select as TPpt the time interval occupied by the situation with which they occur. In the absence of such a time interval, and because we are investigating these sentences without any preceding text, there is not any time interval with the role of TPpt.

Moreover, the observation of the examples presented in (454)-(473) reveals that the situations represented by the *Infinitivo* in the time clause can be located in a past, future or present time spheres depending on the verb tense that is used in the main clause: if the verb tenses used locate the situations of the main clause in a past sphere as the *Pretérito Perfeito*, *Pretérito Imperfeito*, *Pretérito-mais-que-perfeito* and some cases of the *Presente* do, then the situations of the subordinate clause are also located in a past time sphere, whereas whenever the situations of the main clause are located in a future time sphere by a future tense, then the situations of the subordinate clause are normally located in a future time sphere. In certain contexts, when the *Presente* is used, the situation of the subordinate clause can also be located in a present time sphere (cf. habitual reading of (470)). The localisation of the situation in the same time sphere is forced by the lexical information conveyed by the connector *antes de* and not by the *Infinitivo*[39].

It is necessary to point out that the interpretation of the situations in the same time spheres is the default reading. But there are contexts in which the situation of the subordinate clause may be located in a different time sphere from the situation of the

[39] Lluïsa Hernanz (1999: 2271) says about adverbial connectors such as *antes de* and *depois de*: "Su estatuto sintáctico, por tanto, no se limita al de meros conectores. Sino que abarca una function tanto o más importante, como es la de ser portadores de la referencia temporal de la subordinada. Son, en efecto, los rasgos temporales depositados en (...) *antes de*, etc., los que permiten contrarrestar la defectividad temporal del infinitivo y en consecuencia hacen posible su presencia en (301) y construcciones similares."

(301) b. *Antes de* entrar, dejen salir.

main clause. This is the case of sequences with future forms, like in (477), or with the *Presente*, as in (478).

(477) Antes de fazer o trabalho de casa amanhã, hoje o João vai brincar.
Before doing the homework tomorrow, today João is going to play.

(478) Antes de fazer o trabalho de casa amanhã, hoje o João brinca.
Before doing the homework tomorrow, today João is going to play.

The fact that the situation described by the *Infinitivo* in a clause introduced by *antes de* (and by *depois de*, as we will see shortly) can be located in different time intervals, even within the same sequence of tenses, is another evidence of its lack of temporal features.

The absence of temporal features in the *Infinitivo* means that no TPpt can be selected for the situation represented by the *Infinitivo* nor can we establish a relation between the TPpt and the situation's location time. So, the conditions which represent these characteristics cannot integrate the SDRS corresponding to the representation of adverbial sentences with infinitive clauses, introduced not only by *antes de* and *depois de*, but also by *para* ('so').

The lack of temporality of the *Infinitivo* in most syntactic configurations poses another problem to the analysis that we are conducting. One of the parameter we have been investigating is the presence, or not, of temporal subordination. We have explained that the two temporal linkage processes of clauses involve the notions of temporal domain and of TPpt. However, if the *Infinitivo* is without any temporal traces, we need to verify whether we can still speak of temporal subordination and creation of a new temporal domain.

There are two hypotheses to work with: either (i) we consider that, since the *Infinitivo* cannot create a temporal domain, the situation of the main clause always creates a new temporal domain and, thus, always selects *n* as its TPpt; or (ii) we assume that, since we are dealing with time clauses with the function of locating[40] the situation

[40] The time clauses, also in this aspect, would behave like temporal adverbials which can also create new temporal domains. Oliveira (2008: 111), while discussing the temporal value of the Subjunctive in *that*-clauses, argues that in the *that*-clause of example (i) it is not the verb tense which creates the new temporal domain but the time adverbial *amanhã*.

of the main clause, the clause introduced by *antes de* (and by *depois de*, for that matter) can indeed create a temporal domain which can be, or not, integrated by the situation of the main clause. In this case, the temporal domain will be defective because it lacks information concerning the TPpt and the relation between the TPpt and the location time of the situation.

If we adopt the first hypothesis, we fail to properly explain the difference between examples with the *Pretérito Perfeito* or the *Pretérito-mais-que-perfeito* in the main clause (cf. (454) with (458), repeated as (479) and (480)).

(479) Antes de fazer o trabalho de casa, o João brincou.
Before doing the homework, João played.

(480) Antes de fazer o trabalho de casa, o João tinha brincado.
Before doing the homework, João had played.

On the other hand, if we argue in favour of the second hypothesis we can pinpoint the difference between those examples. Furthermore, since, as we argued before, despite the lack of temporal features, we can, nonetheless, locate the situation due to the information from the connector, it makes sense that the subordinate clause is able to create a temporal domain.

So, whereas in (479) the situation of *João brincou* selects as its TPpt the utterance time, in (480) the situation of the main clause chooses as its TPpt the time interval in which the situation of *João fazer o trabalho de casa* is located. In both cases, the relation between the TPpt and the situations' location time is of anteriority. However, in the first example, the two situations do not share the same temporal domain and the temporal organisation of the situations is exclusively given by the connector *antes de*. In the second example, the two situations have a direct temporal bond and the relation of anteriority is conveyed not only by the connector, but also by the *Pretérito-mais-que-perfeito* of the main clause.

(i) O Rui pediu-me que fosse falar com ele amanhã.
The Rui asked me that go(Subj) talk to him tomorrow.
Rui asked me that I talk to him tomorrow.

In fact, the Subjunctive in many configurations also depends on other tenses to locate the situation it represents and in this sense it shares some characteristics with the *Infinitive*. We will resume this topic when we discuss some of the data with Subjunctive.

The examples with the future form in the main clause, repeated here as (481)-(484) are also cases of creation of a new temporal domain.

(481) Antes de fazer o trabalho de casa, o João vai brincar.
Before doing the homework, João is going to play.

(482) Antes de ir para o hospital, o João vai estar muito ansioso.
Before going to the hospital, João is going to be very anxious.

(483) Antes de ser professor, o João vai trabalhar numa biblioteca.
Before being a teacher, João is going to work in a library.

(484) Antes de ser professor, o João vai ser bibliotecário.
Before being a teacher, João is going to be a librarian.

The TPpt of the main clause's situation is the utterance time and the relation between the two is of posteriority. If the situation of the main clause is located in a future time interval and it occurs necessarily before the situation of subordinate clause, then the latter is also posterior to the utterance time.

The examples with the *Pretérito Imperfeito* (cf. (485)-(488)) represent in the main clause individual level states (cf. (486) and (488)) and habitual states (cf. (485) and (487)). In the first case, there is a past temporal interpretation of the states. In the second case, although the situations are events in its base, the verb tenses transform them into states and assign them a habitual reading which is extended to the situations of the subordinate clauses[41]. As we have already pointed in chapter 2, section 2.3.1.[42], in these cases, the *Pretérito Imperfeito* represents the situation in a new temporal domain and does not integrate the temporal domain created by the *before*-clause (so, *TPpt.= n* and situation is anterior to the TPpt). The connector *antes de* disallows an overlapping relation between the two situations and imposes a relation of anteriority.

(485) Antes de fazer o trabalho de casa, o João brincava.
Before doing the homework, João played(Imp).

[41] Although we have decided not to investigate the cases of habitual and generic readings that can surface namely when the *Presente* and *the Pretérito Imperfeito* occur, we have deemed it best to include these tenses in the analysis of sentences with *antes de* and *depois de* because in certain contexts they can have an episodic interpretation, as we will demonstrate. We will refer to the habitual readings but not discuss it at length.
[42] Cf. pages 123-125.

(486) Antes de ir para a universidade, o João era muito tímido.
Before going to the university, João was(Imp) very shy.

(487) Antes de ser professor, o João trabalhava numa biblioteca.
Before being a teacher, João worked(Imp) in a library.

(488) Antes de ser professor, o João era bibliotecário.
Before being a teacher, João was(Imp) a librarian.

In the examples with the *Presente* (cf. (489)-(492)), there are two temporal interpretations available: a habitual reading and an episodic reading.

(489) Antes de fazer o trabalho de casa, o João brinca.
Before doing the homework, João plays.

(490) Antes de viajar de avião, o João sente-se muito nervoso.
Before travelling by plane, João is very nervous.

(491) Antes de ser professor, o João trabalha numa biblioteca.
Before being a teacher, João works in a library.

(492) Antes de ser professor, o João é bibliotecário.
Before being a teacher, João is a librarian.

In the first case, the situations represented by the *Presente* are interpreted as habitual states. For instance, the sentence in (489) can be paraphrased in the following manner: 'every time João does the homework, before, he plays'. In this temporal interpretation, TPpt is the utterance time and the situation overlaps the TPpt.

In the second case, the *Presente* is interpreted as a fictional *Presente* and it is very close to the historic present[43]. In these cases the situation does not overlap the utterance time and it is instead anterior to it. So, in this interpretation, the temporal characterisation of the situations represented by the *Presente* is: *TPpt:=n* and the relation between the TPpt and *n* is of anteriority. This is only available interpretation for (492). The same interpretation arises in examples with *depois de*, as we will show (cf. (493), for instance).

[43] Quirk *et al.* (1985: 183) refer that while the situations "narrated by means of the historic present are real, those narrated by the fictional 'historic present' are imaginary".

(493) Depois de ser professor, o João trabalha numa biblioteca.
After of be teacher, the João works in-a library.
After being a teacher, João works in a library.

It should be noted that in order to obtain this episodic interpretation a very specific context is needed, namely of a literary text.

To sum up, we have observed that in sentences with *antes de*:

(i) different tenses in the main clause are compatible with the *Infinitivo*, namely the *Presente*, the *Pretérito Perfeito*, the *Pretérito Imperfeito*, the *Pretérito-mais-que-perfeito* and the *Futuro*;

(ii) the combinations of two events, of two states or of one event with one state are feasible;

(iii) it is not the *Infinitivo* that creates the temporal domain, but the adverbial clause itself, because the *Infinitivo* lacks temporal features;

(iv) the situations must be represented in the same time spheres;

(v) temporal subordination only seldom occurs;

(vi) the connector always determines a temporal relation of anteriority between the situations.

The *after*-clauses share some of the features of the *before*-clauses, namely the absence of temporal features of the *Infinitivo*, but differ in others, namely the temporal interpretation with different aspectual classes. Regarding the possible verb tenses, examples (494)-(513) illustrate some of the different possibilities.

(494) Depois de fazer o trabalho de casa, o João brincou.
After of do the work of house, the João played.
After doing the homework, João played.

(495) Depois de ir para casa, o João esteve muito doente.
After of go to home, the João was very sick.
After going home, João was very sick.

(496) Depois de ser professor, o João trabalhou numa biblioteca.
After of be teacher, the João worked in-a library.
After being a teacher, João worked in a library.

(497) Depois de ser professor, o João foi bibliotecário.
After of be teacher, the João was librarian.
After being a teacher, João was a librarian.

(498) *Depois de fazer o trabalho de casa, o João tinha brincado.
After of do the work of house, the João had played.
**After doing the homework, João had played.*

(499) *Depois de ir para casa, o João tinha estado muito doente.
After of go to home, the João had been very sick.
**After going to home, João had been very sick.*

(500) *Depois de ser professor, o João tinha trabalhado numa biblioteca.
After of be teacher, the João had worked in-a library.
**After being a teacher, João had worked in a library.*

(501) *Depois de ser professor, o João tinha sido bibliotecário.
After of be teacher, the João had been librarian.
**After being a teacher, João had been a librarian.*

(502) Depois de fazer o trabalho de casa, o João vai brincar.
After of do the work of house, the João is going to-play.
After doing the homework, João is going to play.

(503) Depois de fazer o exame, o João vai estar muito cansado.
After of do to the exam, the João is going to-be very tired.
After doing the exam, João is going to be very tired.

(504) Depois de ser professor, o João vai trabalhar numa biblioteca.
After of be teacher, the João is going to-work in-a library.
After being a teacher, João is going to work in a library.

(505) Depois de ser professor, o João vai ser bibliotecário.
After of be teacher, the João is going to-be librarian.
After being a teacher, João is going to be a librarian.

(506) Depois de fazer o trabalho de casa, o João brincava.
After of do the work of house, the João played.
After doing the homework, João played(Imp).

(507) *Depois de ir para casa, o João estava muito doente.
After of go to home, the João was very sick.
**After going to home, João was(Imp) very sick.*

(508) *Depois de ser professor, o João trabalhava numa biblioteca.
After of be teacher, the João worked in-a library.
**After being a teacher, João worked(Imp) in a library.*

(509) *Depois de ser professor, o João era bibliotecário.
After of be teacher, the João was librarian.
**After being a teacher, João was(Imp) a librarian.*

(510) Depois de fazer o trabalho de casa, o João brinca.
After of do the work of house, the João plays.
After doing the homework, João plays.

(511) Depois de acordar, o João é muito rabugento.
After of wake-up, the João is very moody.
After waking up, João is very moody.

(512) Depois de ser professor, o João trabalha numa biblioteca.
After of be teacher, the João works in-a library.
After being a teacher, João works in a library.

(513) Depois de ser professor, o João é bibliotecário.
After of be teacher, the João is librarian.
After being a teacher, João is a librarian.

The examples presented above integrate the same tenses' combination tested for sentences with clauses introduced by *antes de*. Nevertheless, since, generally speaking, the connector *depois de* imposes the inverse temporal order, i.e., the situation of the main clause is posterior to the situation of the subordinate clause, there are certain tenses' combinations which are disallowed. It is the case of the *Infinitivo* with the *Pretérito-mais-que-perfeito* (cf. (498)-(501)) and, in most cases, with the *Pretérito Imperfeito* (cf. (506)-(509)). In the first case, the ungrammaticality of the examples results from the absence of a time interval that can act as TPpt for the situations represented by these tenses (cf. (500), repeated here for convenience as (514)).

(514) *Depois de ser professor, o João tinha trabalhado numa biblioteca.
**After being a teacher, João had worked in a library.*

In (514), the *Pretérito-mais-que-perfeito*'s semantics requires a past TPpt and a relation of anteriority between the situation and that TPpt. Contrary to what happens in sentences with *antes de*, in sentences with *depois de*, the time interval represented by

the subordinate clause cannot be the TPpt of the situation represented by the verb tense under scrutiny and cannot establish with it a relation of anteriority, because the connector *depois de* imposes the exact opposite order, i.e., temporal successivity. As there is no other time interval available to be the situation's TPpt, the sentence becomes ungrammatical.

The examples with the *Pretérito Imperfeito* behave differently when compared to the data with clauses headed by *antes de*: in some combinations, the habitual interpretation is very salient (cf. (506), repeated here as (515)) and others need a time adverbial of frequency to make more visible that interpretation (cf. (516)-(517)).

(515) Depois de fazer o trabalho de casa, o João brincava.
After doing the homework, João played(Imp).

(516) Depois de ir para casa, o João estava sempre muito doente.
After going to home, João was(Imp) always very sick.

(517) Depois de ser professor, o João trabalhava numa biblioteca todos os dias.
After being a teacher, João worked(Imp) in a library every day.

In sentences with *depois de* with the *Pretérito Imperfeito*, the habitual reading or the stative reading with individual level states (cf. (508), repeated here as (517)) are less available because, while the clause introduced by *antes de* establishes a final boundary for the state of the main clause (cf. (518)), the clause introduced by *depois de* does not impose any boundary to limit the state of the main clause, since it represents a situation as anterior to the main clause's situation. The definition of such boundaries is relevant so that the relation of temporal successivity may emerge[44].

(518) *Depois de ser professor, o João era bibliotecário.
**After being a teacher, João was(Imp) a librarian.*

(519) Antes de ser professor, o João era bibliotecário.
After being a teacher, João was(Imp) a librarian.

[44] Furthermore, the semantic features of the *Pretérito Imperfeito* in this sequence of aspectual classes prevent also a relation of inclusion that, as we will demonstrate, is possible under certain aspectual classes' combinations.

Regarding the data with the *Presente* in (510)-(513), in (510) and (511), repeated here as (520) and (521), we can assign the sentences a habitual interpretation, which becomes clearer if we add an adverb as *normalmente* ('usually') the situation. In this case, the TPpt is the utterance time and there is an overlapping relation between the TPpt and the situation represented by the *Presente*.

(520) Depois de fazer o trabalho de casa, o João (normalmente) brinca.
After doing the homework, João (usually) plays.

(521) Depois de acordar, o João é (normalmente) muito rabugento.
After waking up, João is (usually) very moody.

The other examples (cf. (522)-(523)) are only acceptable if we interpret the *Presente* as a fictional narrative *Presente*, used, for instance, in a documentary, in which case the situations are located in a past time interval. However, this is a very marked context.

There is another available, though dubious, reading that needs, nonetheless, the presence of the adverbial *agora*, in which case the situations overlap the utterance time.

(522) ??Depois de ser professor, o João trabalha (agora) numa biblioteca.
??After being a teacher, João works (now) in a library.

(523) ??Depois de ser professor, o João é (agora) bibliotecário.
??After being a teacher, João is (now) a librarian.

It should be noted, however, that this last interpretation would be more natural if instead of the *Infinitivo*, the time clause resorted to the *Infinitivo Perfeito* ('Infinitive Perfect').

The sequence with the *Infinitivo* followed by the *Pretérito Perfeito* allows for combinations of two events (cf. (524)), one event and one state (cf. (525)), one state and one event (cf. (526)) and two states (cf. (527)).

(524) Depois de fazer o trabalho de casa, o João brincou.
After doing the homework, João played.

(525) Depois de ir para casa, o João esteve muito doente.
After going home, João was very sick.

(526) Depois de ser professor, o João trabalhou numa biblioteca.
After being a teacher, João worked in a library.

(527) Depois de ser professor, o João foi bibliotecário.
After being a teacher, João was a librarian.

The use of the *Pretérito Perfeito* determines that both situations are located in the same past time sphere.

In addition to some discrepancies as far as tenses are concerned, contrary to sentences with *antes de*, the different aspectual classes' combinations do not always render the temporal relation of posteriority[45]. Recalling, for instance, examples (524)-(527), we can notice that in the first two examples the only available temporal interpretation is of temporal successivity, while the last two examples are ambiguous between a successivity or an inclusion relation.

Contextual factors and our world knowledge may favour one or the other interpretation. For example, in (528), the preferential reading is of temporal inclusion of the situation *João ensinou em muitas escolas* into the state *João ser professor*, whereas, in (529), it is of posteriority of the situation of the main clause in relation to the state of the subordinate clause.

(528) Depois de ser professor, o João ensinou em várias escolas.
After being a teacher, o João taught in several schools.

(529) Depois de ser professor, o João foi ministro da educação.
After being a teacher, João was Minister of Education.

In both interpretations, the time interval that functions as Rpt for the situation of the main clause is not the eventuality as a whole, but, instead, a salient part of the phase structure associated to the situation in the subordinate clause. By default, this will be the initial boundary of the eventuality (cf. Beaver and Condoravdi (2003), Silvano and Cunha (2010)). For statives and processes their initial frontier is the only available boundary, since these aspectual classes do not convey, by themselves, an intrinsic

[45] We have already pointed out this difference in Chapter 1, section 1.3.1.1., pages 41-44 and presented some proposals of analysis for the two temporal interpretations.

endpoint[46]. The TPpt of the situations in the main clause is the utterance time and the relation between the two time intervals is of anteriority. The connector *depois de* imposes a temporal relation of posteriority between the situations of the main clause and of the subordinate clause.

Since, in any of the analysed data with *depois de*, the TPpt of the situation of the main clause is the time interval in which the situation of the subordinate clause is located, none of the sequence of tenses licenses temporal subordination. This circumstance can be explained by the fact that the connectors *antes de* and *depois de* impose a specific temporal organisation, which, on the one hand, disallows some of the tenses which are typically associated to temporal subordination and, on the other hand, lessens the necessity of establishing a stronger temporal linkage between the two situations.

With respect to the representation of the situations in the same time sphere, we observe that in sentences with *depois de*, by default, the situation of the subordinate clause is located in the same time sphere as the situation of the main clause. However, the lack of temporal information of the *Infinitivo* and the semantics of certain verb tenses in addition to the temporal organisation imposed by the connector *depois de*, licenses the representation of the situations in different time spheres. This is the case of sentences with the *Presente*. The compatibility of these sentences with different time adverbials as in (530) seems to corroborate this conclusion.

(530) Depois de ir para a praia ontem, o João está muito doente hoje.
After going to the beach yesterday, João is very sick today.

Nevertheless, this interpretation is more available with the *Infinitivo Perfeito* in the subordinate clause, like in (531).

(531) Depois de ter ido para a praia ontem, o João está muito doente hoje.
After having gone to the beach yesterday, João is very sick today.

[46] For those few Portuguese native speakers that find some ambiguity with culminated processes, the relevant boundary may be either the initial one or the culmination itself (cf. Lopes and Morais for a detailed discussion of this issue in chapter 1).

Sentences with future forms only allow for the representation of the situations in different time spheres with the *Infinitivo Perfeito* in the subordinate clause, like in (532).

(532) Depois de ter feito o trabalho de casa hoje, o João vai brincar amanhã.
After having done the homework today, João will play tomorrow.

In sum, we observed that, in sentences with adverbial clauses introduced by *depois de*:

- **(i)** not all tenses which were tested can occur in the main clause, namely the *Pretérito-mais-que-perfeito* and in some contexts the *Pretérito Imperfeito*;
- **(ii)** not all aspectual classes' combinations produce grammatical results, namely sequences of some states;
- **(iii)** the connector determines by default a temporal relation of posteriority;
- **(iv)** the presence of a state in the subordinate clause can lead to a temporal relation of inclusion;
- **(v)** the situations can be represented in different time spheres;
- **(vi)** temporal subordination never occurs.

4.3.2.2. Rhetorical Relations

The connectors *antes de* and *depois de* are responsible for the temporal organisation of the situations, as we have demonstrated in the analysis of the data in the previous sections. Since the temporal ordering constitutes one of the sources of information to infer some rhetorical relation, then those connectors can be considered cue-phrases marking certain rhetorical relations.

Aiming at verifying which rhetorical relations link the situations in sentences with *antes de*, we repeat some of the examples adduced above, renumbered (533)-(536), and modify one to illustrate the cases in which the order of the main and subordinate clauses is different (cf. (533)).

(533) Antes de fazer o trabalho de casa, o João brincou.
Before doing the homework, João played.

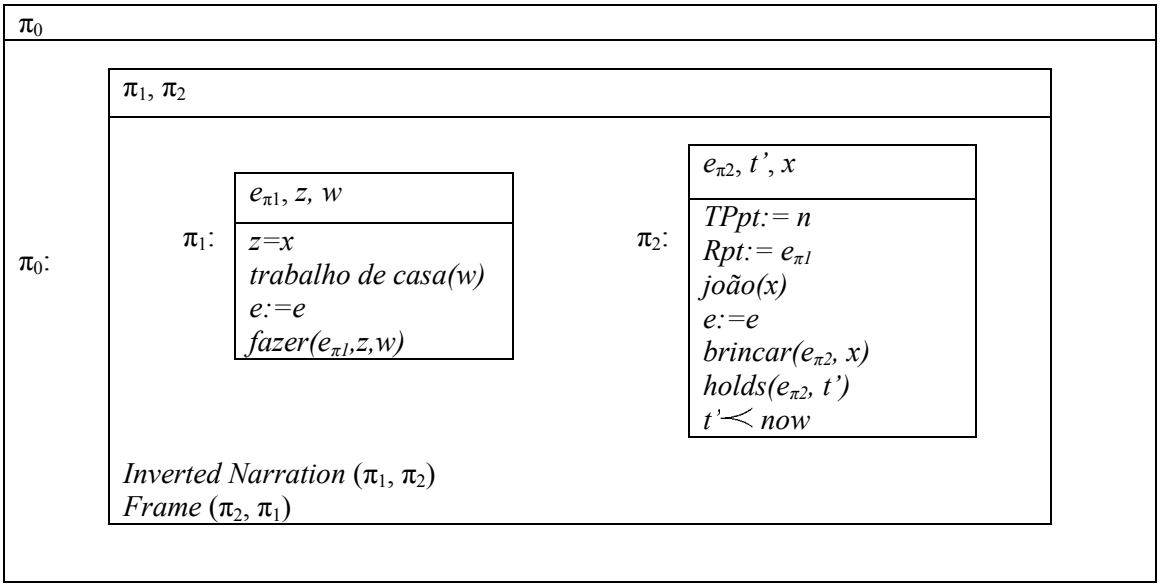
(534) Antes de fazer o trabalho de casa, o João tinha brincado.
Before doing the homework, João had played.

(535) Antes de ser professor, o João vai trabalhar numa biblioteca.
Before being a teacher, João will work in a library.

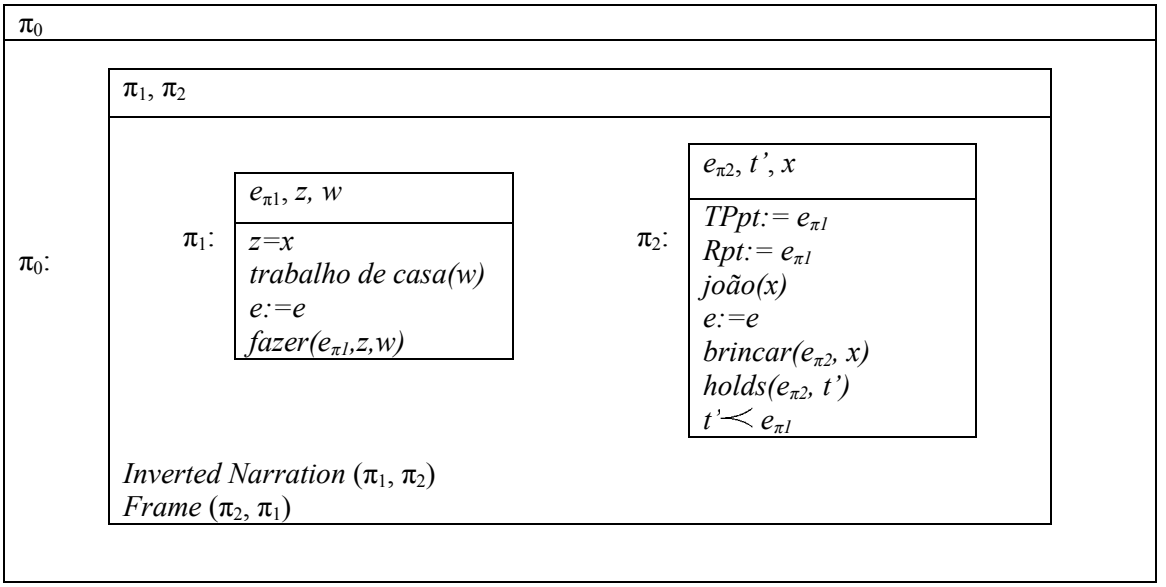
(536) O João era bibliotecário antes de ser professor.
João was a librarian before being a teacher.

In all of the examples above, the situation of the main clause is anterior to the situation described by the subordinate clause. Furthermore, in none of the examples there is a strong causal link between the situations, instead the sentences simply narrate two eventualities and establish an order between them. Bearing in mind the rhetorical relations' meaning postulates with which we have been working, we could infer Narration or Inverted Narration. As the temporal order does not match the linear order, we must infer the relation Inverted Narration. SDRSs (533a), (534a), (535a) and (536a) represent the rhetorical link present in each example and the temporal features discussed earlier.

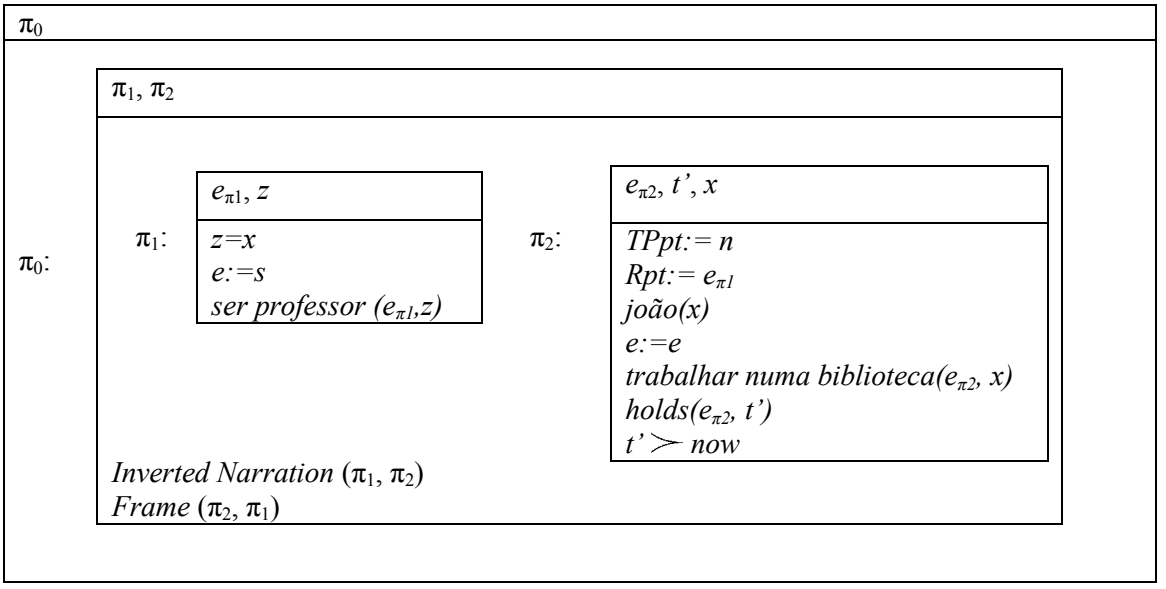
(533a)



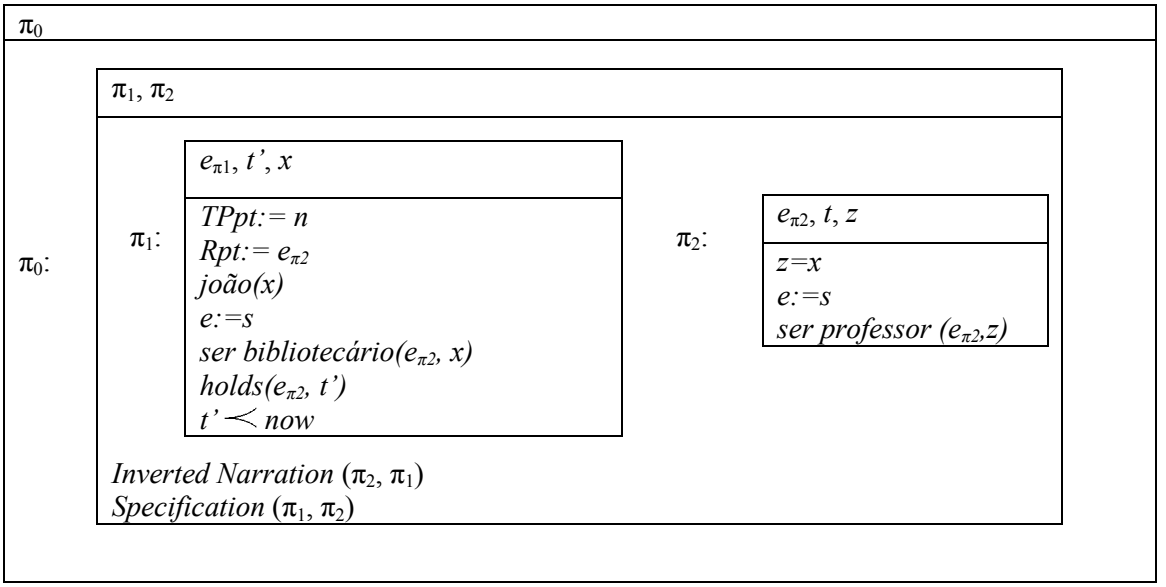
(534a)


π0
π1, π2
π0:
π1:
eπ1, z, w
z=x
trabalho de casa(w)
e:=e
fazer(eπ1,z,w)
π2:
eπ2, t', x
TPpt:= eπ1
Rpt:= eπ1
joão(x)
e:=e
brincar(eπ2, x)
holds(eπ2, t')
t' ≺ eπ1
Inverted Narration (π1, π2)
Frame (π2, π1)

(535a)


π0
π1, π2
π0:
π1:
eπ1, z
z=x
e:=s
ser professor (eπ1,z)
π2:
eπ2, t', x
TPpt:= n
Rpt:= eπ1
joão(x)
e:=e
trabalhar numa biblioteca(eπ2, x)
holds(eπ2, t')
t' ≻ now
Inverted Narration (π1, π2)
Frame (π2, π1)

(536a)



In (533a) and (534a), the only difference concerns the TPpt: in the first case, it is the utterance time and, in the second case, it is the previous situation. For this reason, in (534) there is temporal subordination and in (533) there is not.

In (535a), the condition $t' \succ now$ locates the situation of the main clause in a future time interval and the rhetorical relation conveys the information that the situation of the main clause is anterior to the situation represented by π_1.

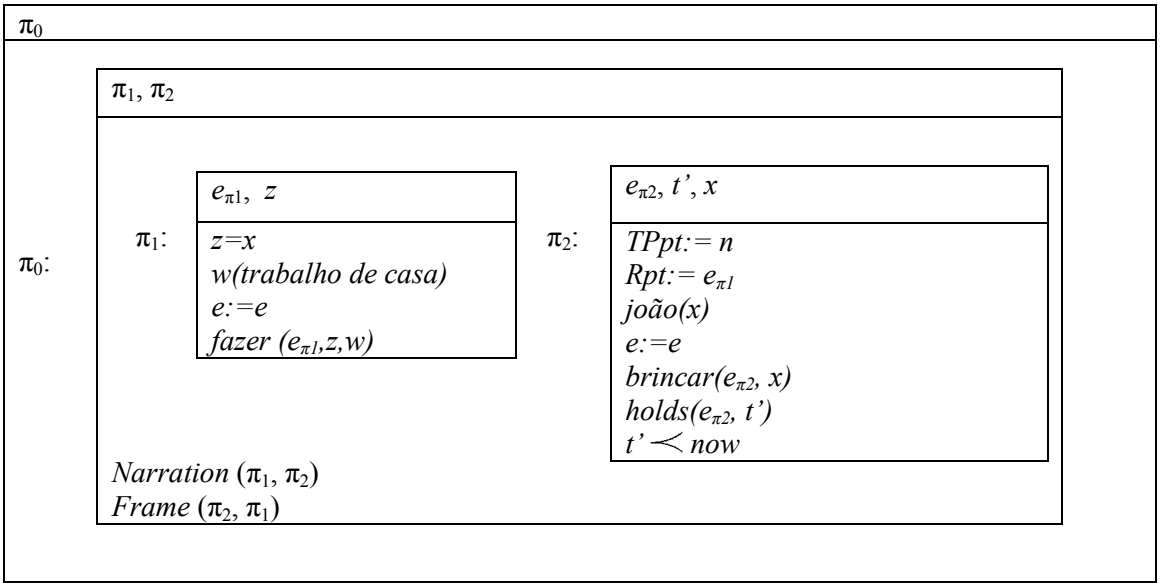
The situations in sentences with *depois de* can be rhetorically linked by two different relations. The example in (537) illustrates one of the rhetorical relations available in sentences with *depois de.*

(537) Depois de fazer o trabalho de casa, o João brincou.
After doing the homework, João played.

Similarly to *antes de* and contrary to *quando*, *depois de* signals a temporal order of the situations. So, in these examples, the situation of the main clause is located in a time interval that is posterior to the time interval occupied by the situation of the subordinate clause. Apart from the temporal organisation, *depois de*, like *antes de* and *quando*, does not convey any causal meaning. The lexicon used does not lead the reader to establish a causal link between the situations. Thus, the sentences merely portray a sequence of situations whose temporal order matches the linear order. Taking into

account this information given by semantic sources and our world knowledge, we infer the rhetorical relation Narration, as exemplified by SDRS (537a).

(537a)



Contrary to what happens with *antes de*, which is always a cue-phrase for the rhetorical relation Inverted Narration, *depois de* does not always signal Narration, precisely because, in sentences with these time clauses within certain contexts, the temporal relation may be of temporal inclusion, as we have already pointed out. We recall that, in order for this temporal reading to surface, some aspectual conditions must be met, namely the presence of a state in the subordinate clause, like in (538).

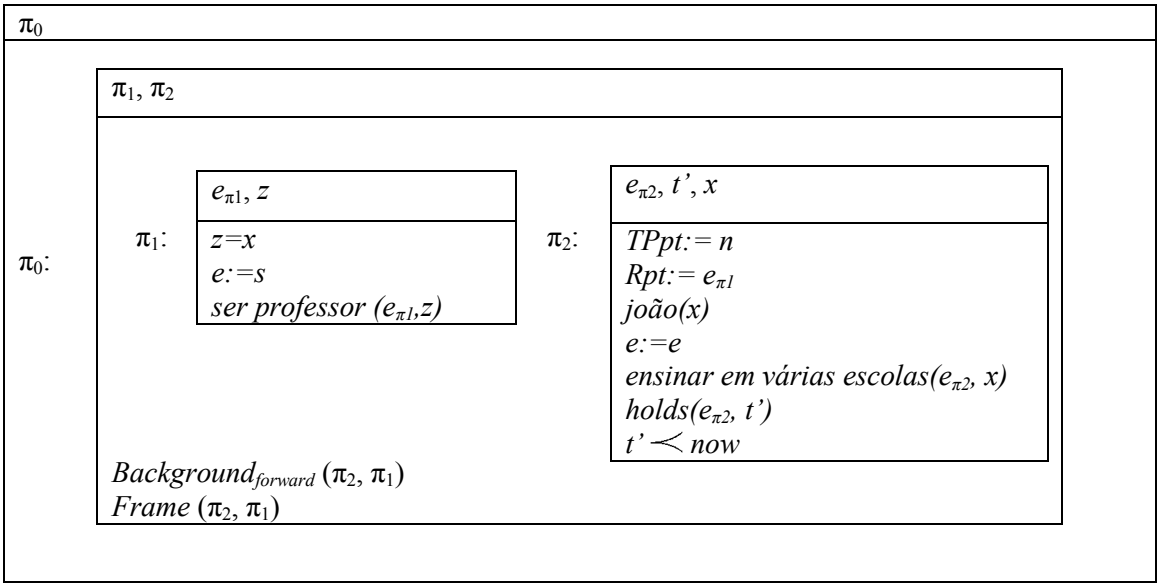
(538) Depois de ser professor, o João ensinou em várias escolas.
After being a teacher, o João taught in several schools.

In addition to the aspectual requirements, in the interpretation of this type of sentences our world knowledge also plays a relevant part. For instance, while in (539) our world knowledge informs us that normally *being a minister of education* cannot overlap the state *being a teacher*, in (538), that information source tell us that *teaching in several schools* is part of *being a teacher*.

(539) Depois de ser professor, o João foi ministro da educação.
After being a teacher, João was Minister of Education.

Although, in (538), if it were not for *depois de*, one might infer a causal link between the two situations, for instance, of consequence, the presence of the connector prevents such an interpretation, even without imposing a temporal relation of posteriority. As a matter of fact, *depois de* seems to block the inference of an intrinsic rhetorical relation, that is, a rhetorical relation which is featured by a stronger semantic interdependence[47]. Therefore, we can choose from the group of the extrinsic rhetorical relations: Narration, Inverted Narration, $\text{Background}_{\text{forward}}$ and $\text{Background}_{\text{backward}}$. Since the temporal relation is not of anteriority or of posteriority, we are left with Background. Since it is the state *ser professor* that sets the scenario for the situation *o João ensinou em várias escolas*, the rhetorical relation we infer is $\text{Background}_{\text{forward}}$. SDRS (538a) represents sentence (538).

(538a)



The comparison between the complex sentences with *antes de* and *depois de* and their non-complex counterparts cannot be drawn because the *Infinitivo* in single sentences would render ungrammatical results.

[47] For the distinction between intrinsic and extrinsic rhetorical relations, see chapter 3, section 3.2.6., pages 211-212.

Overall, we can present the following conclusions:

(i) *antes de* and *depois de* in complex sentences act as cue-phrases for the rhetorical relations of Inverted Narration and Narration, respectively;

(ii) proving how intertwined the inference process of temporal and rhetorical relations is, in sentences with *depois de*, the reader can also process the two situations as being linked by $\text{Background}_{\text{forward}}$;

(iii) although *depois de* may be considered a cue-word to infer the rhetorical relation Narration, other linguistic and extra-linguistic factors play a relevant role and are also responsible for the inference of a different rhetorical relation.

4.3.3. Sentences with clauses introduced by *enquanto*

Another connector that can introduce time clauses is *enquanto*. This connector influences the temporal relation of the situations, like *antes de* and *depois de* do. By default, imposes a relation of overlapping. However, depending on the verb tense and/or the aspectual class of the situations involved, it can signal different rhetorical relations.

In addition to the interpretation of the time clause introduced by *enquanto* as establishing a time interval during which the situation of the main clause occurs, there is another one according to which the time clause establishes the upper bound of the situation represented by the main clause. The different temporal relation corresponds to a different rhetorical relation. Once again, as it happens with *depois de*, the connector which we would expect to be associated to a single rhetorical relation enables the inference of another rhetorical relation.

4.3.3.1. Temporal features and some aspectual features

We will make an initial foray into investigating some of the tenses' combination permitted by this type of adverbial clause and which render a temporal interpretation, varying the aspectual class of both subordinate and main clause[48]/[49].

(540) Enquanto a Ana leu o jornal, o Pedro lavou/ lavava/ *tinha lavado/ *vai lavar/ *lava o carro.
While the Ana read the newspaper, the Pedro washed/ washed(Imp)/ had washed/ is-going to wash/ washes the car.
*While Ana read the newspaper, Pedro washed/ washed(Imp)/ *had washed/* will wash/ *washes the car.*

(541) *Enquanto a Ana lia o jornal, o Pedro lavou/ lavava/ tinha lavado/ vai lavar/ lava o carro.
**While Ana read(Imp) the newspaper, Pedro washed/ washed(Imp)/ had washed/ will wash/ washes the car.*

(542) *Enquanto a Ana tinha lido o jornal, o Pedro lavou/ lavava/ tinha lavado/ vai lavar/ lava o carro.
**While Ana had read the newspaper, Pedro washed/ washed(Imp)/ *had washed/ will wash/ washes the car.*

(543) Enquanto a Ana lê o jornal, o Pedro *lavou/ *lavava/ *tinha lavado/ vai lavar/ lava o carro.
*While Ana reads the newspaper, Pedro *washed/ *washed(Imp)/ *had washed/ will wash/ washes the car.*

(544) Enquanto a Ana vai ler o jornal, o Pedro *lavou/ *lavava/ *tinha lavado/ vai lavar/ lava o carro.
*While Ana will read the newspaper, Pedro *washed/ *washed(Imp)/ *had washed/ will wash/ washes the car.*

(545) Enquanto a Ana lavar a roupa, o Pedro *lavou/ *lavava/ *tinha lavado/ vai lavar/ lava o carro.
*While the Ana wash the clothes, the Pedro *washed/ *washed/*had washed/ will wash/ washes the car.*
*Until Ana does the laundry, Pedro *washed/ *washed(Imp)/ *had washed/ will wash/ washes the car.*

[48] We recall that it is not our aim to analyse thoroughly the possible aspectual combinations, but only to establish some of the temporal differences between eventive and stative situations.
[49] In this group of examples, because they are similar with the exception of the verb tenses, we will not present the literal translation, except for the first one of each group.

(546) Enquanto a Ana viajou, o Pedro esteve/ estava/ *tinha estado/ *vai estar/ *está triste.
*While the Ana travelled, the Pedro was/ was(Imp)/ had been/ is-going to-be/*is sad.*
*While Ana travelled, Pedro was/ was/ *had been/ *will be/ is sad.*

(547) *Enquanto a Ana viajava, o Pedro esteve/ estava/ tinha estado/vai estar/ está triste.
**While Ana travelled(Imp), Pedro was/ was(Imp) / had been/ will be/ is sad.*

(548) *Enquanto a Ana tinha viajado, o Pedro esteve/ estava/ tinha estado/vai estar/ está triste.
**While Ana had travelled, Pedro was/ was(Imp)/ had been/ will be/ is sad.*

(549) Enquanto a Ana viaja, o Pedro *esteve/ *estava/ *tinha estado/vai estar/ está triste.
*While Ana travels, Pedro *was/ *was(Imp)/ *had been/ will be/ is sad.*

(550) Enquanto a Ana vai viajar, o Pedro *esteve/ *estava/ *tinha estado/vai estar/ */??está triste.
*While Ana will travel, Pedro *was/ *was(Imp)/ *had been/ will be/ */??is sad.*

(551) Enquanto a Ana viajar, o Pedro *esteve/ *estava/ *tinha estado/vai estar/ está triste.
*While the Ana travel, the Pedro *was/ *was/ *had been/ *will be/ is sad.*
*Until Ana stops travelling, Pedro *was/ *was(Imp)/ *had been/ *will be/ is sad.*

(552) Enquanto a Maria foi directora da escola, os alunos faltaram/ faltavam/ *tinham faltado/ *vão faltar/ *faltam menos às aulas.
While the Maria was principal of-the school, the students missed/ missed/ had missed/ are-going to-miss/ miss less to-the classes.
*While Maria was the school's principal, the students missed/ missed(Imp)/ *had missed/ *will miss/ *miss classes less.*

(553) Enquanto a Maria era directora da escola, os alunos faltaram/ faltavam/ *tinham faltado/ *vão faltar/ *faltam menos às aulas.
*While Maria was(Imp) the school's principal, the students missed/ missed(Imp)/ *had missed/ *will miss/ *miss classes less.*

(554) *Enquanto a Maria tinha sido directora da escola, os alunos faltaram/ faltavam/ tinham faltado/ vão faltar/ faltam menos às aulas.
**While Maria had been the school's principal, the students missed/ missed(Imp)/ had missed/ will miss/ miss classes less.*

(555) *Enquanto a Maria é directora da escola, os alunos faltaram/ faltavam/ tinham faltado/ vão faltar/ faltam menos às aulas.
**While Maria is the school's principal, the students missed/ missed(Imp)/ had missed/ will miss/ miss classes less.*

(556) *Enquanto a Maria vai ser directora da escola, os alunos faltaram/ faltavam/ tinham faltado/ vão faltar/ faltam menos às aulas.
**While Maria will be the school's principal, the students missed/ missed(Imp)/ had missed/ will miss/ miss classes less.*

(557) Enquanto a Maria for directora da escola, os alunos *faltaram/ *faltavam/ *tinham faltado/ vão faltar/ faltam menos às aulas.
*While Maria is the school's principal, the students *missed/ *missed(Imp)/ *had missed/ will miss/ miss classes less.*

(558) Enquanto o João morou no campo, foi/ era/ *tinha sido/ *vai ser/ *é saudável.
While the João lived in-the countryside, was/ was/ had been/ is-going to- be/ is healthy.
*While João lived in the countryside, he was/ was(Imp)/ *had been/ *will be/* is healthy.*

(559) *Enquanto o João morava no campo, foi/ era/ tinha sido/ vai ser/ é saudável.
*While João lived(Imp) in the countryside, he was/ was(Imp)/ *had been/ *will be/ is healthy.*

(560) *Enquanto o João tinha morado no campo, foi/ era/ tinha sido/ vai ser/ é saudável.
**While João had lived in the countryside, he was/ was(Imp)/ had been/ will be/ is healthy.*

(561) *Enquanto o João mora no campo, foi/ era/ tinha sido/ vai ser/ é saudável.
**While João lives in the countryside, he was/ was(Imp)/ *had been/ *will be/ is healthy.*

(562) *Enquanto o João vai morar no campo, foi/ era/ tinha sido/ vai ser/ é saudável.
**While João will live in the countryside, he was/ was(Imp)/ had been/ will be/ is healthy.*

(563) Enquanto o João morar no campo, *foi/ *era/ *tinha sido/ vai ser/ é saudável.
*While João lives in the countryside, he *was/ *was(Imp)/ *had been/ will be/ is healthy.*

The observation of the examples reveals that there are some incompatibilities as to the presence of certain verb tenses in sentences with *enquanto*. For instance, the *Pretérito-mais-que-perfeito*, apart from being ungrammatical in the subordinate clause (cf. (543), for instance) because there is not any available time interval to act as its TPpt in the sentence, it cannot occur in the main clause, either (cf. (542), for example). The use of this tense is disallowed by the semantics of *enquanto*: if the connector determines a relation of simultaneity and the *Pretérito-mais-que-perfeito* conveys a relation of anteriority, the combination with other verb tenses results in ungrammatical sentences.

The *Pretérito Imperfeito* can only occur in the subordinate clause when it represents states which are individual level states (cf. (553)).

Looking at the examples, we notice that both situations are represented in the same time sphere, which makes sense, because in order to establish a relation of simultaneity both situations must be located in the same time sphere. So, the use of *Pretérito Perfeito* in the subordinate clause prevents the presence in the main clause of tenses which belong to other time spheres such as the future form with *ir + Infinitivo*. For example, in (540), the situation *a Ana leu o jornal* occurs in a time interval anterior to the utterance time and in one of the combinations the situation *o Pedro vai lavar o carro* is located in a time interval that is posterior to the utterance time, and to the first situation. The localisation of the two situations in different time intervals does not accord well with the lexical information conveyed by *enquanto*.

It should be noted that because of the *Presente*'s different temporal values, the combination with other verb tenses may render different interpretations. For instance, when the *Presente* in the subordinate clause is combined with another *Presente* in the main clause and both represent eventive situations, there is a habitual reading (cf. (543)). Another temporal interpretation of the *Presente* is of future whenever it is combined with a future form as in (543).

When the *Presente* is in the main clause and it is preceded by the *Futuro* of the Indicative mood, the future interpretation of the situation represented by the *Presente* is obtained in an indirect way, because, as we will discuss ahead, in these cases and other

similar, the *Presente* represents the situation as overlapping the first situation. Since the first situation, which is presented by the *Futuro*, is located in a time interval posterior to the utterance time, then the situation described by the *Presente* is also located in that time interval. It should be noted that the *Futuro* (*Indicativo*) is not compatible with a state in the subordinate clause (cf. (556) and (562)).

On the contrary, the *Futuro do Conjuntivo* ('Subjunctive Future') (cf. (557) and (563)) is quite natural in those constructions. It should be noticed, however, that the presence of this tense in the clause introduced by *enquanto* imposes a different temporal interpretation of the situation. In these cases, the situation of the subordinate clause establishes an upper bound for the situation represented by the main clause, paraphraseable by *até ao momento em que* ('till the moment that'). Whenever the *Futuro do Conjuntivo* occurs in the subordinate clause it can only be combined with future forms or the *Presente*. For instance, in (563), the state *o João vai ser saudável* will prevail for the time that the situation *o João morar no campo* is valid. With events (cf. (545)) or one event and one state (cf. (551)) the same reading is possible.

The temporal relation that results from the tenses' combination just presented is always of simultaneity. Nevertheless, depending on the aspectual classes involved it can be of overlapping (partial or total) and of inclusion. The combination of situations of the same aspectual type such as two culminated processes as in (540)-(545) leads to an overlapping relation. But belonging to the same aspectual class is not the sole condition for an overlapping relation: if both situations share some aspectual characteristics, namely durativity, they can also establish that same temporal relation.

The matching of a durative situation with a non-durative as in (552)-(557) normally leads to a relation of inclusion. So, in this case, the situation *os alunos faltarem às aulas menos* is included in the state *a Maria ser director da escola*.

Despite the fact that the same type of temporal relation links both situations, the processes of temporal linkage vary according to the tenses' combination and, hence, in some cases, there is temporal subordination and in others there is not. All the situations of the subordinate clauses have as TPpt the utterance time and, depending on the verb tense used, they establish a relation of anteriority (*Pretérito Perfeito*, *Pretérito Imperfeito*), overlapping (*Presente* in its habitual reading) or posteriority (*Presente* in its future value, future forms, *Futuro do Conjuntivo*) with that time interval.

In turn, the situations of the main clause have different TPpts. In the combination *Pretérito Perfeito* + *Pretérito Imperfeito*, the TPpt of the main clause's situation TPpt is the time interval in which the situation of the subordinate clause is located and the relation between both is of overlapping. For example, in (546), repeated here as (564), the TPpt of the situation represented by the main clause is the time interval in which the situation *Maria viajou* is located and the state overlaps the process.

(564) Enquanto a Maria viajou, o Pedro estava triste.
While Maria travelled, Pedro was(Imp) sad.

It is interesting to notice that contrary to what happens within other syntactic configurations, namely complex sentences with *that*-clauses[50], in this type of structure, the situation represented by the *Presente* in the main clause is integrated in the same temporal domain created by the situation of the subordinate clause and establishes with it a relation of overlapping. For instance, in (544) repeated here as (565), the situation of *Pedro washing the car* has its TPpt the time interval in which the situation of *Ana reading the newspaper* is located and the relation between both is of overlapping.

(565) Enquanto a Ana vai ler o jornal, o Pedro lava o carro.
While Ana will read the newspaper, Pedro washes the car.

This circumstance is verified when the subordinate clause describes the situation in the *Presente*, the *Futuro*[51] and in the *Futuro do Conjuntivo*. Thus, in these sequences, there is temporal subordination.

The following combinations constitute cases of creation of a new temporal domain: *Pretérito Perfeito* + *Pretérito Perfeito*/ *Futuro*, *Presente* + *Futuro*, *Futuro*/ *Futuro do Conjuntivo* + *Futuro*. As such, in each case, the situation of the main clause chooses as TPpt the utterance time and, depending on the verb tense, they establish a relation of anteriority or of posteriority. Example (558), here (566), illustrates this process of temporal linkage of situations.

[50] Cf. Silvano (2002) for a semantic temporal treatment of this type of sentences.
[51] Declerck (1993) already argues that in a post-present temporal domain the Simple Present is used to express simultaneity when there is temporal subordination.

(566) Enquanto o João morou no campo, foi saudável.
While João lived in the countryside, he was healthy.

In (566), the state of *João being healthy* is perspectivised from the utterance time and the semantics of the *Pretérito Perfeito* determines that it is located in a past time interval. Although a sequence of *Pretéritos Perfeitos* can lead to different temporal orderings, as pointed out for sentences with *quando*[52], in this circumstance, *enquanto* imposes a relation of simultaneity, more precisely of overlapping between the two states.

To sum up, the sentences with clauses introduced by *enquanto*:

(i) allow for different tenses and aspectual classes' combinations, but there are some restrictions regarding verb tenses:

- **a.** the *Pretérito-mais-que-perfeito* cannot occur in the subordinate clause in any of the aspectual classes' combinations;
- **b.** the *Pretérito Imperfeito* can occur when there is a habitual interpretation or when it represents an individual level state.
- **c.** the *Futuro* (*ir* in the *Presente* + *Infinitivo*) can only occur in the subordinate clause when two events are combined and it is only compatible with the *Presente* and the *Futuro*;
- **d.** the *Pretérito Perfeito* in the subordinate clause can be combined with the *Pretérito Perfeito* and the *Pretérito Imperfeito*, but not with the *Presente*, *Pretérito-mais-que-perfeito* and the *Futuro* (*ir* in the *Presente* + *Infinitivo*);
- **e.** the *Presente* in the subordinate clause is compatible with the *Presente* and the *Futuro*, but not with the *Pretérito Perfeito*, the *Pretérito Imperfeito* and the *Pretérito-mais-que-perfeito*.
- **f.** the *Futuro do Conjuntivo* in the subordinate clause is compatible with *Presente* and the *Futuro* (*ir* in the *Presente* + *Infinitivo*), but not with the *Pretérito Perfeito*, the *Pretérito Imperfeito* and the *Pretérito-mais-que-perfeito*.

[52] Cf. section 4.3.1.2. of this chapter, pages 258-268.

(ii) express a temporal relation of simultaneity imposed by the connector *enquanto*;

(iii) force the representation of the situations on the same time sphere;

(iv) enable both temporal subordination and creation of a new temporal domain;

(v) the *Presente* in the main clause does not create a new temporal domain but it is integrated in the temporal domain created by the situation of the subordinate clause.

4.3.3.2. Rhetorical Relations

The fact that the connector *enquanto* imposes a temporal relation of simultaneity and does not by default express any link of causality narrows down the group of rhetorical relations we can infer in processing this type of sentences. The following examples, adduced above and renumbered here, are intended to represent the possible rhetorical relations.

(567) Enquanto a Ana leu o jornal, o Pedro lavou o carro.
While Ana read the newspaper, Pedro washed the car.

(568) Enquanto a Ana viajou, o Pedro estava triste.
While Ana travelled, Pedro was(Imp) sad.

(569) Enquanto a Maria era directora da escola, os alunos faltaram menos às aulas.
While Maria was(Imp) the school's principal, the students missed classes less.

(570) Enquanto a Ana viajar, o Pedro vai estar triste.
While Ana travels, Pedro will be sad.

The first example represents two events which are located in the same time interval and they are not linked by any causal link. The rhetorical relation that fills the temporal requisite is Background. However, this rhetorical relation does not capture the discursive link that bounds the two situations because in this sentence there is more than

one situation establishing the scenario for the other. Instead, we interpret them as portraying a kind of parallelism between two situations. For this reason, we adopt Alves's (2002: 279) proposal of a new rhetorical relation named Parallelism[53], but we present for it a slightly different definition (cf. table 49).[54]

Rhetorical Relation	Definition
Parallelism (α, β)	R holds if the constituents express eventualities that are parallel not only in terms of structure but also temporally. Temporal Consequence of Parallelism: ØParallelism(α, β)⇒overlap(e_α, e_β).

Table 49. Definition of the rhetorical relation Parallelism

This rhetorical relation integrates the group of extrinsic rhetorical relations because, like Narration, Inverted Narration and Background, in the absence of a strong causal link, their inference is mainly based on their temporal consequences.

In (568) and (569), each sentence has a state represented in the *Pretérito Imperfeito* and an event represented in the *Pretérito Perfeito*, though in the inverse order. In (570), there is also a state represented in the *Futuro* and an event represented in the *Futuro do Conjuntivo*. Nonetheless, in all sentences the states overlap the events. Furthermore, they describe the circumstances under which the eventive situations take place. So, bearing in mind this information, we can infer the rhetorical relation Background, more precisely, the rhetorical relation $\text{Background}_{\text{backward}}$ for examples (568) and (570) and $\text{Background}_{\text{forward}}$ for example (569).

However, in addition to conveying a temporal overlapping relation, these examples also express a causal connection between the two situations. Actually, one could link the two situations simply by $\text{Background}_{\text{backward}}$ and $\text{Background}_{\text{forward}}$ because the states can be interpreted as the surroundings of the events. However, there is a stronger semantic link between the two situations that is not properly described by

[53] Asher and Lascarides (2003) propose the rhetorical relation Parallel but at a text structuring level (cf. section 3.2.5., Chapter 3 of the present work, page 206). Moreover, they define it as sharing not only the same similar semantic structure, but also the same topic. We argue that in the type of sequences we are analysing, although the semantic structure is indeed similar, the topic is not necessarily the same. In turn, Kehler (2002) integrates in the group of Resemblance rhetorical relations Parallel (cf. section 3.2.4., chapter 3, page 193), which is very similar, if not equal to the Parallel of Asher and Lascarides (2003).

[54] It should be noted that the sentences with clauses introduced by *quando* can also represent situations linked by Parallelism in an interpretation in which the two situations overlap (cf. (i)).

(i) Quando a Ana leu o jornal, o Pedro lavou o carro.
When Ana read the newspaper, Pedro washed the car.

Background. We process the situation of the main clause as a consequence of the situation of the subordinate clause. One could say that the rhetorical relation is Result as Alves does (2002: 292), but there is a mismatch between the temporal features of this discursive relation and of the example in question. However, there is indeed a casual relation of cause-effect in these examples and our world knowledge tells us that not always the effect is temporally located after the cause.

Therefore, we propose to delete the temporal consequences of the rhetorical relation Result. One could argue that if we do so, we lose important semantic information that, on the one hand, can aid us in the process of inference and, on the other hand, can allow a more accurate representation of the sentences. But if we accept that one can infer more than one rhetorical relation at the content level, as claimed by the authors Asher and Lascarides (2003), then we could dismiss the two aforementioned arguments and simultaneously maximise discursive coherence by inferring another rhetorical relation that, in addition to adding another rhetorical link (even though a more neutral one), unveils the temporal relation between the situations.

Table 50 presents the reformulated definition of the rhetorical relation Result.

Rhetorical Relation	Definition
Result (α, β)	R holds if the relevant constituent expresses a situation which is the effect or consequence of the situation represented by the other constituent.

Table 50. The reformulated definition of the rhetorical relation Result

As such, for instance, in (570), the situation *o João está triste* is a consequence of the situation *Ana viajar*, but we can also infer that the former provides the surroundings for the latter, and, thus, we infer $\text{Background}_{\text{backward}}$. Since the temporal consequence of Background is temporal overlapping, the temporal relation between the two situations is explained.[55]

[55] Once again, the sentences with clauses introduced by *quando* can describe situations connected by this combination of rhetorical relations (cf. (i)).

(i) Quando a Ana viajar, o Pedro vai estar triste.
When Ana travel(Subj), Pedro will be sad.

It should be noted, however, that, although the rhetorical relations may the same as in (570), i.e., Result and $\text{Background}_{\text{backward}}$, the temporal characterisation of the situation described in the subordinate clause differs. In (i), the situation *a Ana viajar* is completely posterior to the utterance time, whereas in (570) it overlaps the utterance time and goes beyond it.

Alves (2002) analyses examples like (569) differently. She considers that the rhetorical relation which links the situations in such cases is Elaboration. It should be noted that she only refers to sequences of *Pretéritos Perfeitos*, as in (571).

(571) Enquanto viveu em Paris, a Ana partilhou um apartamento com o Michel.
While lived in Paris, the Ana shared a flat with the Michel.
While she lived in Paris, Ana shared a flat with Michel.

(Alves (2002: 292))

In order to suit the rhetorical relation to the examples as this one, she adds to the definition proposed by Lascarides and Asher (1991; 1993) the possibility of not only events but also states being part of the situation with which they are combined. In temporal terms, this means that the temporal relation is not always of inclusion of the second situation into the first, but it can also be of overlapping. The problem is not having Elaboration with states. The prototypical example of Asher and Lascarides (2003: 139), repeated here as (572) integrates a state in one argument.

(572) John had a great evening last night. He had a great meal. He ate salmon. He devoured lots of cheese. He then won a dancing competition.

(Asher and Lascarides (2003: 139))

Looking into (571), however, and comparing it to other cases of Elaboration as (572), we perceive that the rhetorical connection cannot be the same. In (572), on the one hand, the situations *he had a great meal* and *he then won a dancing competition*, and on the other hand, *he ate salmon* and *he devoured lots of cheese* are linked to *John had a great evening* and *he had a great meal*, respectively, by Elaboration, because they are clearly parts of a larger situation. The same is true for one of the examples with *quando* already analysed, repeated here as (573).

(573) Quando a Maria fez a tarte de maçã, descascou as maçãs.
When Maria made an apple pie, she peeled the apples.

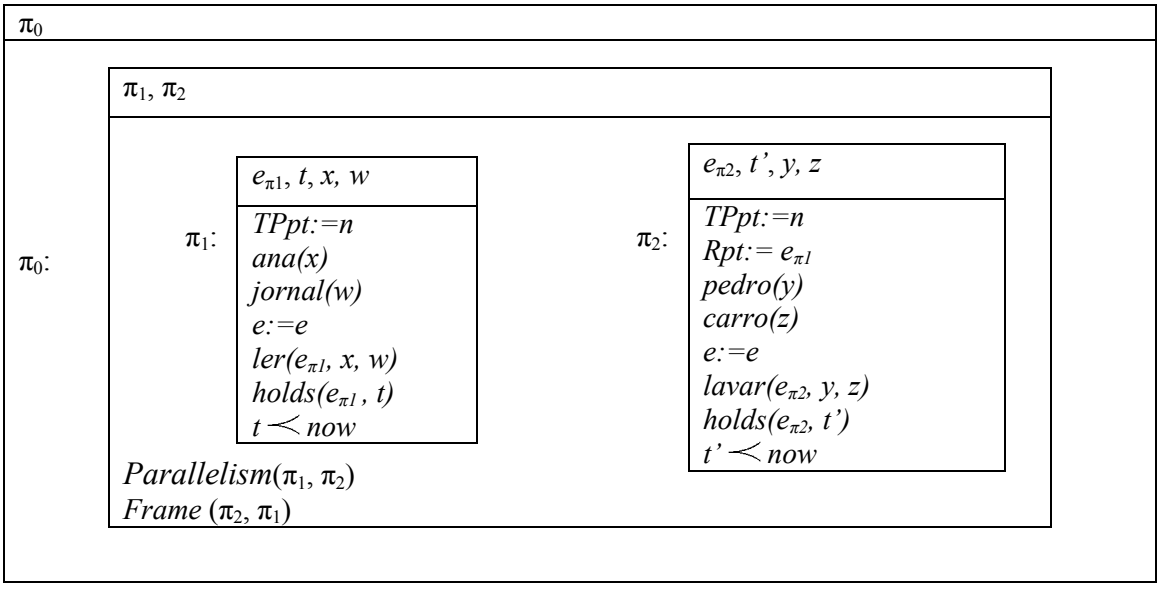
In this example, the speaker elaborates on the situation represented by the subordinate clause, referring to a subsituation of *making an apple pie*. The situations

linked by Elaboration to a larger situation constitute an answer to a question of the type 'what did he/she do to accomplish α?', where α is the larger situation. For instance, in relation to (572), one can ask after hearing the first sentence, '*what did John do to have a great evening?'*. The answer would be *'he had a great meal and he then won a dancing competition'*.

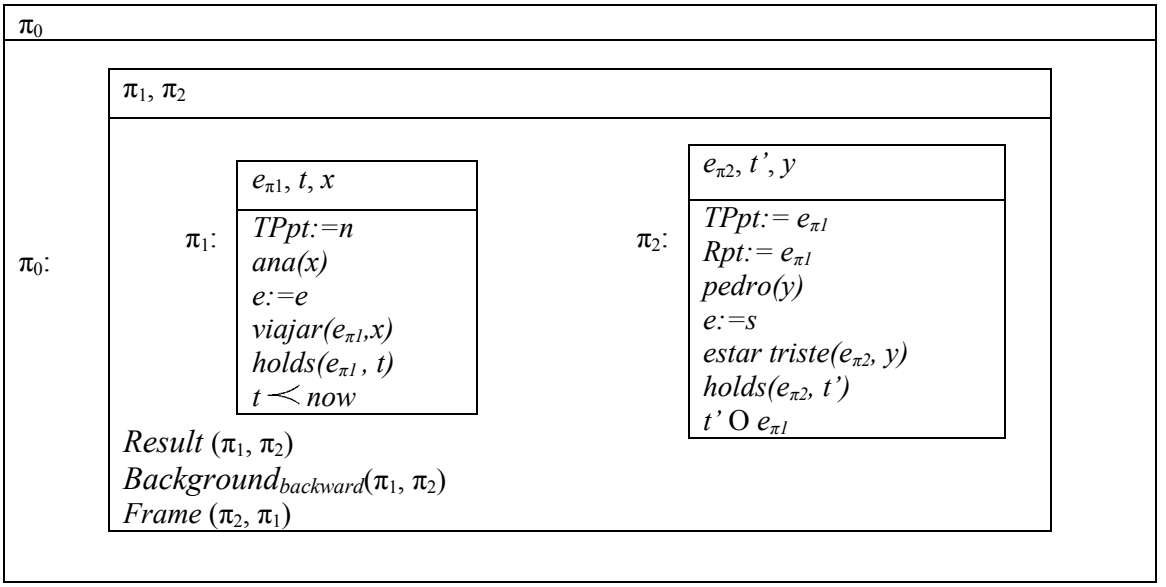
In (571), one cannot ask the same question because it results odd: *'what did Ana do to live in Paris? She shared a flat with Michel'*. In this case, the focus is on the situation *Ana partilhou um apartamento com o Michel* and not on *Ana viveu em Paris*, due mainly to the influence of the connector, which contrary to *quando*, for instance, has a greater role in the assignment of a rhetorical meaning to the sentence. The proper question for this sentence would be *'In which circumstances did Ana shared a flat with Michel?'*. As so, the rhetorical relation $\text{Background}_{\text{forward}}$ would be more suitable.

The SDRSs representing examples (567)-(570) are in (567a)-(570a).

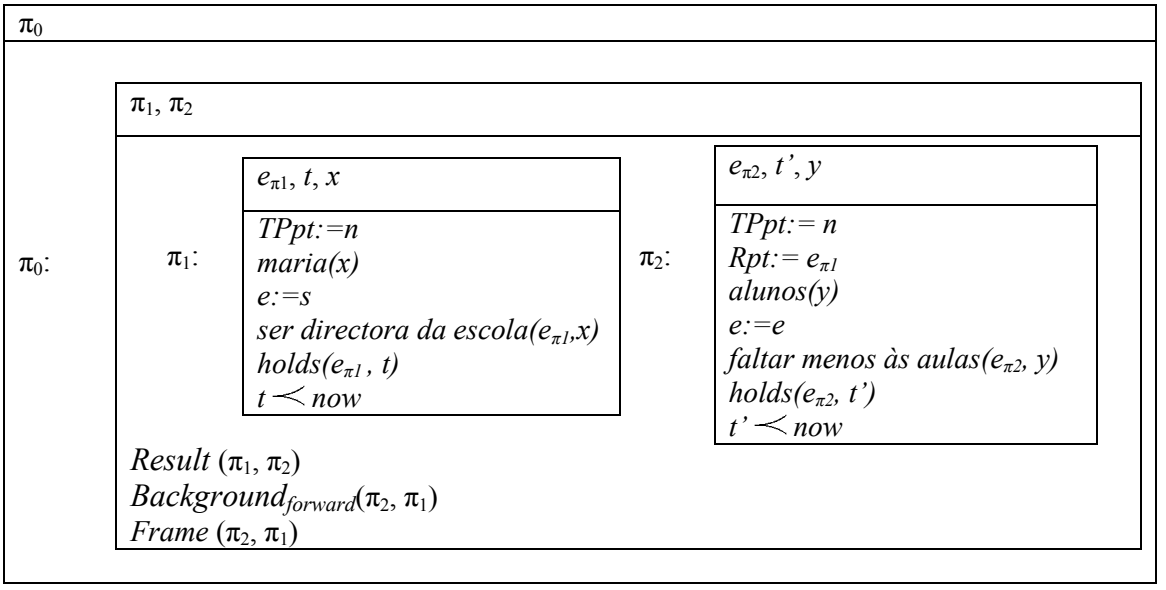
(567a)



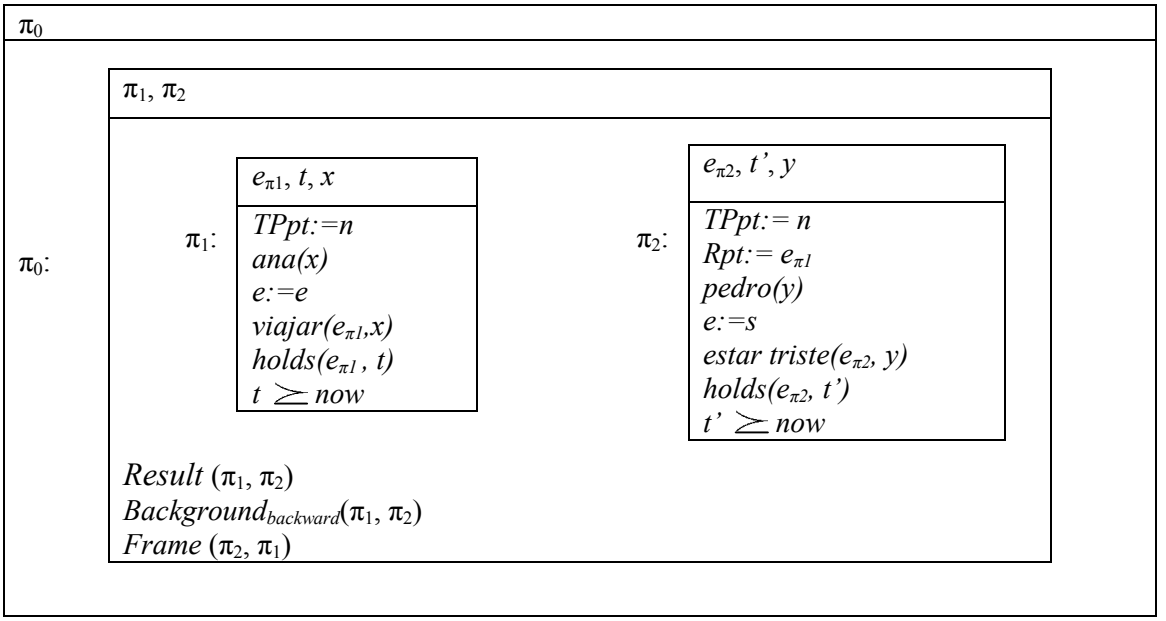
(568a)


π0
π1, π2
π0:
π1:
e_π1, t, x
TPpt:=n
ana(x)
e:=e
viajar(e_π1,x)
holds(e_π1 , t)
t ≺ now
π2:
e_π2, t', y
TPpt:= e_π1
Rpt:= e_π1
pedro(y)
e:=s
estar triste(e_π2, y)
holds(e_π2, t')
t' O e_π1
Result (π1, π2)
Background_backward(π1, π2)
Frame (π2, π1)

(569a)


π0
π1, π2
π0:
π1:
e_π1, t, x
TPpt:=n
maria(x)
e:=s
ser directora da escola(e_π1,x)
holds(e_π1 , t)
t ≺ now
π2:
e_π2, t', y
TPpt:= n
Rpt:= e_π1
alunos(y)
e:=e
faltar menos às aulas(e_π2, y)
holds(e_π2, t')
t' ≺ now
Result (π1, π2)
Background_forward(π2, π1)
Frame (π2, π1)

(570a)[56]



The comparison between complex sentences with *enquanto* and strings of single sentences reveals, generally speaking, the same rhetorical relations are kept. So, when the order is subordinate clause + main clause the rhetorical relations hold (cf. (574)-(579)). When the order changes, the same rhetorical relations is observed in the complex sentences because the directionality of the inference process is from the main clause to the subordinate clause. However, in the non-complex counterparts of the same examples, Parallelism is preserved as expected (cf. (577)), because the directionality of the inference process does not affect this rhetorical relation; in the case of Background, since the arguments change, so does the type of Background (cf. (578) and (579)); and instead of the rhetorical relation of Result inferred in (578a) and (579a), we infer the rhetorical relation of Explanation in (578b) and (579b).

(574) a. Enquanto a Ana leu o jornal, o Pedro lavou o carro. **(Parallelism)**
While Ana read the newspaper, Pedro washed the car.

b. A Ana leu o jornal. O Pedro lavou o carro. **(Parallelism)**
Ana read the newspaper. Pedro washed the car.

[56] In this SDRS, in π_1 we use the condition $t \succeq now$ to represent the temporal relation of overlapping the utterance time and going beyond it, which is conveyed by the use of the *Futuro do Conjuntivo* in the clause introduced by *enquanto*.

(575) a. Enquanto a Ana viajou, o Pedro estava triste. **(Background$_{backward}$ + Result)**
While Ana travelled, Pedro was(Imp) sad.

b. A Ana viajou. O Pedro estava triste. **(Background$_{backward}$ + Result)**
Ana travelled. Pedro was(Imp) sad.

(576) a. Enquanto a Maria era directora da escola, os alunos faltaram menos às aulas. **(Background$_{forward}$ + Result)**
While Maria was(Imp) the school's principal, the students missed classes less.

b. A Maria era directora da escola. Os alunos faltaram menos às aulas. **(Background$_{forward}$ + Result)**
Maria was(Imp) the school's principal. The students missed classes less.

(577) a. O Pedro lavou o carro enquanto a Ana leu o jornal. **(Parallelism)**
Pedro washed the car while Ana read the newspaper.

b. O Pedro lavou o carro. A Ana leu o jornal. **(Parallelism)**
Pedro washed the car. Ana read the newspaper.

(578) a. O Pedro estava triste enquanto a Ana viajou. **(Background$_{backward}$ + Result)**
Pedro was(Imp) sad while Ana travelled.

b. O Pedro estava triste. A Ana viajou. **(Background$_{forward}$ + Explanation)**
Pedro was(Imp) sad. Ana travelled.

(579) a. Os alunos faltaram menos às aulas enquanto a Maria era directora da escola. **(Background$_{forward}$ + Result)**
The students missed classes less while Maria was(Imp) the school's principal.

b. Os alunos faltaram menos às aulas. A Maria era directora da escola. **(Background$_{backward}$ + Explanation)**
The students missed classes less. Maria was(Imp) the school's principal.

In summary,

(i) *enquanto* is by default indicative of the rhetorical relation Parallelism, which normally arises when both clauses resort to the same verb tense and represent situations of the same aspectual class;

(ii) Background normally surfaces when there is a state, basic or derived;

(iii) in certain contexts the lexicon leads the reader to establish a relation of cause-effect between the situations, which still overlap each other. In these cases, we infer the rhetorical relations Result and Background: the first accounts for the causal link and the second for the temporal relation;

(iv) although *enquanto* permits a variation of three rhetorical relation, which is a higher number than *antes de* and *depois de* permit, it is much more restrictive than *quando*;

(v) the comparison of the complex sentences with their non-complex counterparts reveals that some rhetorical relations at the content level are preserved, namely Parallelism, because the order in which the two situations are processed is not relevant and Background, which only changes the type from $\text{Background}_{\text{backward}}$ to $\text{Background}_{\text{forward}}$ and vice-versa. In certain contexts, the rhetorical relation Result changes to Explanation.

4.4. Sentences with clauses introduced by *porque*

The clauses of reason which we will analyse are the ones introduced by *porque*, since they are the most representative of this type of clauses. Since the connector *porque* introduces a cause or reason, the inference of the rhetorical relation which expresses that link will be facilitated. Nonetheless, the analysis of some of the possible tenses' combinations will show that, despite the fact that the causal meaning of *porque* is always the same, the temporal relation is not always anteriority of the cause, as predicted by the meaning postulates of Explanation. This constitutes a problem with which we have to deal.

In sentences with *porque*, because of the strong causal meaning of *porque*, we relate the situation of the subordinate clause to the situation of the main clause. Moreover, the non-marked order of this type of sentences is main clause + subordinate clause. For that reason, we will present mainly examples with that order. Nonetheless, we will discuss some cases with the inverse order to verify the rhetorical relations at the text structuring level.

4.4.1. Temporal features and some aspectual features

Some of the possible tenses' sequences are: *Presente* + *Presente*, *Pretérito Perfeito* + *Pretérito Perfeito*, *Pretérito Perfeito* + *Pretérito Imperfeito*, *Pretérito Perfeito* + *Presente*, *Presente* + *Pretérito Perfeito*, *Pretérito Perfeito* + *Pretérito-mais-que-perfeito*, *Presente* + *Futuro* and *Futuro* + *Futuro*.

The sequence *Presente* + *Presente* is viable with two events (cf. (580)), one event and one state (cf. (581)), one state and one event (cf. (582)) and two states (cf. (583)).

(580) A Maria ganha muito dinheiro porque trabalha em dois sítios.
The Maria earns a-lot of money because works in two places.
Maria earns a lot of money because she works in two places.

(581) A Ana cozinha para o Pedro porque ele é simpático com ela.
The Ana cooks for the Pedro because he is nice with her.
Ana cooks for Pedro because he is nice to her.

(582) A Maria tem uma depressão porque trabalha demasiado.
The Maria has a depression because works too-much.
Maria has a depression because she works too much.

(583) A Filipa está em casa porque tem febre.
The Filipa is at home because has fever.
Filipa is at home because she has fever.

In (580), there is a habitual interpretation so the TPpt of both situations is the utterance time and the relation between the TPpt and each situation is of partial overlapping or inclusion of the utterance time in the habitual state. In (581), the

combination of the *Presente* with the event *a Ana cozinha para o Pedro* also favours a habitual reading[57] and the state overlaps each occurrence of the event. With the states there is a present time interpretation of the situations. In (582) and (583), the state and the process and the two states, respectively, also overlap. In none of these examples, there is temporal subordination.

Although the subordinate clauses express the cause of the situations of the main clause, the temporal relation between them is not always of anteriority, but of overlapping, due to the *Presente* and/ to the aspectual classes of the situations. However, if we change the verb tense to the *Pretérito Perfeito*, we obtain a different temporal relation between the situations in the first three examples, while in the last the same temporal relation remains (compare (584)-(586) with (587)).

(584) A Maria ganhou muito dinheiro porque trabalhou em dois sítios.
Maria earned a lot of money because she worked in two places.

(585) A Ana cozinhou para o Pedro porque ele foi simpático com ela.
Ana cooked for Pedro because he was nice to her.

(586) A Maria teve uma depressão porque trabalhou demasiado.
Maria had a depression because she worked too much.

(587) A Filipa esteve em casa porque teve febre.
Filipa was at home because she had fever.

In (584), the situation represented by the subordinate clause is interpreted as being anterior to the situation of the main clause as result of the interaction between different types of information, not only temporal but also lexical.

In (585), the alteration of the verb tense leads to a different temporal relation: the state is processed as being anterior to the event of *Ana cooking for Pedro*. It should be noted that the occurrence of a state of the same aspectual type but lexically different may render a different temporal interpretation even combined with an eventive situation (cf. (588)).

[57] We recall that we are not concerned here with developing a very thorough analysis for cases of habitual or generic reading. We only present these examples as illustrations of possible tenses' and aspectual classes' combinations.

(588) O Pedro fez um bom negócio porque foi inteligente.
The Pedro did a good business because was smart.
Pedro did a good business because he was smart.

In (588), the state *foi inteligente* is an individual level phase state, as the state *foi simpático* in (585), and the situations of the main clause are eventive in both examples and yet in this case we interpret the state as overlapping the event.

In (586), the event of *working too much* is located in a time interval which is anterior to the state of *Maria having a depression*. However, if we change the predications, even maintaining a sequence of a state and an event, we can get a different temporal relation (cf. (589)).

(589) A Maria viveu em Paris porque estudou na Sorbonne.
Maria lived in Paris because she studied in the Sorbonne.

In this example, the event is not anterior to the state. Instead, the preferential temporal interpretation is of overlapping between the two.

In (587), the preferential reading is of overlapping between the two states. Nonetheless, the presence of other predications with, for instance, a different kind of state, an individual level phase state, instead of the stage level non-phase state, may result in a different temporal relation (cf. (590)).

(590) A Filipa esteve de castigo porque foi agressiva com os colegas.
The Filipa was of punishment because was aggressive with the colleagues.
Filipa was grounded because she was aggressive with her colleagues.

In (590), the state *Filipa being aggressive* is read as the cause for the state *being grounded*, but, contrary to the state's interpretation of the main clause in (587), this one is anterior to the first state.

Each situation represented by the *Pretérito Perfeito* in the examples given above is perspectivised from the utterance time and establishes with it a relation of anteriority, which means that the process of temporal linkage of the situations is the creation of a new temporal domain. The examples with the sequence *Pretérito Perfeito* + *Pretérito Imperfeito*, however, are cases of temporal subordination, since the situation of the

subordinate clause is integrated in the temporal domain created by the situation of the main clause (cf. (591)-(594)).

(591) A Maria ganhou muito dinheiro porque trabalhava em dois sítios.
Maria earned a lot of money because she worked(Imp) in two places.

(592) A Ana cozinhou para o Pedro porque ele era simpático com ela.
Ana cooked for Pedro because he was(Imp) nice to her.

(593) A Maria teve uma depressão porque trabalhava demasiado.
Maria had a depression because she worked(Imp) too much.

(594) A Filipa esteve em casa porque tinha febre.
Filipa was at home because she had(Imp) fever.

In these examples, it is not only the mechanism of temporal linkage of the clauses that changes, but also the temporal relations between the situations. The *Pretérito Imperfeito* determines that there is an overlapping relation when the situations represented by the *Pretérito Perfeito* are states (cf. (593) and (594)) and a temporal relation of inclusion when the situations are events (cf. (591)-(592)). As a result, for instance, in (591), the situation of *Maria working in two places* is not anterior to the situation of *Maria earning a lot of money*, as in (584), but includes the event. In fact, the time interval occupied by the first situation is the TPpt of the second situation.

The same temporal relation between the situations is observed in sequences with the *Pretérito Perfeito* followed by the *Presente*, but not the same mechanism of temporal linkage of the situations, as confirmed by the analysis of examples (595)-(598).

(595) A Maria ganhou muito dinheiro porque trabalha em dois sítios.
Maria earned a lot of money because she works in two places.

(596) A Ana cozinhou para o Pedro porque ele é simpático com ela.[58]
Ana cooked for Pedro because he is nice to her.

(597) A Maria teve uma depressão porque trabalha demasiado.
Maria had a depression because she works too much.

[58] In this context, the state *ele é simpático com ela* has a habitual interpretation, greatly due to the phrase *com ela* and the fact that it is a phase state.

(598) A Filipa esteve em casa porque tem febre.
Filipa was at home because she has fever.

In this set of examples, the situations represented by the subordinate clause hold not only at the utterance time, but also at a past time interval, which at least includes the location time of the situations of the main clause. In (595), the situation *Maria works in two places*, which has a habitual reading, in addition to overlapping the utterance time, must also be true in the time interval in which the situation *Maria earned a lot of money* is located. If we were to interpret the situation of the subordinate clause as only including the utterance time, then the sentence will be odd. The same reasoning applies to the interpretation of the other sentences.

With respect to the temporal characterisation of this verb tenses' sequence, the complex sentences with *porque* seem to behave very similarly to double access sentences, that is, complex sentences with *that*-clauses selected by verbs with the verb tenses' sequence *Pretérito Perfeito* ('Simple Past') + *Presente* ('Simple Present') (cf. (599)).

(599) O Pedro disse que a Maria trabalha em dois sítios.
The Pedro said that the Maria works in two places.
Pedro said that Maria works in two places.

Based on the analysis of Abusch (1991; 1993), Ogihara (1995) and Oliveira (1998), Silvano (2002) proposes that in these cases the TPpt of the situation of the subordinate clause is a time interval that includes the utterance time of the report and the original time utterance and that the situation overlaps that time interval.

We will extend the same proposal of analysis to sequences of *Pretérito Perfeito* + *Presente* in sentences with *porque*. Therefore, we claim that in the examples from (595)-(598): (i) the TPpt of the situations represented by the clause introduced by *porque* is a time interval that includes not only the utterance time but also the location time of the situations of the main clauses; (ii) and that the relation between the situations and their TPpt is of overlapping. The condition which we will be using in the SDRS to represent this temporal feature is: $TPpt:= i_{\langle e\pi 1,\ n\rangle}$, where *i* stands for time interval and $\langle e_{\pi 1},\ n\rangle$ for the minimal low and upper frontiers of that time interval, i.e.,

the time interval includes at least the location time of the first situation and the utterance time, but can, nonetheless, go beyond those limits.

As it happens within sentences with *that*-clauses, this sequence of tenses in sentences with *porque* impose the creation of a new temporal domain, and not temporal subordination, as with the sequence with *Pretérito Imperfeito*.

It is interesting to notice that the same relation between the sequence of tenses and the temporal linkage mechanisms of situations observed in these two different types of complex sentences can be found in contexts such as the ones presented in (600)-(603).

I. **Overlapping Relation**

A. Sequence *Pretérito Perfeito + Presente*

Creation of a new temporal domain

(600) a. A Maria ganhou muito dinheiro porque trabalha em dois sítios.
Maria earned a lot of money because she works in two places.

b. O Pedro disse que a Maria trabalha em dois sítios.
Pedro said that Maria works in two places.

B. Sequence *Pretérito Perfeito + Pretérito Imperfeito*
Temporal Subordination

(601) a. A Maria ganhou muito dinheiro porque trabalhava em dois sítios.
Maria earned a lot of money because she worked(Imp) in two places.

b. O Pedro disse que a Maria trabalhava em dois sítios.
Pedro said that Maria worked(Imp) in two places.

II. **Anteriority relation**

A. Sequence *Pretérito Perfeito + Pretérito Perfeito*
Creation of a new temporal domain

(602) a. A Maria ganhou muito dinheiro porque trabalhou em dois sítios.
Maria earned a lot of money because she worked in two places.

b. O Pedro disse que a Maria trabalhou em dois sítios.
Pedro said that Maria worked in two places.

B. Sequence *Pretérito Perfeito + Pretérito-mais-que-perfeito*
Temporal Subordination

(603) a. A Maria ganhou muito dinheiro porque tinha trabalhado em dois sítios.
Maria earned a lot of money because she had worked in two places.

b. O Pedro disse que a Maria tinha trabalhado em dois sítios.
Pedro said that Maria had worked in two places.

This parallelism can be drawn because, on the one hand, the sentences with *that*-clauses in European Portuguese permit different tenses' combinations as long as the verbs that select the subordinate clauses are neutral verbs like *dizer* ('say) and *afirmar* ('state') and, as such, do not impose a specific temporal localisation of the situations with which they are combined or require that both situations are represented in the same time sphere, as with *quando*, for instance. On the other hand, although *porque* is highly marked lexically, it allows the localisation of the situations in different time intervals and even different time spheres. Contrarily, *quando*, *antes de*, *depois de* and *enquanto* impose many more restrictions as to the temporal localisation of the situations, as we have seen.

Other possible tenses' combination is with a *Presente* followed by a *Pretérito Perfeito* (cf. (604)-(607))[59].

(604) O Pedro trabalha num banco porque se licenciou em Economia.
The Pedro works in a bank because himself graduated in Economics.
Pedro works in a bank because he graduated in Economics.

(605) A Ana reprova na disciplina de Matemática porque foi preguiçosa[60].
The Ana flunks in-the subject of Maths because was lazy.
Ana flunks Maths because she was lazy.

(606) A Maria tem uma depressão porque trabalhou demasiado.
Maria has a depression because she worked too much.

(607) A Filipa está em casa porque teve febre.
Filipa is at home because she had fever.

[59] We have changed the first two examples in order to make the sentences more acceptable. It should be noted that this sequence of tenses occurs more easily with states and not with events.
[60] This sentence can be interpreted if we assign the *Presente* a reading of direct report, that is, "I am flunking Ana because she was lazy".

In this sequence of tenses, the situation of the subordinate clause is always anterior to the situation of the main clause. Each of the situations' TPpt is the utterance time, but while the situations described by the *Presente* include the utterance time, the situations represented by the *Pretérito Perfeito* are anterior to *n*. This sequence is another instance of creation of a new temporal domain and of the localisation of the situations in different time spheres.

Up to this point the several tenses' combinations analysed in sentences with *porque* have represented situations which establish between them a relation of overlapping or of anteriority. Nevertheless, there are sequences that can originate a temporal relation of posteriority (cf. (608)-(609)).

(608) O João vai comprar um fato novo porque vai casar.
The João is-going to-buy a suit new because is-going to-marry.
João is going to buy a new suit because he is going to get married.

(609) O Pedro foi para a escola porque vai fazer um exame.
The Pedro went for the school because is-going to-do an exam.
Pedro went to school because he is going to do an exam.

In this set of examples, the situations of the subordinate clause are represented by a future form (*Presente* of *ir* + *Infinitivo*) and they are posterior to the situations of the main clause, regardless of the tense used in the main clause. In (608), the two situations receive the same temporal characterisation, that is, the TPpt is *n* and the relation between the situations and the TPpt is of posteriority. Such temporal features signify that the temporal relation between the two situations is not determined by the temporal characterisation of each situation and it can be of anteriority, overlapping and of posteriority. In this particular case, the lexicon and our world knowledge play a relevant part in determining the correct temporal relation, i.e., of posteriority. In (609), the temporal relation between the situations results from the temporal characterisation of each situation: the TPpt of the first situation is *n* and the relation with it is of anteriority; the TPpt of the second situation is *n* and the relation with it is of posteriority, hence, the relation between both situations is of posteriority.

In none of the cases just analysed there is temporal subordination. However, if we were to change the verb form *vai fazer*, which expresses future value in European Portuguese, to *ia fazer*, using the *Pretérito Imperfeito* of the verb *ir* with the temporal

value of a past future, then the mechanism of temporal linkage of the situations would be temporal subordination (cf. (610)).

(610) O Pedro foi para a escola porque ia fazer um exame.
The Pedro went for the school because was-going to-do an exam.
Pedro went to school because he was going to do an exam.

The same contrast between these tenses' sequences can be observed in sentences with *that*-clauses introduced by verbs as *dizer* (cf. (611)-(612)).

III. **Posteriority Relation**

A. Sequence *Pretérito Perfeito* + *Futuro* (*Presente* of *ir* + *Infinitivo*)

Creation of a new temporal domain

(611) O Pedro disse que vai fazer um exame.
The Pedro said that is-going to-do an exam.
Pedro said that he is going to do an exam.

B. Sequence *Pretérito Perfeito* + *Futuro do Passado* (*Pretérito Imperfeito* of *ir* + *Infinitivo*)

Temporal subordination

(612) O Pedro disse que ia fazer um exame.
The Pedro said that was-going to-do an exam.
Pedro said that he was going to do an exam.

Similarly to (609), in (610), the TPpt of the situation of the subordinate clause is *n* and the relation between the two is of posteriority. In turn, in (612), like in (610), the TPpt of *João ia fazer um exame* is the time interval in which the first situation is located and the temporal relation between the two situations is of posteriority.

In short, from the analysis of sentences with *porque* carried out we can come to the following conclusions:

(i) different sequences of tenses in the Indicative mood are possible: *Presente* + *Presente*, *Pretérito Perfeito* + *Pretérito Perfeito*, *Pretérito Perfeito* + *Pretérito Imperfeito*, *Pretérito Perfeito* + *Presente*, *Presente* + *Pretérito Perfeito*, *Pretérito Perfeito* + *Pretérito-mais-que-perfeito*, *Presente* + *Futuro* and *Futuro* + *Futuro*.

(ii) different aspectual classes' combinations are feasible, namely event + event; event + state; state + event; and state + state;

(iii) depending on the type of verb tenses or aspectual classes' sequences and on the predications involved, the situations can establish temporal relations of anteriority, of posteriority and of overlapping;

(iv) the situations can be represented in different time spheres;

(v) creation of a new temporal domain and temporal subordination can be observed in this type of sentences.

4.4.2. Rhetorical Relations

The connector *porque* is highly marked lexically and, thus, it is greatly responsible for the inference of a causal relation of the situations that it connects. As it marks a cause or a reason, we can logically assume that it is a cue-word for the rhetorical relation of Explanation. However, in order to infer this rhetorical relation in all of the examples analysed in the previous section, we need to address two questions: one concerning its temporal consequences and the other its value in sentences headed by *porque* at a text structuring level.

First, we have seen that there are cases in which the two situations in this type of sentences can have a relation of anteriority (cf. (613)), circumstance which is predicted by the meaning postulates put forward by Asher and Lascarides (2003)[61].

[61] Cf. Table 46, page 271 of this work.

(613) A Maria ganhou muito dinheiro porque trabalhou em dois sítios.
Maria earned a lot of money because she worked in two places.

The authors also postulate that two situations which overlap each other (cf. (614)-(616)) can be connected by Explanation. According to them, in these cases, there is also a relation of Background, which explains the relation of overlapping.

(614) A Maria teve uma depressão porque trabalhava demasiado.
Maria had a depression because she worked(Imp) too much.

(615) A Filipa está em casa porque tem febre.
Filipa is at home because she has fever.

(616) A Ana cozinhou para o Pedro porque ele é simpático com ela.
Ana cooked for Pedro because he is nice to her.

However, it is quite troublesome to justify how the combination of different temporal relations, anteriority and overlapping, can render an overlapping relation.

There are also examples in which the two situations have a relation of posteriority (cf. (617)) and in these cases we wonder which rhetorical relation we could combine with Explanation to obtain the correct temporal relation. If the example involved only events as in (618), we could argue that both situations are linked by Explanation and by Narration and we would obtain the correct temporal interpretation.

(617) O João vai comprar um fato novo porque vai casar.
João is going to buy a new suit because he is going to get married.

(618) O Pedro foi para a escola porque vai ter um exame.
Pedro went to school because he is going to have an exam.

The meaning postulates of Narration stipulate that this rhetorical relation is inferred when the two situations occur in the order they are represented by discourse, which corresponds to the temporal organisation of examples (617) and (618). However, we dwell in the same problem: how come in the combination of distinct and contrary temporal relations, we choose one and not the other?

So, at this point, we are faced with two hypotheses: (i) we introduce the different temporal consequences in the Explanation's definition; or (ii) we consider that

Explanation has no temporal consequences and, in combination with other rhetorical relations, it can render different temporal relations, namely overlapping with Background, posteriority with Narration or anteriority with Inverted Narration.

The first hypothesis would mean that the temporal relations of situations linked by Explanation would not be specified directly in the SDRS. In fact, only in the case of temporal subordination and of examples with situations represented in different time spheres, would we be able to infer the temporal relation of the situations. In the case of temporal subordination (cf. (614)), we can easily identify the relation between the situations because: (i) the TPpt of a situation is the location time of the other situation and the relation between the TPpt and that situation expresses, ultimately, the temporal relation between the two situations; (ii) and because the SDRS includes the conditions that express those relations. When both situations occur in different time spheres, as in (618), the identification of the temporal relation between the two situations is inferred from the conditions that identify the TPpt and the relation between the TPpt and the location time of both situations.

The problem is when we cannot infer the temporal relation from the temporal characterisation of each situation. For instance, in example (613), both situations have as TPpt the utterance time and both establish with it a relation of anteriority and these conditions do not say anything about the temporal relation between the two situations. The condition that identifies the rhetorical relation between them would not provide that information either, if we included in the Explanation's definition the three possible temporal relations. In this scenario, the SDRS of examples like this would not specify the temporal relation between the two situations and, thus, would not properly represent the sentences.

The solution for this predicament would be to introduce a condition to represent the temporal relation of the situations. However, if we followed this option, one of the principles in which the SDRT is grounded, that is, that rhetorical relations can explain temporal relations, would lose its strength. And we have seen that in fact it works with different data (cf. sequences of *Pretéritos Perfeitos* in sentences with *quando*).

The second hypothesis, that is, the combination of different rhetorical relations is more compelling. First, we would not have to deal with temporal underspecification or add extra conditions to solve that underspecification. Second, we would be maximising discursive coherence. Third, we would be optimising the rhetorical relations. Forth, we

would be working on premises already predicted by the authors Asher and Lascarides (2003). Last, but not least, the same procedure could be applied to other rhetorical relations, like Result.

Therefore, bearing in mind, on the one hand, the downsides of the first hypothesis and, on the other hand, the upsides of the second, we will subscribe to the second hypothesis, that is, the meaning postulates of Explanation do not include any temporal consequences and the different temporal relations we can encounter in sentences with *porque* can be accounted for by combining Explanation with Background, Narration or Inverted Narration.

The combination of these rhetorical relations is possible because of their different nature and because their meaning postulates do not conflict with each other. Background, Narration and Inverted Narration are extrinsic relations while Explanation is an intrinsic relation. This means that, whereas to infer the first three the temporal information is the most relevant, in the case of Explanation, there are other sources of information such as the lexicon and world knowledge, which play a more relevant role. Since Background, Narration and Inverted Narration do not establish a causal link between the situations, contrary to Explanation, the meaning postulates of the combined rhetorical relations do not clash. The same would not be true if we tried to combine Explanation and Result, for instance.

For these reasons, we will assign to Explanation the main role of identifying the relation of meaning between the two situations and to Background, Narration and Inverted Narration the responsibility of identifying the temporal localisation of the situation.

We will, nonetheless, have to loosen the meaning postulates of Narration in order to cover cases in which there is a state with an event in a relation of successivity. Therefore, instead of speaking of prestates or poststates of the events, we just stipulate that one situation temporally follows the other (cf. table 51).

Rhetorical Relation	**Definition**
Narration (α, β)	R holds if the constituents express eventualities that occur in the sequence in which they were described. α and β share a contingent common topic, and the more informative the topic, the better the narration (hence, narration is scalar). Spatiotemporal Consequence of Narration: ØNarration(α, β)⇒$e_\alpha \prec e_\beta$

Table 51. Reformulation of Narration's definition

Table 52 presents the new definition of Explanation.

Rhetorical Relation	Definition
Explanation (α, β)	R holds if the relevant constituent expresses a situation which is the cause or reason of the situation represented by the other constituent.

Table 52. The reformulated definition of the rhetorical relation Explanation

The second question we want to raise concerns the inference, or not, of Explanation in examples with *porque* in the initial position (cf. a. and b. in (619)-(623)).

(619) a. A Maria ganhou muito dinheiro porque trabalhou em dois sítios.
Maria earned a lot of money because she worked in two places.

b. Porque trabalhou em dois sítios, a Maria ganhou muito dinheiro.
Because she worked in two places, Maria earned a lot of money.

(620) a. A Maria teve uma depressão porque trabalhava demasiado.
Maria had a depression because she worked(Imp) too much.

b. Porque trabalhava demasiado, a Maria teve uma depressão.
Because she worked(Imp) too much, Maria had a depression.

(621) a. A Filipa está em casa porque tem febre.
Filipa is at home because she has fever.

b. Porque tem febre, a Filipa está em casa.
Because she has fever, Filipa is at home.

(622) a. A Ana cozinhou para o Pedro porque ele é simpático com ela.
Ana cooked for Pedro because he is nice to her.

b. Porque o Pedro é simpático com a Ana, ela cozinhou para ele.
Because Pedro is nice to Ana, she cooked for him.

(623) a. O João vai comprar um fato novo porque vai casar.
João is going to buy a new suit because he is going to get married.

b. Porque vai casar, o João vai comprar um fato novo.
Because he is going to get married, João is going to buy a new suit.

In the b. version of the examples, in the discursive linear order, the cause or reason comes before the effect. If we were only to interpret the sentences having as criterion the linear order, we could infer Result. However, following such an

interpretation of the complex sentences with *porque*, would mean neglecting the lexical meaning of *porque*, which marks an explicative relation between the two situations in a very unambiguous manner.

As such, we will consider that the same rhetorical relation prevails at the content level and that the difference between the two types of sentences resides in the text structuring level: when the subordinate clause occupies the final position, the rhetorical relation is Specification and when it occupies the initial clause it is Frame. In the first case, the situation of the subordinate clause adds specific or detailed information about the situation of the main clause. In the second case, the situation of the subordinate clause encompasses the situation of the main clause.

In order to illustrate the semantic representation of sentences with *porque*, we have built the SDRSs for sentences (624)-(627).

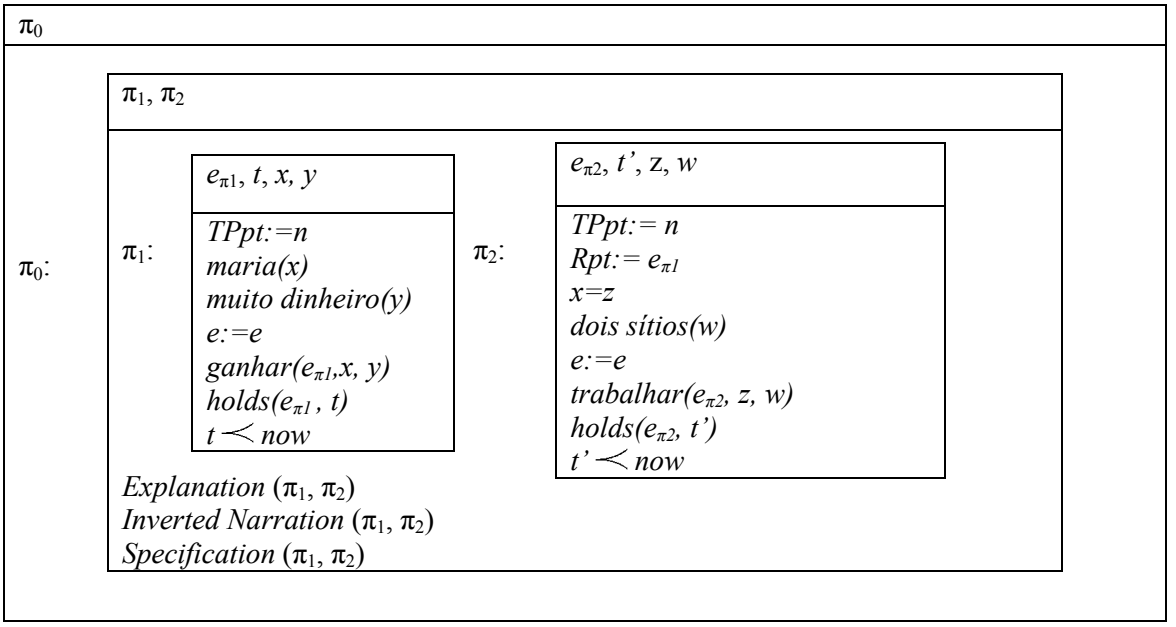
(624) A Maria ganhou muito dinheiro porque trabalhou em dois sítios.
Maria earned a lot of money because she worked in two places.

(625) A Maria teve uma depressão porque trabalhava demasiado.
Maria had a depression because she worked(Imp) too much.

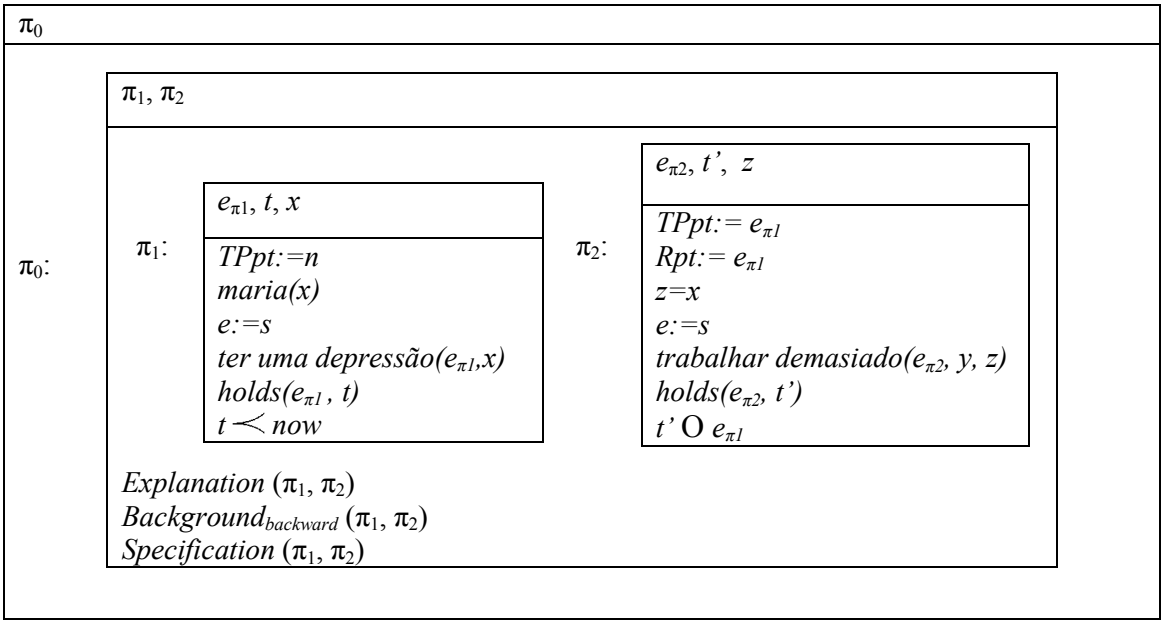
(626) A Ana cozinhou para o Pedro porque ele é simpático com ela.
Ana cooked for Pedro because he is nice to her.

(627) Porque vai casar, o João vai comprar um fato novo.
Because he is going to get married, João is going to buy a new suit.

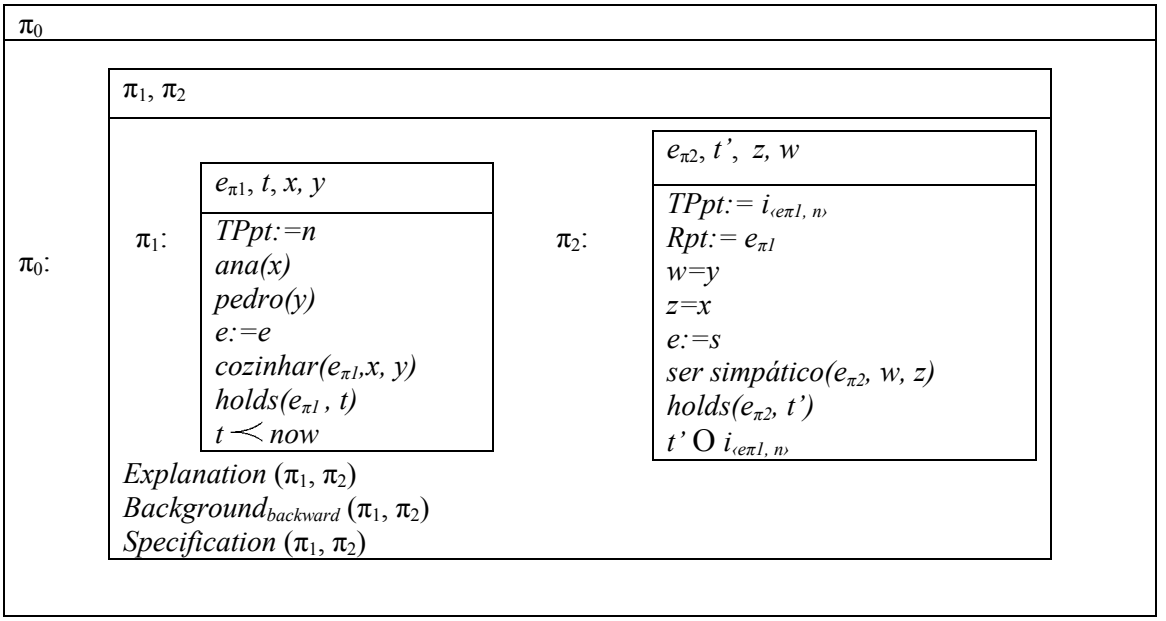
(624a)


π0
π1, π2
π0:
π1:
eπ1, t, x, y
TPpt:=n
maria(x)
muito dinheiro(y)
e:=e
ganhar(eπ1,x, y)
holds(eπ1 , t)
t ≺ now
π2:
eπ2, t', z, w
TPpt:= n
Rpt:= eπ1
x=z
dois sítios(w)
e:=e
trabalhar(eπ2, z, w)
holds(eπ2, t')
t' ≺ now
Explanation (π1, π2)
Inverted Narration (π1, π2)
Specification (π1, π2)

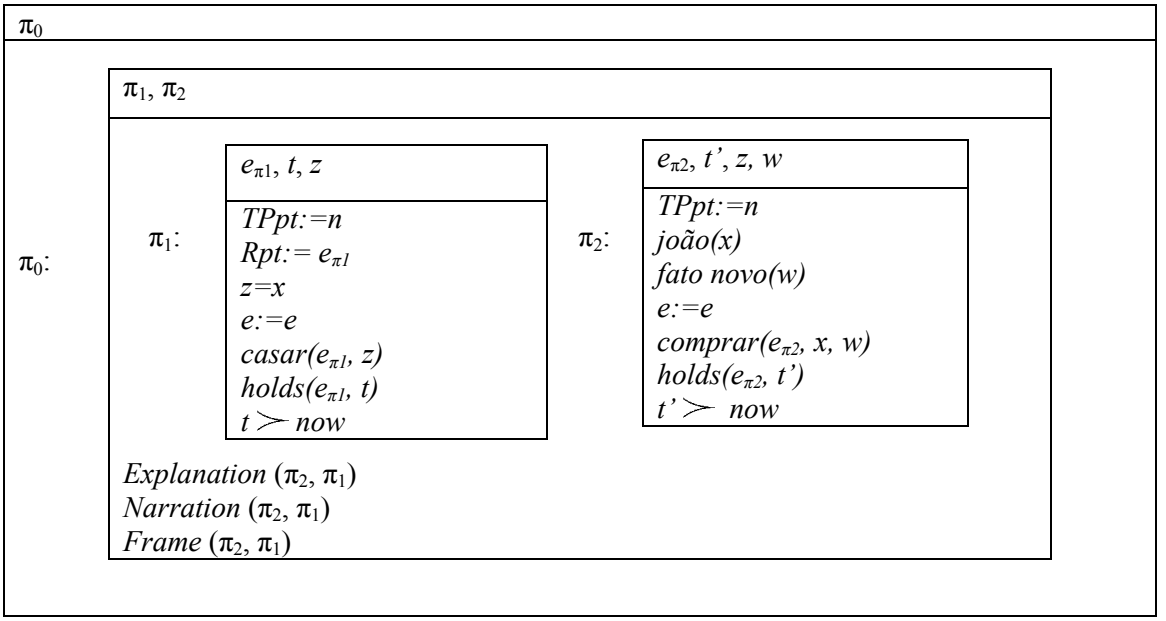
(625a)


π0
π1, π2
π0:
π1:
eπ1, t, x
TPpt:=n
maria(x)
e:=s
ter uma depressão(eπ1,x)
holds(eπ1 , t)
t ≺ now
π2:
eπ2, t', z
TPpt:= eπ1
Rpt:= eπ1
z=x
e:=s
trabalhar demasiado(eπ2, y, z)
holds(eπ2, t')
t' O eπ1
Explanation (π1, π2)
Backgroundbackward (π1, π2)
Specification (π1, π2)

(626a)[62]



(627a)



These SDRSs include the temporal and rhetorical characterisation of the situations discussed previously. The rhetorical link is unveiled by the condition Explanation (π_1, π_2) in the first three SDRSs, and by the condition Explanation (π_2, π_1) in the last example, because the subordinate clause is the first to be processed. As to the

[62] We recall that the time interval defined as the TPpt for the second situation (π_2), that is, $i_{\langle e\pi 1,\, n\rangle}$, includes not only the location time of the first situation ($e_{\pi 1}$), but also the utterance time. Cf. previous section, pages 333-334 for the arguments of this analysis.

temporal relation, when the rhetorical relations inferred at the content level are Explanation and Inverted Narration, then, the temporal relation between the situation of the subordinate clause and the situation of the main clause is of anteriority (cf. (624a)). When there is a combination of Explanation with $\text{Background}_{\text{backward}}$ it is an overlapping relation (cf. (625a) and (626a)) and with Narration it is of posteriority (cf. (627a)).

The comparison of the examples in (624)-(627) to their non-complex counterparts shows that, once again, with the exception of the sequence in which the subordinate clause comes first, the same rhetorical relations are observed.

(628) A Maria ganhou muito dinheiro. Trabalhou em dois sítios. **(Explanation + Inverted Narration)**
Maria earned a lot of money because she worked in two places.

(629) A Maria teve uma depressão. Trabalhava demasiado. **(Explanation + $\text{Background}_{\text{backward}}$)**
Maria had a depression. She worked(Imp) too much.

(630) A Ana cozinhou para o Pedro. Ele é simpático com ela. (**Explanation + $\text{Background}_{\text{backward}}$)**
Ana cooked for Pedro. He is nice to her.

(631) O João vai casar. Vai comprar um fato novo. **(Result + Inverted Narration)**
João is going to get married. He will buy a new suit.

Despite the absence of the connector *porque*, we infer the same rhetorical relations in each example from (628)-(630), which is evidence that we use the same discursive meanings to process both sets of single and complex sentences. However, because the subordination has some features that independent sentences do not have, there are also differences in the way we compute the two types of discourse. Example (631) is proof of that. While in the corresponding example in (627) the rhetorical relation was Explanation in combination with Narration, in (631), the absence of *porque* determines that the situations are interpreted according to their order in the discourse. In this case, we have to infer different rhetorical relations, namely Result and Inverted Narration, which are the dual relations of Explanation and Narration.

In conclusion,

(i) the analysis of the examples reveals that, although *porque* strongly marks an explicative relation, the reason or cause is not always anterior to the situation with which it is combined.

(ii) From the discussion presented, we argue that the best option to conciliate the principles' of the theoretical framework in which we are working is to derive the relations of anteriority, overlapping and posteriority from the possibility of combining Explanation with the extrinsic rhetorical relations Inverted Narration, Background and Narration. The latter justifies the temporal link and the former the causal link.

(iii) the comparison of the complex sentences with their non-complex sentences shows that in the order of main clause + subordinate clause we infer the same rhetorical relations, while the order subordinate clause + main clause imply different rhetorical relations because the processes of computation are different.

4.5. Sentences with clauses introduced by *embora*

The sentences with *embora* that will be object of analysis in this section are part of the group of factual concessive clauses[63]. As it is general knowledge, *embora* selects the Subjunctive mood, circumstance that raises some questions concerning the localisation of the situations. We have already established[64] that the temporal value of the Subjunctive forms depends of the syntactic configuration in which it appears and of the linguistic context. Therefore, we will begin by investigating the different temporal readings which we can obtain in this type of sentences when the Subjunctive is combined with forms of the Indicative mood.

Then, we will verify which rhetorical relations link the situations in sentences with *embora*. Since, in the list proposed by Asher and Lascarides (2003), there is not a

[63] Cf. Chapter 1, section 1.3.3., pages 72-77, for the general analysis of this type of clauses.
[64] Cf. Chapter 2, section 2.3.2., pages 141-144.

rhetorical relation that suits the causal relation established, we will have to resort to other proposals.

Another matter we will go into is whether a rhetorical relation that identifies the causal relation of meaning between the situations is sufficient to represent these types of sentences.

4.5.1. Temporal features and some aspectual features

In chapter 1[65], we have presented the verb tenses that normally occur in the subordinate clause and in the main clause according to some studies. The situations of the clause introduced by *embora* can be represented by the *Presente do Conjuntivo*, the *Pretérito Imperfeito do Conjuntivo*, the *Pretérito Perfeito Composto do Conjuntivo*, the *Pretérito-mais-que-perfeito do Conjuntivo*, while the situations of the main clause can be described by the *Presente do Indicativo*, *Pretérito Perfeito do Indicativo*, *Futuro* and *Condicional*[66]. First, we will combine the different verb tenses in order to check the possible sequences in sentences with *embora*. Simultaneously, we will test which aspectual classes (states and events) can come together in the same sentence. Then, we will study the temporal relations each sequence originates.

Although it is the marked position, we have decided to position the subordinate clause after the main clause to facilitate the processing of temporal relations. This way it will be easier to identify not only the TPpt and the relation between the situations, but also the rhetorical relations that connect the situation of the subordinate clause to the situation of the main clause.

We will begin by testing the verb tenses that can occur with the *Presente do Conjuntivo*. In each set of examples from I to V, we have combined different basic aspectual classes: the first example corresponds to a combination event + state, the second to state + event, the third to state + state and forth to event + event. In certain cases, the co-occurrence with a verb tense can lead to the commutation of the basic aspectual class, namely with the *Presente do Conjuntivo*, the *Pretérito Imperfeito do Conjuntivo* and, in certain, interpretations with *the Pretérito Perfeito do Conjuntivo*.

[65] Cf. table 10, page 77.
[66] We will leave the *Condicional* out of our analysis due to its modal meaning.

I.

A. *Presente do Indicativo + Presente do Conjuntivo*

(632) O João gasta muito dinheiro, embora esteja desempregado.
The João spends a lot of money, although be(Subj) unemployed.
João spends a lot of money, although he is unemployed.

(633) O João vive em Lisboa, embora trabalhe no Porto.
The João lives in Lisbon, although work(Subj) in-the Porto.
João lives in Lisbon, although he works in Porto.

(634) O João é simpático, embora esteja mal-humorado.
The João is nice, although be(Subj) ill-humoured.
João is nice, although he is ill-humoured.

(635) O João estuda Linguística, embora trabalhe em Matemática.
The João studies Linguistics, although work(Subj) in Mathematics.
João studies Linguistics, although he works in Mathematics.

B. *Pretérito Perfeito do Indicativo + Presente do Conjuntivo*

(636) O João gastou muito dinheiro, embora esteja desempregado.
João spent a lot of money, although he is unemployed.

(637) O João viveu em Lisboa, embora trabalhe no Porto.
João lived in Lisbon, although he works in Porto.

(638) O João foi simpático, embora esteja mal-humorado.
João was nice, although he is ill-humoured.

(639) O João estudou Linguística, embora trabalhe em Matemática.
João studied Linguistics, although he works in Mathematics.

C. *Futuro + Presente do Conjuntivo*

(640) O João vai gastar muito dinheiro, embora esteja desempregado.
João will spend a lot of money, although he is unemployed.

(641) O João vai viver em Lisboa, embora trabalhe no Porto.
João will live in Lisbon, although he works in Porto.

(642) O João vai ser simpático, embora esteja mal-humorado.
João will be nice, although he is ill-humoured.

(643) O João vai estudar Linguística, embora trabalhe em Matemática.
João will study Linguistics, although he works in Mathematics.

The observation of examples in I reveals that the *Presente do Conjuntivo* in the subordinate clause is compatible with the all of the verb tenses tested, as well as with the different events/ states sequences. Although the Subjunctive is normally portrayed as a dependent tense, in these syntactic and semantic configurations, it does not depend of the verb tense with which it occurs to locate the situations. Actually, Oliveira (2008) has already observed that this mood in *that*-clauses can temporally create its own temporal domain. This circumstance is observed in examples in I.: in all examples, the situations represented by that verb tense select as its TPpt the utterance time and they include the utterance time. So, in none of the sequences there is temporal subordination.

Given that there is not any temporal bound between the situations, we can infer the temporal relation between them by looking at their temporal features. When the situation of the main clause is in the *Presente do Indicativo* (cf. examples in A), the TPpt is the utterance time and the relation between both is of overlapping, thus, the relations between the two situations is also of overlapping. When the situation of the main clause is in the *Futuro* (cf. examples in C), the TPpt is the utterance time, once again, and the relation between them is of posteriority, hence, the situation of the subordinate clause is located in time interval prior to the situation of the main clause.

However, the temporal analysis of data with the *Pretérito Perfeito* is not as straightforward as the previous ones (cf. examples in B). The TPpt of the main clause's situation is the utterance time and the relation between the two is of anteriority. So, we would expect that if the situations of the subordinate clause overlap the utterance time, then they should be posterior to the first situations. One can indeed get that temporal interpretation in example (637) or even in (639). But, in (636) and (638), although we agree that the situations of the subordinate clause include the utterance time, the sentences are relevant only if the situations of the subordinate clause also hold in the time interval in which the situations of the main clauses are located. This is especially true for (636). In (638), we could accept an interpretation in which we did not expect *João to be in ill-humoured* now, at a present time, because *he was so nice* in the past. Nevertheless, in (636), the presupposition that someone who is unemployed should not spend much money only makes sense if the event of *spending much money* occurs during the state of *being unemployed*. As such, we argue that in these contexts, the *Presente do Conjuntivo* receives a temporal interpretation similar to the double-access sentences: TPpt is a time interval that includes the utterance time and the location time

of the situation of the main clause and the relation between the situation and TPpt is of overlapping.

Similarly to the *Presente do Indicativo*, the *Presente do Conjuntivo* may also have a future interpretation[67]. However, in this type of complex sentences[68] it is normally required the presence of a time adverbial which locates the situation in a future time interval (cf. (644)).

(644) O João está no Porto, embora viaje amanhã para Lisboa.
The João is in-the Porto, although travel tomorrow to Lisbon.
João is in Porto, although he will travel tomorrow to Lisbon.

The presence of the *Pretérito Imperfeito do Indicativo* in the main clause results in ungrammatical sentences because there is not any available time interval that can be its TPpt. However, as it happens with other sentences with adverbial clauses the presence of an individual level predicate in the main clause may license the sentences (cf. (645)).

(645) O João era magro, embora esteja gordo (agora).
The João was thin, although be fat.
João was thin, although he is fat (now).

As to the possibility of representing the situations in the same time spheres, the sequences with the *Pretérito Perfeito* and the *Futuro* are evidence that in sentences with *embora* the situations can be represented in different time spheres without rendering ungrammatical results.

The use of the *Pretérito Imperfeito do Conjuntivo* in the clause with *embora* does not work as well as the *Presente do Conjuntivo*, as shown by examples in II,

[67] Cf. Fonseca (1994), Oliveira (2003), a.o..
[68] Compare the use of the Subjunctive in this type of adverbial sentences to complex sentences with *that*-clauses, such as (i), from Oliveira (2003: 268).

(i) O miúdo está a pedir que lhe leias uma história.
The kid is asking that you read him a story.

In this example, the *Presente do Conjuntivo* describes a situation that is posterior to the utterance time and, for that matter, to the situation *o miúdo está a pedir*. This interpretation is available even without the presence of a future time adverbial due to the lexical nature of the main verb, which projects the situation into a future time interval.

because like the *Pretérito Imperfeito do Indicativo* in its default reading, it needs a past time interval to act as its TPpt.

II.

A. *Presente do Indicativo + Pretérito Imperfeito do Conjuntivo*

(646) *O João gasta muito dinheiro, embora estivesse desempregado.
**João spends a lot of money, although he was unemployed.*

(647) *O João vive em Lisboa, embora trabalhasse no Porto.
**João lives in Lisbon, although he worked in Porto.*

(648) *O João é simpático, embora estivesse mal-humorado.
**João is nice, although he was ill-humoured.*

(649) *O João estuda Linguística, embora trabalhasse em Matemática.
**João studies Linguistics, although he worked in Mathematics.*

B. *Pretérito Perfeito do Indicativo + Pretérito Imperfeito do Conjuntivo*

(650) O João gastou muito dinheiro, embora estivesse desempregado.
João spent a lot of money, although he was unemployed.

(651) O João viveu em Lisboa, embora trabalhasse no Porto.
João lived in Lisbon, although he worked in Porto.

(652) O João foi simpático, embora estivesse mal-humorado.
João was nice, although he was ill-humoured.

(653) O João estudou Linguística, embora trabalhasse em Matemática.
João studied Linguistics, although he worked in Mathematics.

C. *Futuro + Pretérito Imperfeito do Conjuntivo*

(654) *O João vai gastar muito dinheiro, embora estivesse desempregado.
**João will spend a lot of money, although he was unemployed.*

(655) *O João vai viver em Lisboa, embora trabalhasse no Porto.
**João will live in Lisbon, although he worked in Porto.*

(656) *O João vai ser simpático, embora estivesse mal-humorado.
João will be nice, although he was ill-humoured.

(657) *O João vai estudar Linguística, embora trabalhasse em Matemática.
João will study Linguistics, although he worked in Mathematics.

In examples with the *Presente* or with the *Futuro* in the main clause (cf. examples in A and C, respectively), the sentences are ungrammatical because the situations of the main clause are located in a present and a future time interval, respectively, and there is not a past time interval to be the TPpt of the subordinate clauses' situations. For instance, in example (648), if we added a time locator for the situation of the subordinate clause, as in (658), the example could be temporally processed.

(658) O João é simpático, embora estivesse mal-humorado na festa de ontem.
The João is nice, although be ill-humoured in-the party of yesterday.
João is nice, although he was ill-humoured in yesterday's party.

In the absence of a past time situation or interval, we just do not know where to locate the situations of the subordinate clause.

It should be noted, however, that sentences with the *Presente* may be acceptable in an interpretation in which that verb tense has a fictional narrative reading, locating the situations in a past time interval. In this interpretation, the TPpt of the subordinate clause's situations is the time interval in which the situation of the main clause is located.

In examples with the *Pretérito Perfeito*, the situations of the subordinate clause choose as TPpt the location time of the situation of the main clause, which is a past time interval, and establish with it a relation of overlapping (partial in the case of the events). As such, there is temporal subordination.

In examples with the *Pretérito Perfeito Composto do Conjuntivo*[69] in the subordinate clause (cf. III.), all the different tenses' and aspectual classes combinations tested are grammatical.

[69] We have changed some of the predications in the examples so that the temporal relation and the rhetorical link become more evident.

III.

A. *Presente do Indicativo + Pretérito Perfeito Composto do Conjuntivo*

(659) O João gasta muito dinheiro, embora tenha estado desempregado.
João spends a lot of money, although he has been unemployed.

(660) O João vive em Lisboa, embora tenha trabalhado no Porto.
João lives in Lisbon, although he has worked in Porto.

(661) O João é simpático, embora tenha estado mal-humorado.
João is nice, although he has ill-humoured.

(662) O João estuda Linguística, embora tenha trabalhado em Matemática.
João studies Linguistics, although he has worked in Mathematics.

B. *Pretérito Perfeito do Indicativo + Pretérito Perfeito Composto do Conjuntivo*

(663) O João gastou muito dinheiro, embora tenha estado desempregado.
João spent a lot of money, although he has been unemployed.

(664) O João viveu em Lisboa, embora tenha trabalhado no Porto.
João lived in Lisbon, although he has worked in Porto.

(665) O João foi simpático, embora tenha estado mal-humorado.
João was nice, although he has been ill-humoured.

(666) O João estudou Linguística, embora tenha trabalhado em Matemática.
João studied Linguistics, although he has worked in Mathematics.

C. *Futuro + Pretérito Perfeito Composto do Conjuntivo*

(667) O João vai gastar muito dinheiro, embora tenha estado desempregado.
João will spend a lot of money, although he has been unemployed.

(668) O João vai viver em Lisboa, embora tenha trabalhado no Porto.
João will live in Lisbon, although he has worked in Porto.

(669) O João vai ser simpático, embora tenha estado mal-humorado.
João will be nice, although he has been ill-humoured.

(670) O João vai estudar Linguística, embora tenha trabalhado em Matemática.
João will study Linguistics, although he has worked in Mathematics.

In this set of examples, the situations represented by the *Pretérito Perfeito Composto do Conjuntivo* are assigned a temporal relation of anteriority. Accordingly, TPpt is *n* and the relation between the situation and the TPpt is of anteriority.

It should be pointed out that Oliveira (2003: 268) refers that, in the Subjunctive mood, the *Pretérito Perfeito Composto* loses its iterative interpretation with events and gains a terminative value, that is, it represents the situations as finished. However, the examples presented by the author are only with culminated processes and in the contexts of sentences with *that*-clauses. In fact, if we use a culminated process in a clause introduced by *embora*, as in (671), the same interpretation observed by Oliveira (2003) in *that*-clause arises: the situation of the subordinate clause is portrayed as finished and it is anterior to the utterance time and to the situation of the main clause.

(671) O João vive em Lisboa, embora tenha comprado uma casa no Porto.
The João lives in Lisbon, although have bought a house in-the Porto.
João lives in Lisbon, although he has bought a house in Porto.

As to the temporal relations between the situations, the situations of the main clause represented by the *Presente do Indicativo* (cf. A) have as TPpt the utterance time and the relation between both is of overlapping. Since the situations of the subordinate clause have as TPpt *n* and establish with it a temporal relation of anteriority, then the temporal relation between the situation of the subordinate clause and of the main clause is of anteriority.

When the situations of the main clause are represented by the *Pretérito Perfeito*, there is some ambiguity concerning the temporal relations between the situations. We know that the situations of the main and of the subordinate clause choose as TPpt the utterance time and they are anterior to that time interval. However, these temporal features do not inform us if the situations of the subordinate clause establish with the situations of the main clause a relation of anteriority, posteriority or anteriority.

Notice that all of the examples with the sequence of tenses *Pretérito Perfeito* + *Pretérito Perfeito Composto do Conjuntivo* are compatible with time adverbials that determine different temporal relations (cf. (672)-(675)).

(672) O João gastou muito dinheiro no ano passado, embora tenha estado desempregado durante todo o ano/ no ano anterior[70].
João spent a lot of money last year, although he was/ had been unemployed during the same year/ in the previous year.

(673) O João viveu em Lisboa no ano passado, embora tenha trabalhado no Porto nessa altura/ no ano anterior/ no ano seguinte.
João lived in Lisbon last year, although he worked/had worked/ would work in Porto in the same year/ in the previous year/ in the following year.

(674) O João foi simpático no sábado, embora tenha estado mal-humorado o dia todo/ na sexta-feira/ no domingo.
João was nice on Saturday, although he was/had been/ would be ill-humoured in the same day/ on Friday/ on Sunday.

(675) O João estudou Linguística no ano passado, embora tenha trabalhado em Matemática na mesma altura/ no ano anterior/ no ano seguinte.
João studied Linguistics last year, although he worked/ had worked/ would work in Mathematics in the same year/ in the previous year/ in the following year.

The linguistic context may determine one or the other interpretation. For instance, in (676), the preferential interpretation is the one in which the situation of the subordinate clause is prior to the situation of the main clause. In this case, the lexicon has an important role in inferring the correct temporal interpretation. In (677), the preferential interpretation is of the state preceding the event and in (678) of the event being posterior to the state.

(676) O João reagiu calmamente, embora o filho tenha partido uma janela.
The João reacted calmly, although the son have broken a window.
João reacted calmly, although his son had broken a window.

(677) O João viajou, embora tenha estado doente.
The João travelled, although have been sick.
João travelled, although he had been sick.

(678) O João esteve doente, embora tenha vindo à festa.
The João was sick, although have come to-the party.
João was sick, although he has come to the party.

[70] In this example, the localisation of the situation *being unemployed* in a posterior time interval to the situation *spending much money* is not as available because of our world knowledge.

In the sequences with the *Futuro* (cf. examples in C.), since the *Pretérito Perfeito Composto do Conjuntivo* locates the situations in a time interval previous to and/or including the utterance time, while the *Futuro* locates the situation in a time interval posterior to the utterance time, the situations of the subordinate clause are all previous to the situations of the main clause. Once again, both situations are located in different time spheres.

In none of the sequences presented, the TPpt of the subordinate clause's situation is the location time of the previous situation and, therefore, there is not temporal subordination, but creation of a new temporal domain.

The last set of examples tested is with the *Pretérito-mais-que-perfeito* and they are presented from (679)-(690).

IV.

A. *Presente do Indicativo + Pretérito-mais-que-perfeito do Conjuntivo*

(679) O João gasta muito dinheiro, embora tivesse estado desempregado.
João spends a lot of money, although he had been unemployed.

(680) O João vive em Lisboa, embora tivesse trabalhado no Porto.
João lives in Lisbon, although he had worked in Porto.

(681) O João é simpático, embora tivesse estado mal-humorado.
João is nice, although he had been ill-humoured.

(682) O João estuda Linguística, embora tivesse trabalhado em Matemática.
João studies Linguistics, although he had worked in Mathematics.

B. *Pretérito Perfeito do Indicativo + Pretérito-mais-que-perfeito do Conjuntivo*

(683) O João gastou muito dinheiro, embora tivesse estado desempregado.
João spent a lot of money, although he had been unemployed.

(684) O João viveu em Lisboa, embora tivesse trabalhado no Porto.
João lived in Lisbon, although he had worked in Porto.

(685) O João foi simpático, embora tivesse estado mal-humorado.
João was nice, although he had been ill-humoured.

(686) O João estudou Linguística, embora tivesse trabalhado em Matemática.
João studied Linguistics, although he had worked in Mathematics.

C. *Futuro + Pretérito-mais-que-perfeito do Conjuntivo*

(687) O João vai gastar muito dinheiro, embora tivesse estado desempregado.
João will spend a lot of money, although he had been unemployed.

(688) O João vai viver em Lisboa, embora tivesse estudado no Porto.
João will live in Lisbon, although he had worked in Porto.

(689) O João vai ser simpático, embora tivesse estado mal-humorado.
João will be nice, although he had been ill-humoured.

(690) O João vai estudar Linguística, embora tivesse trabalhado em Matemática.
João will study Linguistics, although he had worked in Mathematics.

The analysis of this set of examples leads to two observations. First, the *Pretérito-mais-que-perfeito do Conjuntivo* has only one temporal interpretation in this type of contexts: it locates the situation in a time interval that is before the situation with which it is combined. Second, contrary to the *Pretérito-mais-que-perfeito do Indicativo*, the tense at issue, in this syntactic configuration, does not seem to require a past time interval in the discourse to establish a relation of anteriority with. In fact, with the *Presente* and the *Futuro*, the utterance time seems to be the only necessary time interval to function as its TPpt. If the presence of a past time interval would be mandatory, the sentences in A and C would not be grammatical or interpretable as far as the temporal relations go, and they are.

As such, in examples in A and in C, the situations of the subordinate clause have as TPpt the utterance time and establish with it a temporal relation of anteriority. The temporal relations between the situations is also the same in both set of examples, that is, of anteriority, although the situations of the main clause in examples (679)-(682) are located in a present time and the situations of the main clause in examples (687)-(690) occur after the utterance time.

These two sequences of examples (A and C) also behave in the same way as far as the representation of situations in different time spheres and as the creation of a new temporal domain by the situations of the subordinate clause are concerned.

In turn, the sequence *Pretérito Perfeito do Indicativo + Pretérito-mais-que-perfeito do Conjuntivo* (cf. examples in B) behaves differently regarding the two aforementioned parameters. Despite the fact that the situations of the subordinate clause are located in a time interval which is anterior to the location time of the main clause's

situations, both occur in the same time sphere, the past. Furthermore, in this sequence, there is temporal subordination because the TPpt of the subordinate clause's situations is the location time of the main clause's situations. However, like in the two previous sequences, the relation between the situations is of anteriority.

In sum, we can conclude about the sentences with *embora* that:

(i) they are more restrictive regarding the possible tenses' combination because they only allow Subjunctive in the subordinate clause:
  a. the *Presente do Conjuntivo*, the *Pretérito Perfeito Composto do Conjuntivo* and the *Pretérito-mais-que-perfeito do Conjuntivo* in the subordinate clause are compatible with the *Presente do Indicativo*, the *Pretérito Perfeito do Indicativo* and the *Futuro* in the main clause;
  b. the *Pretérito Imperfeito do Conjuntivo* cannot occur with the *Presente* and the *Futuro*;
  c. the *Pretérito Imperfeito do Indicativo* e o *Pretérito-mais-que-perfeito do Indicativo* cannot occur in the main clause because there is not any available past time interval to be its TPpt;

(ii) they allow different aspectual classes' combinations, although not all render the same temporal interpretation in the same sequence of tenses;

(iii) the temporal relations between the situations may be of overlapping, anteriority and posteriority, depending on the verb tenses, on the aspectual classes, on the lexicon and/ or world knowledge;

(iv) the situations can be represented in different time spheres;

(v) they license temporal subordination and creation of a new temporal domain;

(vi) the connector *embora* does not determine temporal organisation, it does not oblige the representation of the situations in the same time sphere and it does not impose a specific temporal linkage mechanism of the situations.

4.5.2. Rhetorical Relations

The connector *embora* conveys a strong lexical meaning without imposing, nonetheless, a specific temporal organisation. As already discussed in chapter 1, the sentences with *embora* express an apparent incompatibility between the situations because there is a presupposition which is cancelled by the assertion of the two propositions. The revision of the rhetorical relations' list put forward by Asher and Lascarides (2003) indicate that there is not a rhetorical relation which suits the aforementioned semantic content.

However, looking at other proposals, we notice that there are some authors that include such a rhetorical relation in their lists, namely Mann and Thompson (1988), Sanders *et al.* (1992) and Kehler (2002)[71]. Mann and Thompson (1988) propose a rhetorical relation named Concession to link situations between which there is an apparent incompatibility, but that, in fact, are compatible. Sanders *et al.* (1992) resort to Contrastive Claim-Argument or Contrastive Argument-Claim[72] to describe the relation of meaning in sentences with *although*. Kehler (2002) refers that *although* signals Denial of Preventer. We will adopt Kehler's rhetorical relation mainly because, when compared to Concession or Contrastive Claim-Argument, the term Denial of Preventer is more transparent, informative and fits the data better. Moreover, we are mainly concerned with the semantic content of the propositions and not with their pragmatic value and the rhetorical relations proposed by Sanders *et al.* are pragmatic. Moreover, the relation Denial of Preventer expresses well the relation of meaning between the situations in sentences with *embora*: the subordinate clause denies that something which was expected to act as an obstacle (preventer) does so.

Since, as we have concluded from the analysis of the examples, there is not a specific temporal relation, or a temporal relation by default, attached to the causal meaning of these sentences, we will not stipulate any temporal consequences for this

[71] Cf. pages 182, 190 and 193 in Chapter 3, respectively.

[72] The Contrastive Argument-Claim is inferred when the clause introduced by *although* occurs in an initial position, whereas the Contrastive Claim-Argument is inferred whenever the *although*-clause is in a final position. The authors adopt a different analysis regarding the processing of these types of sentences. Notice that we consider that all adverbial clauses which are object of our study, with the exception of the time clauses, are processed after the main clause and, so, they are the ones to be linked to the main clause by a rhetorical relation, regardless of their position in the sentence.

rhetorical relation. The definition of the rhetorical relation Denial of Preventer is in Table 53.

Rhetorical Relation	Definition
Denial of Preventer (α, β)	R holds whenever the relevant constituent presents a situation which would be expected to act as an obstacle for the other situation.

Table 53. Definition of the rhetorical relation Denial of Preventer

In the definition of the rhetorical relation, we have not included any temporal consequences because, as we have concluded from the analysis of the examples, the connector *embora* does not impose a specific temporal organisation and, depending on the tenses and/or aspectual classes, the temporal relations may be of overlapping, posteriority or anteriority. However, since the rhetorical relation should also unveil the temporal relation between the situations, we will resort to the other rhetorical relations which, in addition to conveying discursive information, even though more neutral, also carry temporal information. So, we will argue that, also in sentences with *embora*, similarly to sentences with *porque*, for instance, the connector imposes a specific rhetorical relation, which expresses a causal relation between the two situations, and that the combination with rhetorical relations of a different nature provides more information about the relation of meaning and mainly about the temporal relation.

We will illustrate the construction of SDRSs with the following examples, already analysed in the previous section.

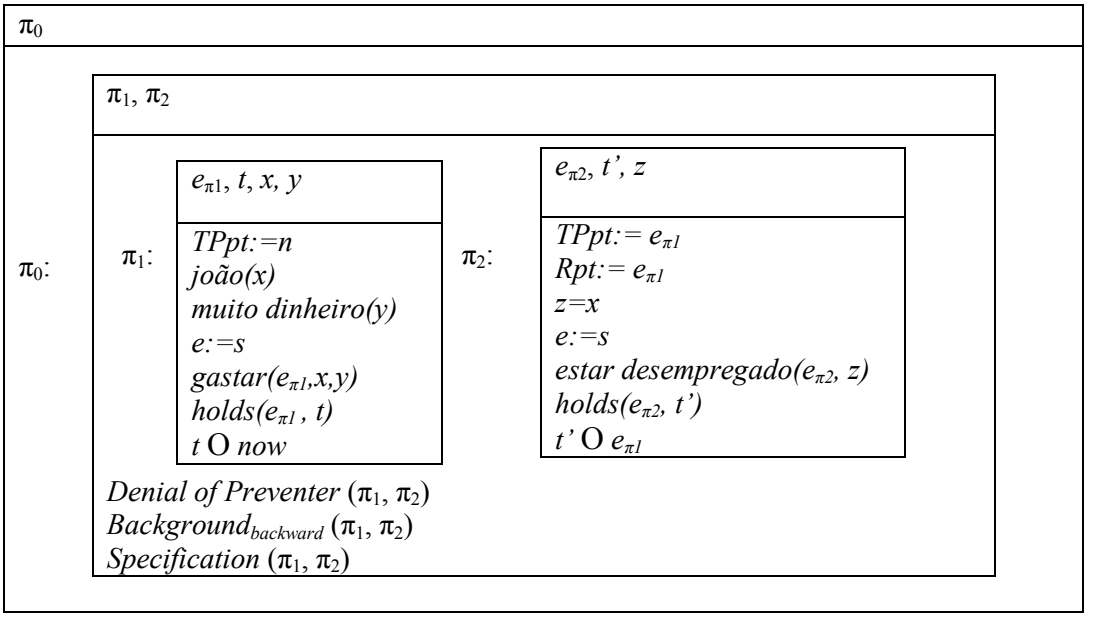
(691) O João gasta muito dinheiro, embora esteja desempregado.
João spends a lot of money, although he is unemployed.

(692) O João foi simpático, embora estivesse mal-humorado.
João was nice, although he was ill-humoured.

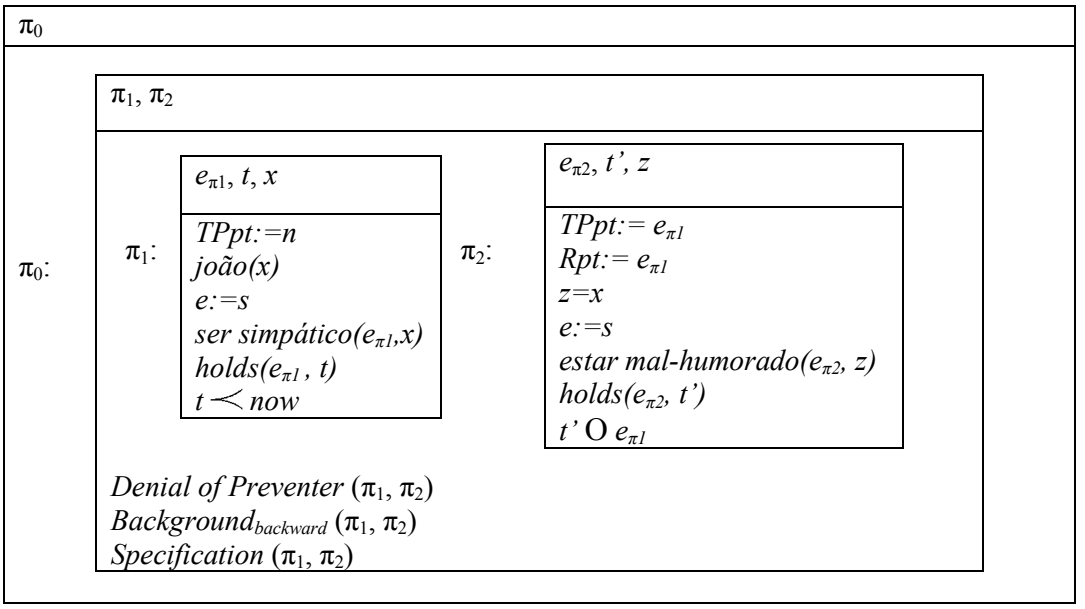
(693) O João vive em Lisboa, embora tenha trabalhado no Porto.
João lives in Lisbon, although he has worked in Porto.

(694) Embora tivesse trabalhado em Matemática, o João estudou Linguística.
Although he had worked in Mathematics, João studied Linguistics.

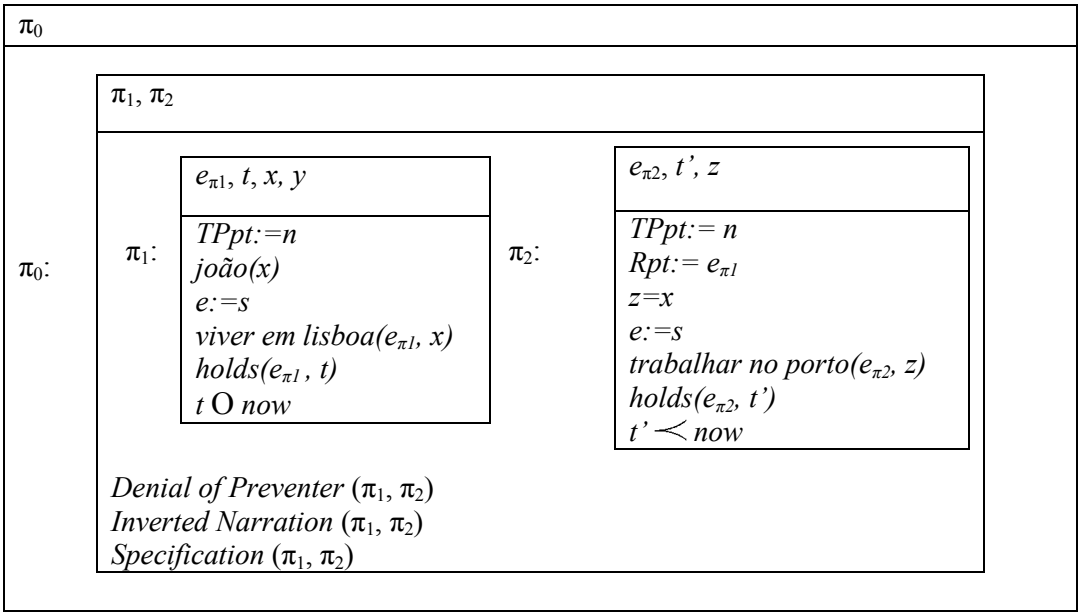
(691a)


π_0
π_1, π_2
π_0:
π_1:
$e_{\pi1}, t, x, y$
TPpt:=n
joão(x)
muito dinheiro(y)
e:=s
gastar($e_{\pi1}$,x,y)
holds($e_{\pi1}$, t)
t O now
π_2:
$e_{\pi2}, t', z$
TPpt:= $e_{\pi1}$
Rpt:= $e_{\pi1}$
z=x
e:=s
estar desempregado($e_{\pi2}$, z)
holds($e_{\pi2}$, t')
t' O $e_{\pi1}$
Denial of Preventer (π_1, π_2)
Background$_{backward}$ (π_1, π_2)
Specification (π_1, π_2)

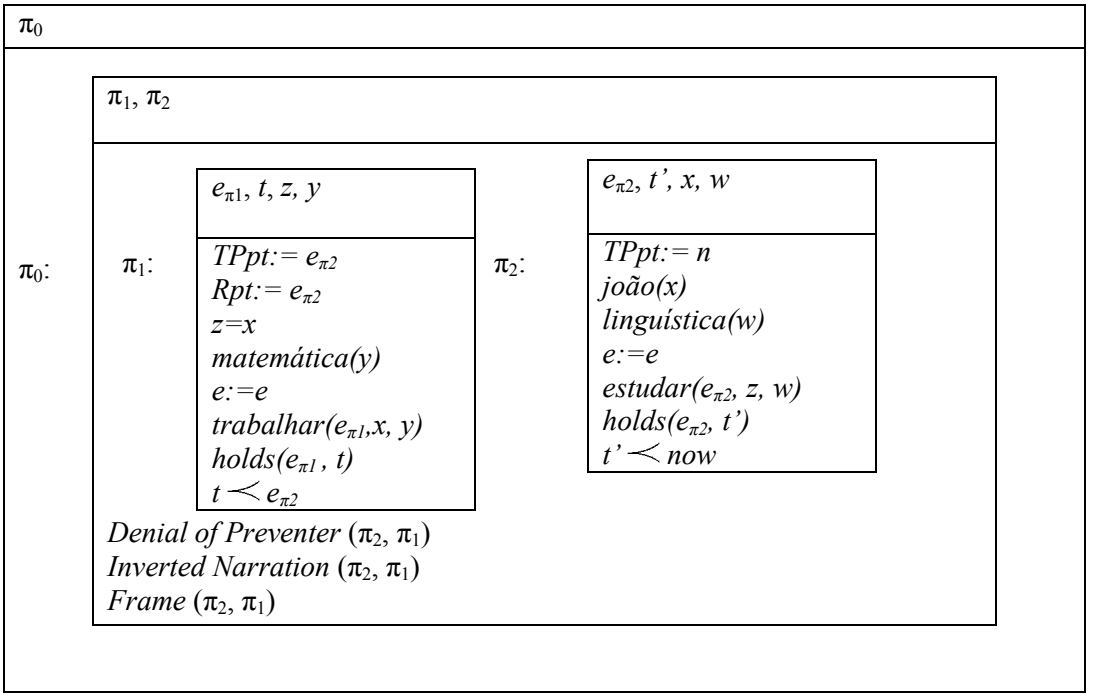
(692a)


π_0
π_1, π_2
π_0:
π_1:
$e_{\pi1}, t, x$
TPpt:=n
joão(x)
e:=s
ser simpático($e_{\pi1}$,x)
holds($e_{\pi1}$, t)
t ≺ now
π_2:
$e_{\pi2}, t', z$
TPpt:= $e_{\pi1}$
Rpt:= $e_{\pi1}$
z=x
e:=s
estar mal-humorado($e_{\pi2}$, z)
holds($e_{\pi2}$, t')
t' O $e_{\pi1}$
Denial of Preventer (π_1, π_2)
Background$_{backward}$ (π_1, π_2)
Specification (π_1, π_2)

(693a)



(694a)



In all SDRSs, the condition *Denial of Preventer* (π_1, π_2) in the first three and the condition *Denial of Preventer* (π_2, π_1) in the last do not inform us about the temporal relation between the situations that are represented, because the rhetorical relation Denial of Preventer does not convey any temporal consequences. However, the

conditions that follow with the identification of the extrinsic relations which we can infer in each sentence endow us with the necessary knowledge to recognise the different temporal relations. In certain cases, we could infer the temporal relation from the characterisation of each situation. For instance, in (692a), the condition $t'\ O\ e_{\pi 1}$ immediately tells us that the relation between the situations os of overlapping.

In the SDRS (694a), the positioning of the subordinate clause at the beginning of the sentences determines that the rhetorical relation at the text structuring level is Frame and not Specification because π_1, that is the label for the situation represented by the subordinate clause, frames π_2, the label for the situation of the main clause.

The introduction of more than one rhetorical relation at the content level reveals once again productive and necessary to present a proper semantic representation of the sentences in a rhetorical relations' framework.

The comparison of some of the examples to strings of independent sentences is not viable due to the use of the Subjunctive in the subordinate clause.

Overall, in sentences with *embora*:

(i) the inference of the rhetorical relation Denial of Preventer relies mainly on the lexical meaning of the connector, on lexicon and our world knowledge;

(ii) in the processing of the rhetorical relation Denial of Preventer, the temporal information is not of relevance. It is of relevance when we infer other rhetorical relations that are combined with Denial of Preventer mainly to represent the temporal relations between the situations. If it were not for these rhetorical relations, the temporal relations would be in certain contexts underspecified in the semantic representation.

(iii) one can infer at the content level Denial of Preventer combined with Narration, when the temporal relation between the subordinate clause's situation and the main clause's situation is of posteriority, with Inverted Narration, when the there is a temporal relation of anteriority or with $\text{Background}_{\text{backward}}$, when the temporal relation is overlapping.

4.6. Sentences with clauses introduced by *se*

The sentences with clauses introduced by *se* that will be object of analysis in this section are solely the factual conditional clauses because, as we have already explained, the hypothetic and contrafactual require the consideration of modal values, which have different implications in the temporal and rhetorical characterisations and, as such, demand the consideration of other parameters out of the scope of this work.

Although we will only refer to tenses of the Indicative mood and in this group leave out the modal interpretations, there are still some verb tenses' combinations which may result in different temporal relations. The data with different sequences of eventive and stative situations will reveal which are compatible in this type of sentences and whether they influence the temporal relations.

Finally, we will confirm that, as most connectors that introduce adverbial clauses, *se* also marks a specific rhetorical relation which does not convey temporal consequences. However, we will show that to represent these sentences in a complete manner one needs to resort to a combination of intrinsic and extrinsic rhetorical relations.

4.6.1. Temporal features and some aspectual features

The sentences with clause introduced by *se* can have factual meaning when the following tenses come together: *Presente*, *Pretérito Perfeito*, *Pretérito Imperfeito*, *Pretérito-mais-que-perfeito* and *Futuro*. So, we will test the possible combinations of these tenses in different sequences of stative and eventive situations and ascertain the temporal relations they produce[73]. Since in this type of sentences we are not dealing with Subjunctive mood and, by consequence, the temporal interpretation would not pose so many problems, we have decided to present most of the examples in the order subordinate clause + main clause, which is its non-marked position.

[73] Cf. Table 12, page 83, chapter 1, for the systematisation, of tenses' combinations, not only in the factual reading, but also in the hypothetical and contrafactual interpretations, based on Ferreira's investigation (1996).

We will begin by verifying which tenses in the main clause can be combined with the *Presente* in the subordinate clause (cf. (695)-(698)). It should be noted, however, that this use of the *Presente* in the subordinate is very marked and requires a specific context to be interpreted. In fact, this use is more common in oral speech than in written speech.

(695) Se o João falta à aula, o pai castiga-o/ *castigava-o/ ??castigou-o[74]/ *tinha-o castigado/ vai castigá-lo.
If the João misses to-the class, the father punishes-him/punished(Imp)-him/ punished-him/ had-him punished/ is-going to-punish-him.
*If João misses class, his father punishes/ *punished/ ??punished/ *had punished / is going to punish him.*

(696) Se o João falta à aula, está/*estava/??esteve/*tinha estado/ vai estar de castigo.
If the João misses to-the class, is/was(Imp)/ was/ had been / is-going to-be of punishment.
*If João misses class, he is/ *was/ ??was/ *had been/ is going to be grounded.*

(697) Se o João está doente, come/*comia/ ??comeu/ *tinha comido/ vai comer muito pouco.
If the João is sick, eats/ate(Imp)/ ate/ had eaten/ is-going to-eat very little.
*If João is sick, he eats/ *ate/ ??ate/ *had eaten/ is going to eat very little.*

(698) Se o João tem febre, está/ *estava/ ??esteve/ *tinha estado/ vai estar doente.
If the João has fever, is /was(Imp)/ was/had been/ is-going to-be sick.
*If the João has fever, he is/*was/ ??was/ *had been/ is going to be sick.*

This set of examples shows that only the *Presente* and the *Futuro* can be combined with the *Presente* in the subordinate clause. The *Pretérito Perfeito* can be interpretable, but it not as acceptable as the other two tenses. The observation of the examples also reveals that we can put together two events (cf. (695)), one event and a state (cf. (696)), one state and one event (cf. (697)) and two states (cf. (698)) and all are

[74] Although this sequence of tenses (*Presente* + *Pretérito Perfeito*) may seem at first a bit strange without any context, it is acceptable if we assign the *Presente* a future interpretation and interpret the sentences as *Se o João faltar à aula é porque o pai o castigou* ('If João misses class it is because his father punished him').

compatible with the different tenses' sequences, although within the same sequence the different aspectual classes' combinations can lead to different temporal interpretations.

In (695), repeated here for convenience as (699), the combination of two *Presentes* with two events is ambiguous between two temporal interpretations.

(699) Se o João falta à aula, o pai castiga-o.
If João misses class, his father punishes him.

In one of those interpretations, the two situations have a generic meaning which corresponds to a paraphrase of the type *every time João misses class, his father punishes him*. In the other interpretation, the *Presente* receives a future reading not only because of the semantics of this tense, which allows for such a reading, but also because of the influence of the connector *se*, which with the tense in question favours a projection of the eventive situations into a future time. So, the situations are located in a time interval after the utterance time, which is the TPpt. In this interpretation, despite the presence of the same tense and the same relation with *n*, the situation of the subordinate clause occurs first than the situation of the main clause.

The presence of *Futuro* in the main clause preserves the same temporal relation (cf. (700)). Both situations have as TPpt the utterance time and both are located after that time interval. The cause-effect relation we can infer from the lexicon and our world knowledge allow us to establish a relation of anteriority of the antecedent.

(700) Se o João falta à aula, o pai vai castigá-lo.
If João misses class, his father is going to punish him.

If we accept the sequence with the *Pretérito Perfeito* in the main clause, we can observe that the temporal relation changes (cf. (701)).

(701) Se o João falta à aula, o pai castigou-o.
If João misses class, his father punished him.

The situation of the subordinate clause continues to be interpreted as occurring in a future time. Since the situation *o João falta à aula* is after the utterance time and the situation *o pai castigou-o* is before the utterance time, then the latter is located in a time interval anterior to the former. In this sequence, the situation of *João missing class* is

portrayed as a consequence of his father's punishment, contrary to the relation cause-effect of the other aforementioned sequences. Nonetheless, this interpretation would be more natural in European Portuguese with the *Futuro do Conjuntivo*. The same observations are valid for example (696).

The presence of another *Presente* in the main clause representing a state (cf. (702)) can have two different temporal interpretations: a habitual one and an episodic one of overlapping, which differs from the one in (699).

(702) Se o João falta à aula, está de castigo.
If João misses class, he is grounded.

We get an interpretation of the state as overlapping the utterance time and also as holding during the time interval in which the situation of the main clause is located. It should be noted, nonetheless, that if we change the type of state from an individual level to a stage level state, as in (703), we can get a different temporal interpretation.

(703) Se o João falta à aula, tem uma nota baixa no trabalho de grupo.
If the João misses to-the class, has a grade poor in-the work of group.
If João misses class, he has a poor grade in the group work.

In this example, the state of the main clause is located not in a time interval that includes the utterance time, as expected, but after *n*, and after the situation of the subordinate clause.

In (704), the sequences with the *Pretérito Perfeito* and with the *Futuro* representing a state have the same temporal interpretation as the sequences with an event of (701) and (700).

(704) Se o João falta à aula, esteve/ vai estar de castigo.
If João misses class, he was/ is going to be grounded.

In (697), repeated here as (705), due to the presence of a state in the subordinate clause, the situation receives a present time interpretation. Its TPpt is the utterance time, which is included in the state.

(705) Se o João está doente, come/ comeu/ vai comer muito pouco.
If João is sick, he eats/ ate/ is going to eat very little.

In the first sequence, with the *Presente* there is a habitual reading of the situations, in which case they overlap. In the second sequence, the *Pretérito Perfeito* locates the event in a time interval before the utterance time and before the state *being sick*. The *Futuro* imposes a localisation of the event after the utterance time, its TPpt, and after the state. Nevertheless, we infer that the state also holds during the location time of the first situation.

In the next example for the set presented at the beginning of this section, (cf. (698)), here as (706), there are two states of different types, but nonetheless states, circumstance that leads to different temporal interpretations, at least, in sequences with *Presentes*.

(706) Se o João tem febre, está/ esteve/ vai estar doente.
If the João has fever, he is/was/ is going to be sick.

In the sequence with the *Presentes*, the two states are perspectivised from the utterance time and both include that time interval, and, thus, they establish between them a temporal relation of overlapping. The *Pretérito Perfeito* and the *Futuro* locate the state in a past and future time interval, respectively, before and after the situation of the subordinate clause.

In the aforementioned examples, the two situations always create their temporal domain and, so, there is not temporal subordination. Furthermore, some sequences represent the situations in different time spheres. For instance, the sequence *Presente* + *Pretérito Perfeito* locates the first situation in a present or future time sphere and the second in a past time sphere.

The subordinate clause can also occur with the *Pretérito Perfeito*, as revealed by examples (707)-(710).

(707) Se o João faltou à aula, o pai castiga-o/ #castigava-o/ castigou-o/ *tinha-o castigado/ vai castigá-lo.
If the João missed to-the class, the father punishes-him/punished(Imp)-him/ punished-him/ had-him punished/ is-going to-punish-him.
*If João missed class, his father punishes/ #would punish/ punished/ *had punished / is going to punish him.*

(708) Se o João faltou à aula, está/estava/esteve/*tinha estado/ vai estar de castigo.
If the João missed to-the class, is/was(Imp)/ was/ had been / is-going to-be of punishment.
*If João missed class, he is/ was(Imp)/ was/ *had been/ is going to be grounded.*

(709) Se o João esteve doente, come/??comia/ comeu/ *tinha comido/ vai comer muito pouco.
If the João was sick, eats/ate(Imp)/ ate/ had eaten/ is-going to-eat very little.
*If João was sick, he eats/??ate(Imp)/ ate/ *had eaten/ is going to eat very little.*

(710) Se o João teve febre, está/ estava/ esteve/ *tinha estado/ vai estar doente.
If the João had fever, is/was(Imp)/ was/ had been/ is-going to-be sick.
*If the João had fever, he is/ was(Imp)/ was/ *had been/ is going to be sick.*

The observation of the examples shows that there are certain sequences that allow a temporal interpretation of the *Pretérito Imperfeito*, due to the presence of a past time interval that acts as the TPpt for the situations represented by that tense, although the sentences can result a bit strange, hence, the two question marks. In (707), the combination of two non-durative and telic events marked lexically by an evident relation of cause-effect prevents the temporal interpretation of the *Pretérito Imperfeito* and leads to a modal reading of the situation. Notice that in (709) there is also an event represented by the same tense, but it is a durative and atelic event combined with a state. If we accept the temporal interpretation, in (709), the situation of the subordinate clause, which is commuted into a state because of the *Pretérito Imperfeito*, overlaps the state *o João esteve doente*. The same temporal relation is observed in the same sequences of tenses, that is, *Pretérito Perfeito* + *Pretérito Imperfeito*, in (708) and (710) with one event and one state and two states, respectively.

In these examples that allow a temporal interpretation of the *Pretérito Imperfeito*, the situations' TPpt is the location time of the situations of the subordinate clause and the relation between both is of overlapping in the case of the states and of inclusion in the case of the events. As such, these are instances of temporal subordination.

If we change the order of the clause, as in (711)-(713), the same temporal characterisation upholds, although the modal interpretation is more evident than in the previous examples. One probable explanation is that the situation that provides the location time to be the TPpt of the main clause's subordination is after in the linear order of discourse. Another interesting point about these examples is that contrary to what happens in sentences with *porque* and *embora*, in this case it is the main clause's situation that integrates the temporal domain created by the subordinate clause's situation.

(711) O João estava de castigo se faltou à aula.
João was(Imp) grounded if he missed class.

(712) O João comia muito pouco se esteve doente.
João ate(Imp) very little if he was sick.

(713) O João estava doente se teve febre.
João had(Imp) fever if he was sick.

The sequence *Pretérito Perfeito* followed by the *Presente* can have different temporal interpretations depending on the aspectual class of the situation in the main clause and on the lexical features of the predication. In all examples, the situations' TPpt is the utterance time, but the relation between the location time and the TPpt differs. In (707), repeated here as (714), the event *o pai castiga-o* is located after the utterance time and, thus, after the situation *o João faltou à aula*.

(714) Se o João faltou à aula, o pai castiga-o.
If João missed class, his father punishes him.

In (708), here as (715), the state includes the utterance time and it is located after the situation of the subordinate clause.

(715) Se o João faltou à aula, está de castigo.
If João missed class, he is grounded.

In this particular example, the state can be interpreted as a consequence or the cause of the situation *missing class*. However, the interpretation of the state as a cause is more evident in the following example.

(716) Se o João faltou à aula, está doente.
If the João missed to-the class, is sick.
If João missed class, he is sick.

In (716), in spite of the presence of the same aspectual classes as in (715), the causal relation between both situations differs. The state's TPpt is the utterance time as well and the relation between both is of overlapping. Notwithstanding that, we infer that the state holds in the time location of the event and even before that time interval because we interpret the state as being the cause of the event. In this sense, these sequences behave similarly to double access sentences with *that*-clauses. Therefore, for cases such as this one, we will consider (i) that the state's TPpt is a time interval that begins, at least, at the location time of the situation with which it is combined and it goes till the utterance time and (ii) that the state overlaps that time interval.

In (709), here as (717), the sentence may result a bit odd with the *Presente*, but if we insert it in a context as in (718), it becomes more acceptable.

(717) Se o João esteve doente, come muito pouco.
If João was sick, he eats very little.

(718) Não vale a pena fazer muito comida para o João. Se ele esteve doente, come muito pouco.
It is not worth cooking a lot of food for João. If he was sick, he eats very little.

Nonetheless, the event can have two interpretations: a generic or a future reading. In the latter, the situation is located after the utterance time and after the state.

In (710), here as (719), the state *is sick* is located at the utterance time and after the state *o João had fever*, although our world knowledge tells us that whenever you have fever you are sick.

(719) Se o João teve febre, está doente.
If the João was sick, he has fever.

The temporal analysis of the sequences with the *Pretérito Perfeito* and *Presente* in sentences with *se* indicates, on the one hand, that the temporal linkage mechanism of situations employed is creation of new temporal domain and, on the other hand, that in this type of sentences the situations may be represented in different time spheres.

The sequences with two *Pretéritos Perfeitos*, repeated here for convenience from (720) to (723), represent both situations as having the utterance time as its TPpt and as establishing with it a relation of anteriority. However, the temporal relations between the two situations in each example differ, which is evidence that the connector *se* does not impose any specific temporal relation.

(720) Se o João faltou à aula, o pai castigou-o.
If João missed class, his father punished him.

(721) Se o João faltou à aula, esteve de castigo.
If João missed class, he was grounded.

(722) Se o João esteve doente, comeu muito pouco.
If João was sick, he ate very little.

(723) Se o João teve febre, esteve doente.
If the João had fever, he was sick.

In (720), there is a strong causal meaning encoded in the lexicon, namely the situation of *being punished* is normally the consequence of a bad behaviour and the situation *missing class* normally has consequences. So, we interpret the situation of the subordinate clause as being the cause. Furthermore, we locate the cause before the situation of the main clause. In (721), the preferential interpretation is the one in which the punishment follows the *missing class* because our world knowledge tell us that normally parents punish the children for skipping classes. However, because the sequence of these verb tenses is underspecified as to the order of the situations, we could also imagine that the punishment of the father was obligating his son to miss a class. In this case, *being grounded* is the reason for *missing class* and occurs first. It should, however, be noted that with different predications the ambiguity may fade away (cf. (724)).

(724) Se o João faltou à aula de revisões, teve nota baixa no exame.
If the João missed to-the class of revisions, had grade low in-the exam.
If João missed the revision class, he had a low grade in the exam.

In this example, there is also a state in the main clause, but the lexicon determines that the state occurs after the situation of the main clause.

Moreover, with another state we can even get an interpretation of overlapping, like in (725).

(725) Se o João faltou à aula, esteve doente.
If João missed class, he was sick.

In this example, the state can be interpreted as occurring before the situation of the subordinate clause. The definition of this temporal relation comes from the following interpretation: because, although he was no longer sick, he was still weak or tired, João missed class. However, the preferential interpretation is of the state including the event.

In (722) and (723), the preferential interpretation is the one in which the situations of the subordinate clause overlap the situations of the main clause.

The sequences with the *Pretérito Perfeito* and the *Futuro*, renumbered here (726)-(729), establish the same temporal relation between the situations of the main clause and of the subordinate clause. In every situation the TPpt is the utterance time. The situations of the subordinate clause are anterior to *n*, while the situations of the main clause are posterior. So, the situations of the clauses introduced by *se* occur first.

(726) Se o João faltou à aula, o pai vai castigá-lo.
If João missed class, his father will punish him.

(727) Se o João faltou à aula, vai estar de castigo.
If João missed class, he will be grounded.

(728) Se o João esteve doente, vai comer muito pouco.
If João was sick, he will eat very little.

(729) Se o João teve febre doente, vai estar doente.
If the João had fever, he will be sick.

With the exception of the sequences with the *Pretérito Imperfeito*, none of the examples with the *Pretérito Perfeito* in the subordinate clause resort to temporal subordination. The grammaticality of sequences which locate the situations in different time spheres, such as the one with the *Pretérito Perfeito* and the *Futuro*, corroborates the assertion that sentences with clauses introduced by *se* permit the localisation of situations in different time spheres.

The compatibilities of tenses' combinations with the *Futuro* in the subordinate clause are presented in examples (730)-(733)[75].

(730) Se o João vai faltar à aula, o pai castiga-o/ *castigava-o / castigou-o/ *tinha-o castigado/ vai castigá-lo.
If the João is-going to-miss to-the class, the father punishes-him/punished(Imp)-him/ punished-him/ had-him punished/ is-going to-punish-him.
*If João is going to miss class, his father punishes/ *punished(Imp)/ punished/ *had punished/ is going to punish him.*

(731) Se o João vai faltar à aula, está/*estava/esteve/*tinha estado/ vai estar de castigo.
If the João is-going to-miss to-the class, is/was(Imp)/ was/ had been / is-going to-be of punishment.
*If João is going to miss class, he is/*was(Imp)/ was/ *had been/ is going to be grounded.*

(732) Se o João vai morar em Londres, aluga/*alugava/ alugou/ *tinha alugado/ vai alugar uma casa em Piccadilly Circus.
If the João is-going to-live in London, rents/ rented(Imp)/ rented/ had rented/ is going to-rent a house in Piccadilly Circus.
*If João is going to live in London, he rents/*rented(Imp)/ rented/ *had rented/ is going to rent a house in Piccadilly Circus.*

(733) Se o João vai morar em Londres, gosta/ *gostava/ gostou/ *tinha gostado/ vai gostar da cidade.
If the João is going to live in London, likes/ liked(Imp)/ liked/ had liked/is going to like of-the city.
*If João will live in London, he likes/ *liked(Imp)/ liked/ *had liked/will like the city.*

To begin with, we should point out that, despite the fact that the *Futuro* locates situations after the utterance time (its TPpt), like the *Presente* with events, contrary to the latter, the former disallows some interpretations and licenses others. The *Pretérito Imperfeito* and the *Pretérito-mais-que-perfeito* are not viable with situations represented in the *Futuro*, not even in a modal interpretation. With respect to incompatibility of the *Pretérito Imperfeito* and *Pretérito-mais-que-perfeito*'s temporal interpretations with the *Futuro*, since the *Futuro* locates the situation in a future time interval, there is not a past time interval available in the discourse to be the TPpt of the situations described by the

[75] We have changed the last two examples because the state *estar doente* results odd when represented in the *Futuro*.

two aforementioned tenses. In the case of the *Pretérito Imperfeito*, not even individual level states or habitual states that do not need a past time interval to act as its TPpt seem to be compatible with the *Futuro* in the subordinate clause. The modal reading does not surface because the *Futuro* portrays the situations as unrealised and blocks a hypothetic or contrafactual interpretation of the situations.

Apart from these verb tenses, the *Futuro* in the subordinate clause can occur with all of the other tenses tested. In (730) and (732), the combination with the *Presente* and an event in the main clause leads to the same temporal relation of posteriority of the main clauses' situations towards the subordinate clauses' situations, regardless of the presence in the subordinate clause of two different aspectual situations, an event and a state, respectively.

In (731), the state in the *Presente* is ambiguous between a present or future time localisation. It can be interpreted as occurring at the utterance time and before the situation of the subordinate clause, being its cause. In the second interpretation, we locate the state as starting at the utterance time but extending till after the location time of the situation of the subordinate clause. In this reading, the state *being grounded* is the consequence of *missing class*. The two interpretations ensue from the temporal features of the *Presente* in combination with the aspectual features of the state. Since the tense itself does not impose any final frontier to the state, which is a durative and atelic situation, then the state holds not only at a present time but can also hold at a future time.

In (733), in the sequence with *Futuro* + *Presente*, both situations have as TPpt the utterance time, but, whereas the subordinate clause's situation is located after that time interval, the main clause's situation overlaps it. So, the situation of the subordinate clause is located after the situation of the main clause. Nevertheless, we can infer that the situation of the main clause holds at the location time of the subordinate clause's situation.

In all examples from (730)-(733), the occurrence of the *Pretérito Perfeito* in the main clause determines that the situations of the subordinate clause are located after the situations of the main clause and after the utterance time, their (TPpt).

The presence of the *Futuro* in both clauses (cf. last combination in examples (730)-(733)) imposes a successivity relation between the situations. Both have as TPpt the utterance time and both are located after that time interval. Other information

sources impose a temporal relation in which the situations of the subordinate clause are previous to the one in the main clauses.

In none of the sequences just analysed with the *Futuro* in the subordinate clause there is temporal subordination because in each case the situations' TPpt is always the utterance time. Furthermore, this set of examples is another proof that sentences with clauses introduced by *se* do not impose the restriction of representing the two situations in the same time sphere.

The *Pretérito Imperfeito* has a temporal interpretation only with states in the subordinate clause combined with situations in the *Pretérito Perfeito* in the main clause. In (734) and (735), the states overlap the situations of the main clause, which provide the location time to be the states' TPpt.

(734) Se o João estava doente, comeu pouco.
If the João was(Imp) sick, ate very little.
If João was(Imp) sick, he ate very little.

(735) Se o João tinha febre, esteve doente.
If the João had(Imp) fever, was sick.
If the João had(Imp) fever, he was sick.

The sequences of *Pretérito Perfeito* and *Pretérito Imperfeito* with a temporal interpretation just presented and those we have presented in examples (711)-(713), repeated here as (736)-(737), show that, in this type of sentences, the *Pretérito Imperfeito* can occur both in the main clause and subordinate clause and still be interpretable, because the situations represented by the *Pretérito Perfeito* supply the necessary time interval to be their TPpt.

(736) Se o João faltou à aula, estava de castigo.
If João missed class, he was(Imp) grounded.

(737) Se o João esteve doente, comia muito pouco.
If João was sick, he ate(Imp) very little .

(738) Se o João teve febre, estava doente.
If João had fever, he was(Imp) sick.

We should recall that, in sentences with *porque*, for instance, if we use the *Pretérito Imperfeito* in the main clause and the *Pretérito Perfeito* in the subordinate

clause, the latter does not normally provides the location time to be the TPpt of the former (cf. (739)).

(739) a. O João estava doente porque comeu muito pouco.
João was(Imp) sick because he ate very little.

b. Porque comeu muito pouco, o João estava doente.
Because he ate very little, João was sick.

In the *Pretérito Imperfeito*'s default reading, the situation's TPpt is a past time interval and the relation between both is of overlapping. However, in this type of sentences and in this tenses' sequence, the connector *porque* and the lexicon influences the localisation of the event in a past time interval which must be prior to the state. As such, the state cannot overlap the event and the location time of the event cannot be the state's TPpt.

The sequences with the *Pretérito-mais-que-perfeito* in the subordinate clause generate ungrammatical sentences or hypothetic or, in certain contexts modal interpretations (cf. (740) and (741), for instance).

(740) *Se o João tinha faltado à aula, o pai castigou-o.
**If João had missed class, his father punished him.*

(741) Se o João tinha faltado à aula, estava agora de castigo.
If João had missed class, he now would be grounded.

The analysis carried out in this section leads to the following conclusions about the temporal characterisation of sentences with clauses introduced by *se* with a factual interpretation:

(i) the *Presente*, the *Pretérito Perfeito* and the *Futuro* can occur in both main and subordinate clauses;

(ii) the *Pretérito Imperfeito* impose more restrictions due namely to their modal values, which surfaces in this type of constructions;

(iii) the *Pretérito Imperfeito* can, nonetheless, occur in both main and subordinate clause when combined with the *Pretérito Perfeito* and obtain a temporal interpretation, although with many restrictions;

(iv) the *Pretérito-mais-que-perfeito* does not occur in these sentences with a temporal interpretation;

(v) this type of sentences allows different combinations of events and states;

(vi) the same sequence of tenses and aspectual classes can produce quite often ambiguous interpretations;

(vii) temporal subordination and creation of a new temporal domain are both allowed;

(viii) the situations can be represented in different time spheres.

4.6.2. Rhetorical Relations

The inference process of the rhetorical relations in sentences with clause introduced by *se* reveals itself more complex than in sentences with other adverbial clauses, because, although the connector *se* marks clearly a condition, there are other types of relations between the situations. This can be a problem for two reasons.

First, to the conditional relation, which is signalled by *se*, cannot be assigned any temporal consequence, since, as demonstrated in the previous section, the relation between the situations can be of anteriority, overlapping or posteriority. Second, some of the other types of relations which can be inferred are causal relations such as Explanation and Result, which do not have any temporal consequences, either. So, if we represented the sentences with only these two types of rhetorical relations, the SDRS would be underspecified as to the temporal relations between the situations. Therefore, we will have to verify if other non-causal rhetorical relations, that is, extrinsic relations, can also be inferred in order to capture the temporal relations between the situations.

The following examples are representative of the rhetorical relations we can encounter in this type of sentences.

(742) Se o João faltou à aula, o pai castigou-o.
If João missed class, his father punished him.

(743) O João faltou à aula se estava doente.
João missed class if he was(Imp) sick.

(744) Se o João vai morar em Londres, gostou da cidade.
If João will live in London, he liked the city.

To begin with, we must recall that we want to unfold the rhetorical link that connects the situation of the clause introduced by *se* to the situation of the main clause. So, regardless of the order, that is the directionality of the rhetorical relation.

Unquestionably, the connector *se* marks a specific relation of meaning between the situations. Asher and Lascarides (2003: 169) refer that the rhetorical relation Consequence is inferred when the cue-phrase *if...then* is present and they match this rhetorical relation to the dynamic '⇨'. However, the interpretation of the examples reveals that just inferring this rhetorical relation in examples with clauses introduced by *se* is quite insufficient because there are, in fact, other rhetorical links between the situations. One could simply adopt this rhetorical relation, but there is another problem. This rhetorical relation focuses mainly on the consequent and not on the antecedent, that is, on the situation of the subordinate clause. They do so in part because Consequence describes the situations according to the discursive linear order. Nevertheless, we have been demonstrating that, when we are working with complex sentences, we cannot just stipulate that the last situation in the discursive linear order is the one to be linked to the first, because then we will not represent accurately the semantics of each sentence.

Therefore, we will resort, once again, to other authors' lists to find a more adequate rhetorical relation, in particular to Mann and Thompson's (1988). They include in their list[76] a rhetorical relation named Condition, which we will adopt, although with a reformulated definition to cover the factual conditional sentences (cf. Table 54).

[76] Cf. Table 36, Chapter 3, page 181.

Rhetorical Relation	Definition
Condition (α, β)	R holds whenever the relevant constituent presents a situation as a condition for the fulfilment of the situation of the other constituent.

Table 54. The definition of the rhetorical relation Condition.

If we were to link the situations in the set of examples from (742)-(744) with only the rhetorical relation Condition, we will not be fully interpreting those sentences. So, we will look at the examples and, taking all the information supplied by the different information sources, we will infer the other rhetorical relations.

In (742), repeated here as (745), there is a very strong causal relation between the situations. In fact, the situation of the subordinate clause, if true, hence, the Condition, is the cause/ reason for the situation of the main clause. So, we infer Explanation, in addition to Condition. However, those two rhetorical relations do not convey any information about the temporal relation and we know from examples with *porque* and our world knowledge that reason or cause can overlap, be anterior or posterior to the consequences or effects. Since in this case the cause is anterior to the consequence, we also infer Inverted Narration.

(745) Se o João faltou à aula, o pai castigou-o.
If João missed class, his father punished him.

In the following example, renumbered here (746), the connector *se* signals the rhetorical relation Condition and the situation of the subordinate clause is interpreted as being the cause for the situation of the main clause, thus, we infer Explanation. Nonetheless, that cause establishes another different link with the consequence. The cause also describes the surroundings of the situation *missing class* by overlapping it. Hence, we infer $\text{Background}_{\text{backward}}$.

(746) O João faltou à aula se estava doente.
João missed class if he was(Imp) sick.

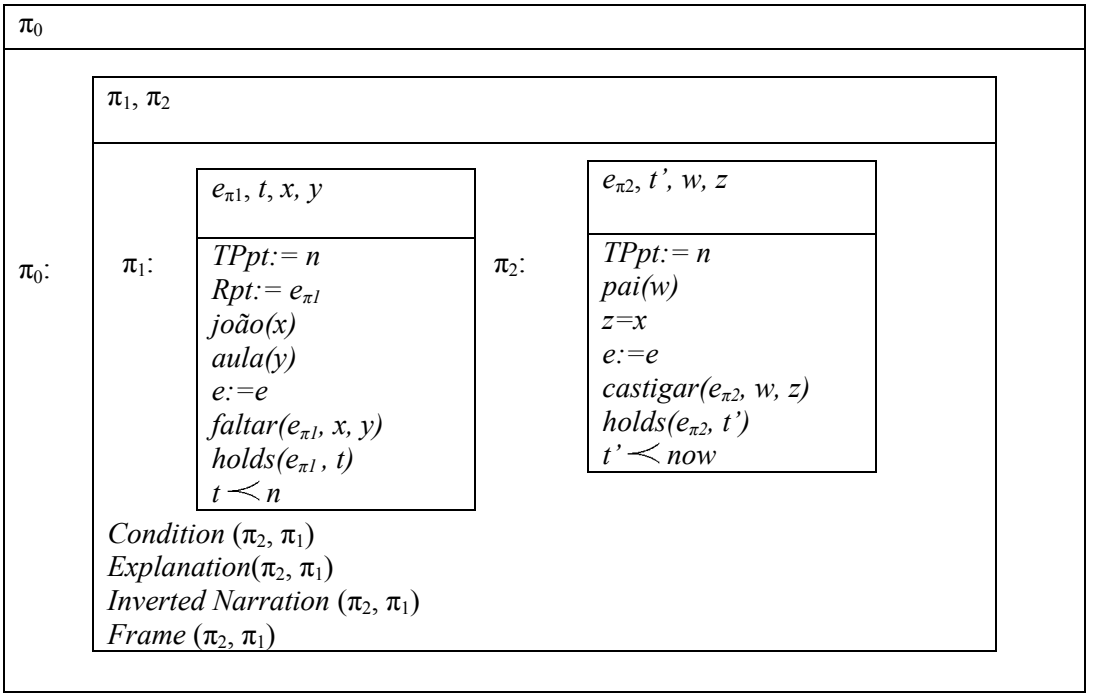
In (744), here (747), besides the relation Condition, we have the dual of Explanation, that is, Result, because now the subordinate clause represents the consequence or effect of the situation of the main clause. Nevertheless, we also infer

Narration, from which we can derive the temporal relation between the situations, temporal successivity.

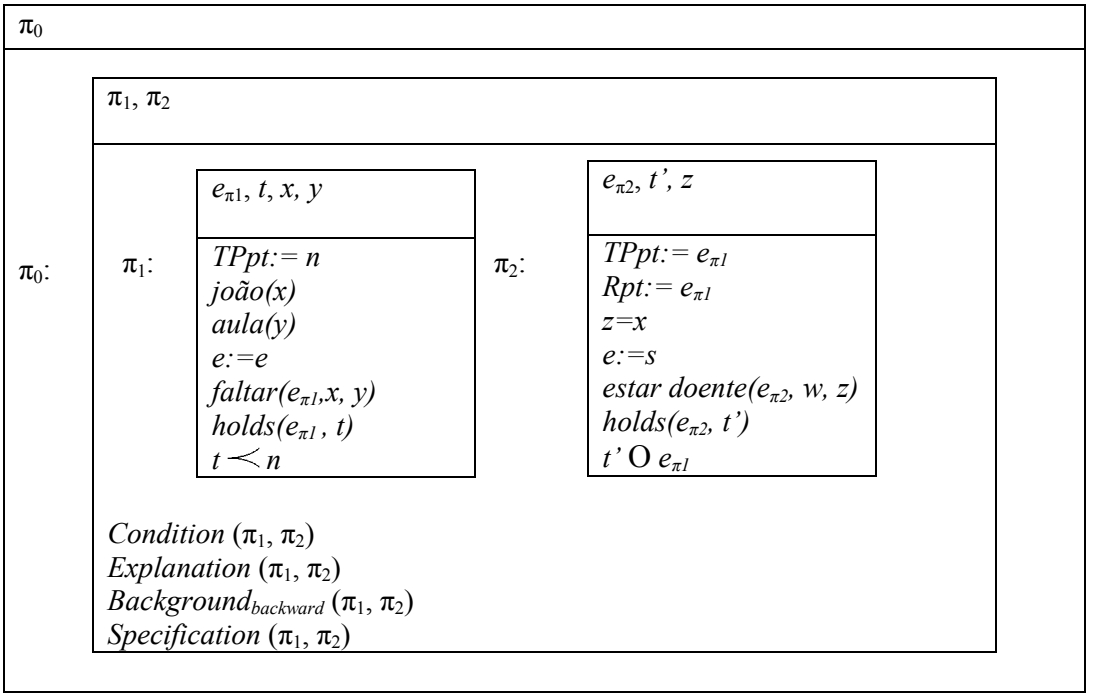
(747) Se o João vai morar em Londres, gostou da cidade.
If João will live in London, he liked the city.

SDRSs (745a), (746a) and (747a) represent the examples adduced above.

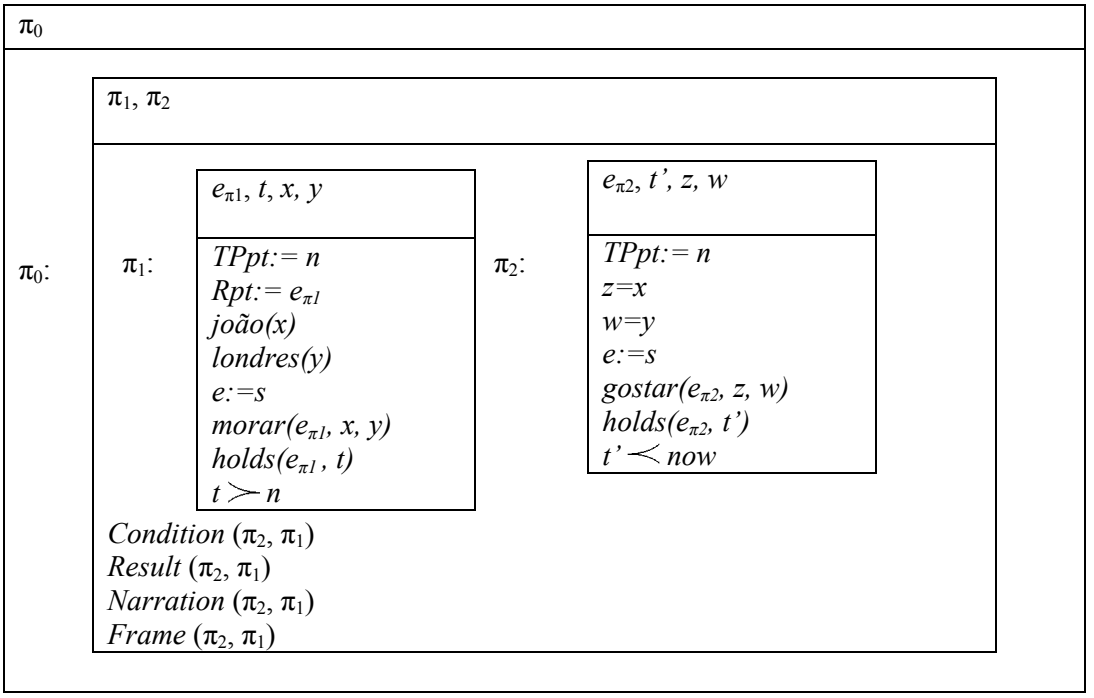
(745a)



(746a)



(747a)



The SDRSs represent the analysis just made and, so, in each SDRS, there are three conditions that identify the rhetorical relations at the content level. The first, *Condition* (π_1, π_2) or *Condition* (π_2, π_1), represents the rhetorical value of *se*, the second

the cause-effect or effect-cause relation between the situations and the third the temporal relation between the situations.

When comparing the examples given before with their non-complex counterparts, it is expected that the first rhetorical relation, Condition, disappears and that the rhetorical causal relations be reversed when the subordinate clause comes in the initial position (cf. (748)-(750)).

(748) a. Se o João faltou à aula, o pai castigou-o. **(Condition + Explanation + Inverted Narration)**
If João missed class, his father punished him.

b. O João faltou à aula. O pai castigou-o. **(Result + Narration)**
João missed class. His father punished him.

(749) a. O João faltou à aula se estava doente. **(Condition + Explanation + Background$_{backward}$)**
João missed class if he was(Imp) sick.

b. O João faltou à aula. Ele estava doente. **(Explanation + Background$_{backward}$)**
João missed class. He was(Imp) sick.

(750) a. Se o João vai morar em Londres, gostou da cidade. **(Condition + Result + Narration)**
If João will live in London, he liked the city.

b. O João vai morar em Londres. Ele gostou da cidade. **(Explanation + Inverted Narration)**
João will live in London. He liked the city.

In the version b. of the examples, we confirm that indeed the rhetorical relation Condition disappears and that, when the subordinate clause occupies the initial position in the version a., in the version b., the causal relation commutes from Explanation to Result (cf. (748)) or the other way around (cf. (750)). Therefore, this exercise corroborates that the interpretation of complex sentences requires a more intertwined net of rhetorical relations than the one followed for examples with non-complex sentences.

In sum,

(i) the sentences with clauses introduced by *se* just analysed express different relations of meaning, which justifies the assignment to them of a combination of three rhetorical relations at the level of content. As such, in addition to the rhetorical relation Condition, there are situations that are also linked by Explanation or Result in combination with $\text{Background}_{\text{backward/forward}}$, Narration and Inverted Narration.

(ii) The inference of these combinations of three rhetorical relations shows that these sentences convey more than one causal meaning, that is, they do not only feature the rhetorical value imposed by the connector, as the sentences with *embora* and *porque*.

(iii) the comparison with non-complex sentences shows that the interpretation process of the complex sentences with *se* require the consideration of more rhetorical relations.

4.7. Sentences with clauses introduced by *para*

In the present section, we will analyse the temporal and discursive features of sentences with clauses of purpose introduced by *para* ('so'). This type of adverbial clauses resort to the *Infinitivo*, which raises some questions as to the temporality of the situations represented. Similarly to clauses with *antes de* and *depois de*, the localisation of the situations is not determined by the *Infinitivo* itself, but by the interaction of different factors, which we will look into.

We will also show that, in spite of the fact that *para* in the complex sentences under study marks a purpose or result, the temporal relation is not always of posteriority. In order to ascertain the temporal relations in this type of sentences, we will test different verb tenses in the main clause and combine different aspectual classes in both clauses.

The rhetorical analysis will show once again that one has to combine different rhetorical relations to encompass the semantics of this type of sentences.

4.7.1. Temporal features and some aspectual features

The subordinate clause introduced by *para* uses the *Infinitivo*, as already pointed out. However, the main clause can integrate different verb tenses. We will test it with the *Presente*, the *Pretérito Perfeito*, the *Pretérito Imperfeito*, the *Pretérito-mais-que-perfeito* and the *Futuro*. The other variable that will be assessed is of aspectual nature: we will combine eventive situations and stative situations.

The first set of examples is presented below (cf. (751) to (754)).

(751) A Maria faz/ fez/ vai fazer ginástica para emagrecer.
The Maria does/ did/ is-going to-do gymnastics to get-thin.
Maria does/ did/ is going to do gymnastics to get thin.

(752) A Maria trabalha/ trabalhou/ vai trabalhar muito para ter sucesso.
The Maria works/ worked/ is-going to-work very-much to have success.
Maria works / worked/ is going to work very much to have success.

(753) A Maria vive/ viveu/ vai viver em casa da mãe para poupar dinheiro.
The Maria lives/ lived/ is-going to-live in house of-the mother to save money.
Maria lives/ lived/ is going to live at her mother's house to save money.

(754) A Maria vive/ viveu/ vai viver no Porto para estar perto da mãe.
The Maria lives/ lived/ is-going to-live in-the Porto to be near of-the mother.
Maria lives/ lived/ is going to live in Porto to be near her mother.

The examples above locate the situations of the main clause in different time intervals, although the TPpt is always the utterance time. Whenever the *Presente* is used the situations overlap the utterance time, both in the habitual reading (cf. (751) and (752) and in the present time interpretation (cf. (753) and (754)). The *Pretérito Perfeito* in the main clause represents the situations in a time interval anterior to the utterance time, whereas the *Futuro* locates the eventualities in a time interval which is posterior to *n*.

The use of the *Infinitivo* in the subordinate clause raises some problems as to the temporal localisation of the situations. In section 4.3.2.1.1., when we analysed sentences with *antes de* and *depois de* followed by *Infinitivo*, we argued that in this type of

sentences the *Infinitivo* does not carry any temporal information, contrary to sentences with infinitive clauses selected by neutral verbs. In this type of constructions with *para*, the *Infinitivo* does not exhibit any temporal marks, either. The examples show that the situations can be located in different time intervals even when the same verb tense is used in the main clause. Moreover, we cannot identify the time interval that acts as the situations' TPpt, we do not have the necessary linguistic information to know if it is the utterance or the time interval occupied by the main clause's situation and which the relation with *n* is. So, as far as the temporal representation of the situations under discussion is concerned, we will delete from the SDRS all conditions concerning temporal characterisation.

Since the *Infinitivo* lacks temporal features, the temporal localisation of these situations is only determined in relation to the situation of the main clause, which in the SDRS will be unveiled by the rhetorical relations.

So, one has to derive the temporal localisation of the subordinate clause's situations from the temporal relations between the two situations. In turn, the temporal relations between the two situations are determined by the interaction of the following factors: the temporal features of the main clause's situations, the aspectual characteristics of the situations involved, the semantics of the connector *para* and our world knowledge.

Contrary to what was expected, *para* does not always determine a relation of posteriority. In fact, the purpose or result that this connector signals can overlap or be posterior to the situation that originates it. The interesting point is that both temporal relations can emerge with different combinations of eventive and stative situations and in many cases the temporal interpretation is mainly determined by our world knowledge.

In (751), there are two events and the temporal relation between them is of overlapping, that is, *getting thin* occurs in the same time interval as *doing gymnastics*. This temporal interpretation is mainly determined by our world knowledge, which informs us that, while we do exercise, we lose weight. The temporal relation of overlapping prevails regardless of the verb tense that is used in the main clause. It should be noted, however, that different eventive predications can originate other temporal relation, namely posteriority (cf. (755)).

(755) A Maria compra/ comprou/ vai comprar livros para oferecer a orfanatos.
The Maria buys/ bought/ is-going to-buy books to offer to orphanages.
Maria buys/ bought/ is going to buy books to offer to orphanages.

In this example, we interpret the situation *Maria buying books* as occurring before the situation *offering them to orphanages*.

In (752), there is an event in the main clause and a state in the subordinate clause. The temporal relation between the situations varies according to the verb tense of the main clause. With the *Presente*, the preferential reading is of overlapping, while with the *Pretérito Perfeito* and the *Futuro* is of posteriority. Nevertheless, once again, if we alter the predications, even keeping the same aspectual classes, a different temporal relation may arise (cf. (756)).

(756) A Maria estuda muito para ser uma boa médica.
The Maria studies very-much to be a good doctor.
Maria studies very much to be a good doctor.

In this example, although the temporal interpretation of overlapping is still available (*Maria is already a doctor, but she has to study hard to be a good one*), the preferred interpretation is the one in which the situation *Maria estuda* is prior to the state *ser uma boa médica*.

In (753) and (754), we combine a state and an event and two states, respectively. In both examples, the temporal relation between the situations is of overlapping, irrespective of the verb tense. In (753), *saving money* occurs during the same time interval as *Maria living with her mother*. In (754), *being near her mother* is located in the same interval as *Maria living in Porto*. The combination of other stative and eventive situations can lead to a different temporal relation (cf. (757)).

(757) A Maria é/ foi/ vai ser simpática com o patrão para receber mais um aumento.
The Maria is/ was/ is-going to-be nice to the boss to receive more a rise.
The Maria is/ was/ is going to be nice to her boss to receive another rise.

In this case, the temporal relation between the two situations is of posteriority of the situation *receber mais um aumento*. In part, this temporal interpretation is the result

of the presence of an individual level phase state in the main clause, which behaves like a process and allows for temporal successivity.

The temporal relation of posteriority is more difficult with combinations of two states due to the aspectual features of this type of situations. One can encounter some examples, such as (758), but the most common interpretation is of overlapping.

(758) A Maria é/ foi/ vai ser simpática com os professores para ter melhores notas.
The Maria is/ was/ is-going to-be nice to the teachers to have better grades.
The Maria is/ was/ is going to be nice to her teachers to have better grades.

The *Pretérito Imperfeito* in this type of sentences is only possible with a habitual interpretation (cf. (759)) and when there are individual level states or habitual states in the main clause as in (760).

(759) A Maria fazia ginástica para emagrecer.
Maria did(Imp) gymnastics to get thin.

(760) A Maria era simpática para agradar ao chefe.
Maria was(Imp) nice to please her boss.

The *Pretérito-mais-que-perfeito* is disallowed in this type of sentences, as evidenced by examples (761)-(762).

(761) *A Maria tinha trabalhado muito para ter sucesso.
**Maria had worked very much to have success.*

(762) *A Maria tinha vivido em casa da mãe para poupar dinheiro.
**Maria had lived at her mother's house to save money.*

The ungrammaticality that ensues from the use of these tenses prevails even if we change the order of the clauses.

The lack of temporal features of the subordinate clause's situation and the semantic role of purpose or result conveyed by the subordinate clause mean that, in this type of sentences with *para*, we cannot say that the subordinate clause's situation is able to create a temporal domain or integrate the temporal domain created by the main

clause. For this reason, the assessment of the temporal linkage mechanism between the situations is not applicable to this type of sentences or the verification of the situations' localisation in the same or different time spheres.

To sum up, in sentences with adverbial clauses introduced *para*:

(i) the *Presente*, the *Pretérito Perfeito* and the *Futuro* can be used in the main clause and are compatible with the *Infinitivo* in the subordinate clause;

(ii) the *Pretérito Imperfeito* can only occur with habitual states or individual level states;

(iii) *the Pretérito-mais-que-perfeito* produce ungrammatical results because the time interval occupied by the subordinate clause's situation cannot act as TPpt for the other situation;

(iv) the *Infinitivo* has no temporal features and the temporal localisation of the situations it describes is established in relation to the situation of the main clause;

(v) since the *Infinitivo* has no temporal features, we cannot assess the mechanisms of temporal linkage between the situations or the possibility of representing the situations in the same time spheres;

(vi) different combinations of eventive and stative situations are feasible;

(vii) bearing in mind the tenses and aspectual classes experimented, two temporal relations between the situations are possible: overlapping and posteriority;

(viii) the same verb tense with different combinations of aspectual classes can render different temporal interpretations;

(ix) the same tenses' and aspectual classes' combinations can render different temporal readings;

(x) the determination of temporal relations results from the interaction of different factors: temporal and aspectual features, the semantics of the connector *para* and our world knowledge.

4.7.2. Rhetorical Relations

The sentences with clauses of purpose introduced by *para* describe a situation in the main clause whose result is represented by the subordinate clause. This relation of meaning is conveyed by the connector *para*. Nevertheless, this rhetorical meaning is not associated to any specific temporal characteristic. As we have shown in the previous section, in this type of sentences the temporal relations between the two situations may be of overlapping or of posteriority. So, if on the one hand, the connector *para* signals a specific rhetorical relation, on the other hand, that rhetorical relation cannot unveil by itself the temporal relation between the situations.

The following three examples illustrate the three combinations of rhetorical relations present in the sentences which undergone the temporal analysis.

(763) A Maria viveu no Porto para estar perto da mãe.
Maria lived in Porto to be near her mother.

(764) A Maria vai comprar livros para oferecer a orfanatos.
Maria is going to buy books to offer to orphanages.

(765) A Maria faz ginástica para emagrecer.
Maria does gymnastics to get thin.

In all three examples, as well as in all of the sentences from the previous section, different information sources, such as the lexicon, semantics and our world knowledge inform us that the situations of the subordinate clause establish with the situations of the main clause a relation of effect or consequence, whose meaning postulates correspond to the rhetorical relation Result. Based on the analysis of the data, we have already argued that this rhetorical relation has no temporal consequences, because a situation may represent a consequence or effect of another situation and yet it may not be posterior to it. In fact, it may establish a temporal relation of overlapping with the other situation[77].

However, a semantic representation of these sentences as conveying only the rhetorical relation Result would be insufficient as it would not properly represent their temporal characteristics or other rhetorical links which we infer during the process of

[77] Cf. Examples with *enquanto* on section 4.3.3.2., pages 320-325.

interpretation. We should not forget that a discourse is as coherent as the rhetorical links which we can establish between the situations.

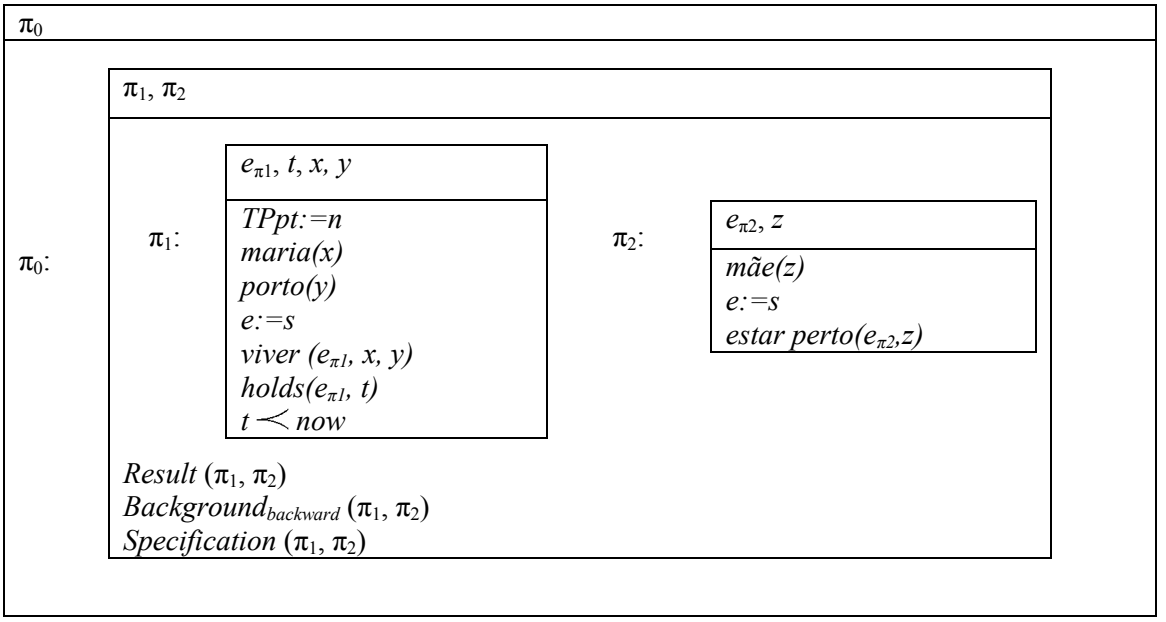
Therefore, looking at the examples, in addition to Result, we can infer other rhetorical relations which can account for the different temporal relations. In (763), the situation *estar perto da mãe* overlaps the situation *Maria viveu no Porto* and it can also be interpreted as describing the scenario of that situation. Thus, we can infer $\text{Background}_{\text{backward}}$. The combination of Result with $\text{Background}_{\text{backward}}$ explains not only the rhetorical links, but also the temporal relations.

In (764), the situation represented by the subordinate clause describes the goal of *Maria buying books* and it occurs after the situation of the main clause. The combination of the rhetorical relations Result and Narration captures the relation of meaning and the temporal relation which are established between the two situations.

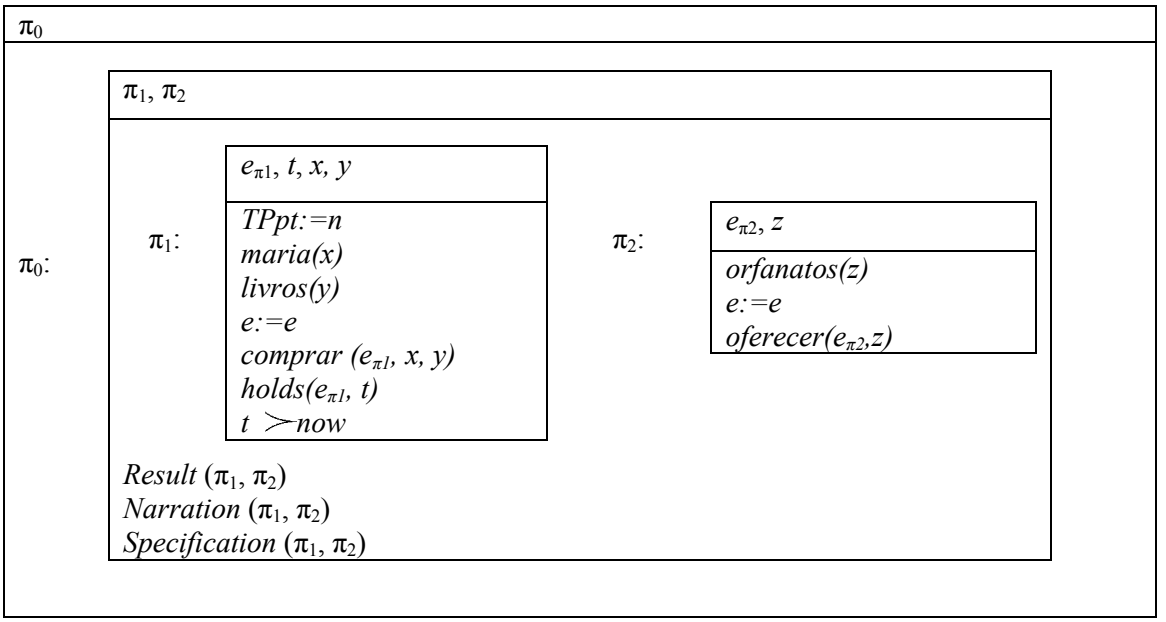
In (765), the aim of *Maria doing gymnastics* is expressed by the subordinate clause: the result is *getting thin*. However, both situations overlap, as we have already seen. One cannot, nonetheless, infer Background because the situation *emagrecer* is an event which is not setting the surroundings for the situation *Maria faz ginástica*. In fact, both situations are portrayed as occurring at the same time, in parallel, so, we infer Parallelism, whose meaning postulates suit the aforementioned semantic description.

The SDRSs (763a), (764a) and (765a) represent the examples from (763) to (765).

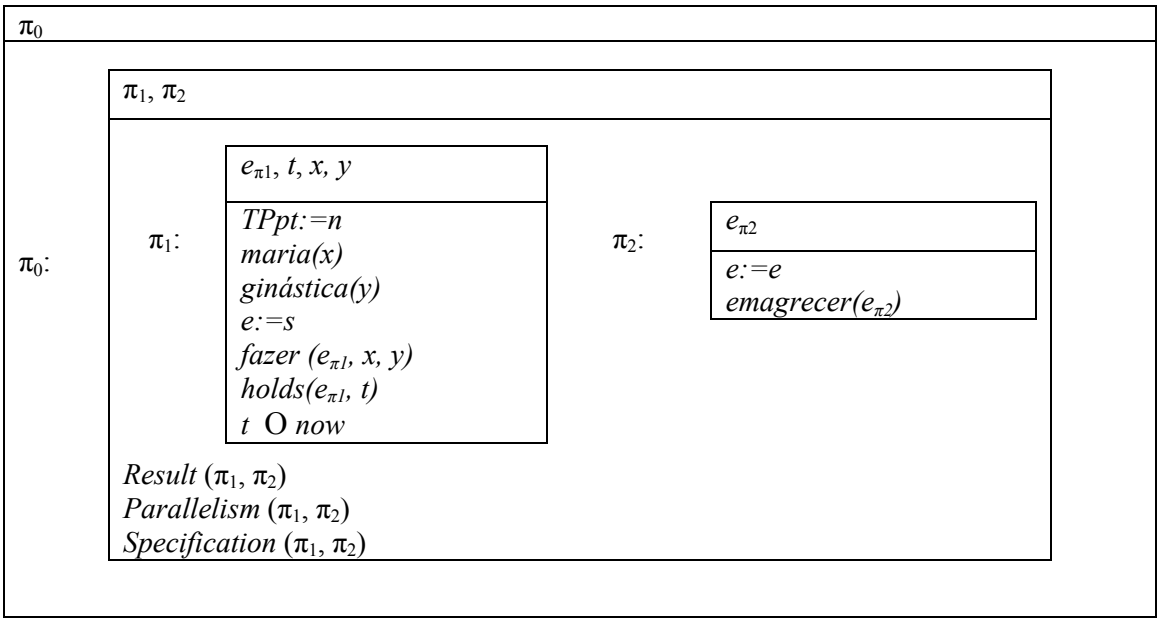
(763a)


π0
π1, π2
π0:
π1:
e_π1, t, x, y
TPpt:=n
maria(x)
porto(y)
e:=s
viver (e_π1, x, y)
holds(e_π1, t)
t ≺ now
π2:
e_π2, z
mãe(z)
e:=s
estar perto(e_π2,z)
Result (π1, π2)
Background_backward (π1, π2)
Specification (π1, π2)

(764a)


π0
π1, π2
π0:
π1:
e_π1, t, x, y
TPpt:=n
maria(x)
livros(y)
e:=e
comprar (e_π1, x, y)
holds(e_π1, t)
t ≻ now
π2:
e_π2, z
orfanatos(z)
e:=e
oferecer(e_π2,z)
Result (π1, π2)
Narration (π1, π2)
Specification (π1, π2)

(765a)

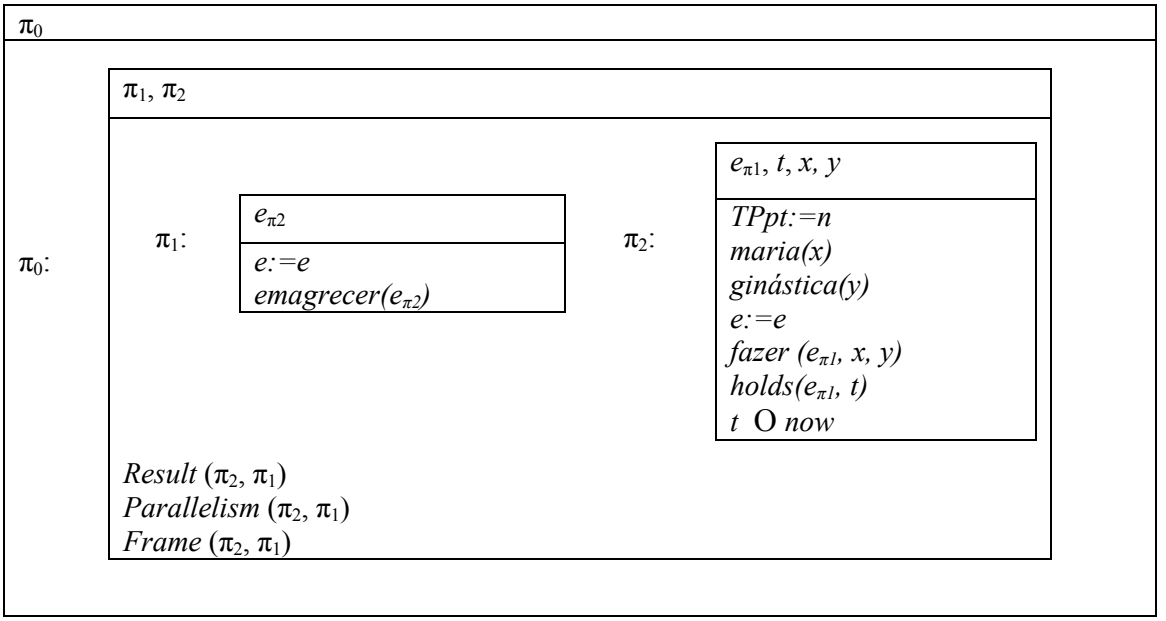


The SDRSs represent the situations of the subordinate clause, labelled π_2, as having no temporal features because they are described by the *Infinitivo*, which as we have already argued, does not carry any temporal information to locate those situations. The temporal features of the main clause's situations are represented by the conditions *TPpt:=n*, for all three, and $t \prec now$, $t \succ now$ and *t* O *now*, since the verb tenses are *Pretérito Perfeito*, *Futuro* and *Presente*, respectively. The temporal relations between the situations are unveiled by the conditions $Background_{backward}$ (π_1,π_2), *Narration* (π_1,π_2) and *Parallelism* (π_1,π_2).

The rhetorical relation which conveys the most relevant relation of meaning at the content level is pinpointed by the condition *Result* (π_1,π_2), whereas the condition *Specification* (π_1,π_2) identifies the rhetorical relation at the text structuring level. If the sentence to be represented assumed the order subordinate clause + main clause as in (766), the corresponding SDRS would be (766a).

(766) Para emagrecer, a Maria faz ginástica.
To get thin, Maria does gymnastics.

(766a)



The comparison between SDRS (765a) and (766a) reveals that the only two changes concern the order of the rhetorical relations' arguments and the rhetorical relation at the text structuring level. In the latter, although we represent the subordinate clause first, still we link its situation to the one of the main clause and not the other way around. We should keep in mind that it is the subordinate clause which has the cue-word of the rhetorical relation Result and that our aim is to unfold which rhetorical relations links the situations of adverbial clauses to the situations of the main clause.

The positioning of the subordinate clause at the head of the sentence may not impose a different rhetorical relation at the content level, but it determines a different interpretation at a macro-level. The situation of the subordinate clause provides now a frame to the situation that is presented by the main clause, which occupies a final position, hence, the condition *Frame* (π_2, π_1).

The comparison of the complex sentences with the versions of non-complex sentences is not possible because of the *Infinitivo*.

To sum up, in the sentences with adverbial clauses introduced *para*:

(i) the connector *para* acts as a cue-word for the most relevant rhetorical relation at the content level, that is, Result;

(ii) the combination of the rhetorical relation Result with other rhetorical relations can account for the different temporal relations and strengthens discursive coherence;

(iii) three possible combinations were observed: Result + $\text{Background}_{\text{backward}}$, Result + Narration and Result + Parallelism;

(iv) similarly to the other sentences with adverbial clauses, one can infer the rhetorical relations Specification or Frame at the text structuring level.

4.8. Systematisation of the temporal relations and rhetorical relations

In the sections of part two, it was our intention to present an analysis of temporal and rhetorical relations of sentences with adverbial clauses introduced by *quando*, *antes de*, *depois de*, *enquanto*, *porque*, *embora*, *se* and *para*.

Concerning the first parameter, that is, temporal relations, we aimed at presenting for each type of sentence examples of different tenses' and aspectual classes' combinations which could originate different temporal relations, different mechanisms of temporal linkage between the situations and different representations of the situations in time spheres.

So, we resorted mainly to combinations of tenses with the *Presente*, the *Pretérito Perfeito*, the *Pretérito Imperfeito*, the *Pretérito-mais-que-perfeito* and the *Futuro* in the form *ir* in the *Presente* + *Infinitivo*. When the type of adverbial clauses demanded the use of the *Infinitivo* ('Infinitive') or of the *Conjuntivo* ('Subjunctive'), we combined these forms with the aforementioned verb tenses.

With respect to the aspectual classes, we chose not to distinguish between the several subclasses and we only tested combinations of events and states without specifying their respective subclasses. However, punctually, we specified some differences inside the same eventive or stative class so that we could illustrate how complex and intertwined the process of temporal interpretation can be and show that,

although, in some cases, Aspect plays a relevant role in obtaining the correct temporal reading, in others the lexicon and our world knowledge has a more relevant contribution.

As far as the rhetorical relations are concerned, we aimed at revealing the main rhetorical relations in sentences with the connectors already singled out. Therefore, we tried to present the most pertinent examples to illustrate the most representative rhetorical relations that we can infer in the selected object of study.

The following tables systematise the parameters analysed for each type of sentence and the analysis.

	Time spheres		**Temporal relations**			**Mechanisms of temporal linkage of situations**	
	Same	Different	Successivity	Simultaneity	Anteriority	New temporal domain	Temporal subordination
sentences with *quando*	☑	☒	☑	☑	☑	☑	☑
sentences with *antes de*	☑	☑	☒	☒	☑	☑	☑
sentences with *depois de*	☑	☑	☑	☑	☒	☑	☒
sentences with *enquanto*	☑	☒	☒	☑	☒	☑	☑
sentences with *porque*	☑	☑	☑	☑	☑	☑	☑
sentences with *embora*	☑	☑	☑	☑	☑	☑	☑
sentences with *se*	☑	☑	☑	☑	☑	☑	☑
sentences with *para*	–	–	☑	☑	☒	–	–

Table 55. Systematisation of the analysed parameters concerning temporal characterisation

Rhetorical Relations	**Complex sentences with...**							
	quando	*antes de*	*depois de*	*enquanto*	*porque*	*embora*	*se*	*para*
Narration	☑	☒	☑	☒	☒	☒	☒	☒
Inverted Narration	☑	☑	☒	☒	☒	☒	☒	☒
$\text{Background}_{\text{forward}}$	☑	☒	☑	☑	☒	☒	☒	☒
$\text{Background}_{\text{backward}}$	☑	☒	☒	☑	☒	☒	☒	☒
Parallelism	☑	☒	☒	☑	☒	☒	☒	☒
Elaboration	☑	☒	☒	☒	☒	☒	☒	☒
Requirement	☑	☒	☒	☒	☒	☒	☒	☒
Explanation + Background	☑	☒	☒	☒	☑	☒	☒	☒
Explanation +Narration	☑	☒	☒	☒	☑	☒	☒	☒
Explanation +Inverted Narration	☑	☒	☒	☒	☑	☒	☒	☒
Denial of Preventer + Background	☑[78]	☒	☒	☒	☒	☑	☒	☒
Denial of Preventer + Narration	☒	☒	☒	☒	☒	☑	☒	☒
Denial of Preventer + Inverted Narration	☒	☒	☒	☒	☒	☑	☒	☒
Condition + Explanation + Inverted Narration	☒	☒	☒	☒	☒	☒	☑	☒
Condition+Explanation +Background	☒	☒	☒	☒	☒	☒	☑	☒
Condition + Result + Narration	☒	☒	☒	☒	☒	☒	☑	☒
Result + Narration	☑	☒	☒	☒	☒	☒	☒	☑
Result + Background	☑	☒	☒	☑	☒	☒	☒	☑
Result + Parallelism	☑	☒	☒	☒	☒	☒	☒	☑

Table 56. Systematisation of the rhetorical relations

[78] Although we have not explored this type of sentences with *quando* because they have different syntactic and semantic features, there are examples in which we can infer the rhetorical relation Denial of Preventer (cf. (i)).

(i) A Ana saiu, quando devia estar a estudar.
The Ana went-out, when should be study.
Ana went out, when she should be studying.

Table 55 shows that the sentences under investigation display a heterogeneous behaviour as to the different temporal parameters assessed. In fact, not even the time clauses, which belong to the same semantic class, behave in the same way.

Regarding the representation of the situations in time spheres, with the exception of sentences with clauses introduced by *quando* and by *enquanto*, all of the other sentences can represent the situations in different time spheres, even those with *antes de* and *depois de*. The sentences with *enquanto* can only represent situations in the same time sphere because the connector imposes a relation of simultaneity between the situations and, thus, the two situations must be represented in the same time interval, ergo, in the same time sphere. In the sentences with *quando*, the connector is underspecified as to the localisation of the situations. Nonetheless, the clause headed by *quando* is used to locate the situation of the main clause and, therefore, it cannot locate it in a different time sphere from the one in which the situation represented by the subordinate clause is located. The sentences with *antes de* and *depois de* + *Infinitivo* represent the situations in different time spheres, although they also have the function of time locators. They can do so because the temporal organisation of successivity and anteriority imposed and conveyed by the lexical meaning of the connectors licenses the representation of the situations in different time spheres as long as the temporal order is respected.

The relation of meaning established in sentences with the other connectors does not impose any restriction as to the representation of the situations in the same time spheres.

As to temporal relations, only the connectors *antes de* and *enquanto* impose a single type of temporal relation, anteriority and simultaneity, respectively. *Depois de* is also very restrictive because of its lexical meaning and by default it determines a relation of temporal successivity. The conditions for a temporal relation of simultaneity only arise when there is a state in the subordinate clause. *Para* allows temporal relations of successivity and simultaneity, but disallows temporal relations of anteriority, which accords well with its lexical meaning. The sentences with *quando*, as a result of the temporal and causal underspecification of the connector, can represent situations which establish relations of successivity, simultaneity and anteriority. The other connectors permit the three different temporal relations because the causal relation(s) they establish do(es) not require any specific temporal organisation.

In regards to the temporal linkage mechanisms of situations, all of the sentences analysed can resort to the creation of a new temporal domain and temporal subordination, with the exception of the sentences with *depois de*. In this case, the tenses which are normally associated to temporal subordination, that is, *Pretérito Imperfeito* and *Pretérito-mais-que-perfeito*, render ungrammatical results, because of the temporal organisation enforced by *depois de*.

Table 56 summarises the rhetorical relations assigned to some of the examples analysed in the previous sections. The observation of the table indicates that the connector which allows for a wider range of rhetorical relations is *quando*. The only rhetorical relation which was not observed in sentences with *quando* is Condition. The variety of rhetorical relations in sentences with *quando* is without a doubt proof of the underspecification of this connector as to its discursive meaning.

Since the other connectors are more marked lexically they narrow down the possible rhetorical relations. *Antes de* and *depois de* are clearly cue-phrases of Inverted Narration and Narration, respectively.

The rhetorical relation that corresponds by default to the connector *enquanto* is Parallelism, but there are others which we can infer in this type of sentences, namely Background and Result combined with Background.

The rhetorical relations that represent the causal links established by *porque*, *embora* and *para* are Explanation, Denial of Preventer and Result, respectively. These are combined with Inverted Narration, Narration and Background, in the case of first two, and with Narration, Background and Parallelism, in the case of Result, to explain the different temporal relations.

The sentences with the connector *se* are more complex because they can convey two different strong causal meanings, namely Condition + Explanation or Condition + Result, in combination with the extrinsic rhetorical relations Inverted Narration or Background, in the first case, and with Narration, in the second case.

All in all, in the analysis we made, we perceived that there is a strong interaction between the temporal relations, rhetorical relations and lexical meaning of the connectors in sentences with adverbial clauses. If in certain cases the temporal relations are determined by the rhetorical meaning associated to the connectors, which results from their lexical meaning (cf. *para*, for instance, which disallows temporal relations of anteriority), in other cases, the rhetorical relations are determined by the temporal

relations, imposed by the lexical meaning of the connectors, (cf. *antes de*, which imposes a rhetorical relation of Inverted Narration).

Conclusions

In this chapter, we presented some contributions to the theoretical framework of SDRT to deal with temporal and rhetorical relations in complex sentences with adverbial clauses.

We began by delimiting the object of study to sentences with clauses introduced by *quando*, *antes de*, *depois de*, *enquanto*, *porque*, *embora* (with factual interpretation), *se* (with factual interpretation) and *para*. This delimitation was necessary because the analysis of all subtypes of adverbial clauses would be a very large undertaking. Moreover, the analysis made for the aforementioned types of sentences illustrates how our proposal can be applied to adverbial sentences in general.

In chapter 2 and 3, we critically revised some theories of temporality and of rhetorical relations and came to the conclusion that the theory that provided the best instruments for a semantic treatment of these questions was the SDRT, by Asher and Lascarides (2003). However, since SDRT did not explicitly and systematically refer to complex sentences with adverbial clauses, we have deemed it best to address some of the specificities of this type of constructions in order to deal with them within the principles of the SDRT.

One of the problems concerned the manner of processing this type of sentences. In discourses with two or more non-complex sentences, the theory predicts that the last situation in the linear order of the discourse is the one to be linked to the previous one. However, due to the semantic (and syntactic) role of the adverbial subordinate clauses the rule of attachment points stipulated by the SDRT could not be followed. Therefore, we presented arguments to argue that:

(i) in the case of the majority of sentences with adverbial clauses, namely those with clauses of reason, concessive clauses, conditional clauses and clauses of purpose, the temporal and rhetorical relations are established from the subordinate clause to the main clause. We argued that, since these clauses are syntactically subordinated to another clause and integrate a connector,

which is most of the times marked lexically, then, the first clause to be processed is the main clause and then we process the subordinate clause. Since the rhetorical link is established from the last situation to be processed to the first, then, the rhetorical and temporal relations are established from the subordinate clause to the main clause, regardless of the linear order of the discourse.

(ii) in the case of the time clauses, the first situation to be processed is always the one of the subordinate clause and, so, the temporal relations and rhetorical relations are established from the main clause to the subordinate clause, regardless of linear order of discourse. Due to their locating function the subordinate time clauses need to be interpreted first in order to locate the situations of the main clause. Assuming that the directionality of the rhetorical and temporal relations is from the last processed situation to the first, then, the rhetorical and temporal link is established from the main clause to the subordinate clause.

Despite the fact that the position of the subordinate clause does not have any bearing in the inference of the rhetorical relations at the content level, we have shown that there are differences at the text structuring level. So, we proposed two new rhetorical relations at this level:

(i) Frame

(ii) Specification.

Another problem which we underlined in part one and for which we presented a proposal of resolution concerned the inference in the same sentence of two rhetorical relations with different temporal consequences, predicted by the authors Asher and Lascarides (2003). We have argued that:

(i) having rhetorical relations with contrasting temporal consequences to explain only one temporal relation between two situations would be troublesome.

(ii) Therefore, we proposed two different groups of rhetorical relations:
   a. one is responsible for unveiling the causal link between the situations;
   b. the other is composed of rhetorical relations whose meaning postulates do not integrate a causal relation, but encompass temporal consequences.

(iii) The combinations of rhetorical relations from these two different groups allow us to explain not only the rhetorical link, but also the temporal relation, as well as to maximise discourse coherence, because the discourse is as coherent as the rhetorical relations one can infer.

(iv) In order to put into practice this proposal, we reformulated some of the definitions of rhetorical relations deleting their temporal consequences.
   a. In our proposal, Explanation and Result belong to the group of the rhetorical relations with a strong causal meaning. This group relies more on information sources such as lexicon and our world knowledge
   b. The rhetorical relations such as Narration and Background belong to the group of rhetorical relations with temporal consequences. This group relies more on temporal information.

(v) The possible combinations permit the representation of the relation of meaning conveyed by sentences with adverbial clauses.

Throughout the analysis, the data motivated:

(i) the reformulation of some of the rhetorical relations' definitions from Asher and Lascarides (Narration);

(ii) the importation of other rhetorical relations from other authors (Condition, Denial of Preventer, Inverted Narration and Parallelism)

(iii) and the proposal of a new rhetorical relation (Requirement).

Table 57 distinguishes the two groups of the rhetorical relations used to analyse the object of study and a few of the possible combinations.

Intrinsic Rhetorical Relations	Extrinsic Rhetorical Relations	A few possible combinations
• Explanation • Result • Elaboration • Requirement • Denial of Preventer • Condition	• Narration • Inverted Narration • Background • Parallelism	• Explanation + Narration • Result + Background • Denial of Preventer + Inverted Narration • Condition + Result + Narration

Table 57. Types of rhetorical relations and examples of possible combinations in sentences with adverbial clauses

In addition to the alteration as far as rhetorical relations are concerned, we have also added some parameters of analysis regarding temporality to be included in our analysis within the SDRT framework.

(i) With respect to Aspect, we have (re)integrated in the SDRSs the conditions which identify the aspectual class of the situations, like Kamp and Reyle (1993) do.

(ii) As to temporal features, we have also included in the SDRS the conditions that identify the TPpt and the relation between the situation's location time and the TPpt and the Rpt, once again, as Kamp and Reyle (1993).

a. However, contrary to the latter, as to the Rpt, we argued that the Rpt of a situation can be any situation or time interval available in the discourse, irrespective whether it has been already processed, that is, it can be a situation which in the discursive linear order of the discourse is after or before the situation in question.

b. Furthermore, based on Silvano's proposal (2002), we claim that, whenever the TPpt of a situation is the utterance time, then the mechanism of temporal linkage between the situations is creation of a new temporal domain and, when the TPpt is the situation with which it occurs, the mechanism is temporal subordination.

Having established the theoretical instruments of analysis, we applied them to the data. We verified that our proposal of analysis can account for and properly represent the semantic features of sentences with adverbial clauses.

We tested different combinations of verb tenses and of eventive and stative situations. Generally speaking, the verb tenses were the *Presente*, the *Pretérito Perfeito*, the *Pretérito Imperfeito*, the *Pretérito-mais-que-perfeito* and the *Futuro* (*ir* in the

Presente + *Infinitivo*). We verified that the verb tenses which offer more restrictions are the *Pretérito Imperfeito* and the *Pretérito-mais-que-perfeito* because they normally require a past time interval to be its TPpt and only a few tenses combinations provide that time interval (the combination with the *Pretérito Perfeito*, in certain contexts, for instance).

Since some connectors select the *Infinitivo*, we have also tried out this form with the aforementioned tenses. The Infinitivo in the subordinate clauses introduced by *antes de*, *depois de* and *para* raises some questions about its temporality. We argued that in this type of sentences the *Infinitivo* does not carry temporal features and that the localisation of the situations it represents is determined in relation to the situation with which it is combined. Therefore, no conditions identifying the TPpt, the Rpt or the relation between the situations' location time and the TPpt can be included in the representation of the situations with the *Infinitivo*. We have also come to the conclusion that the situations represented in clauses introduced by *antes de* and *depois de* are able to create their own temporal domain, because of the clause's semantic role, that is, of time locators. On the other hand, the situations described by the clauses introduced by *para* are not able to perform that task because they lack that temporal function.

We have also tested some Subjunctive forms with Indicative forms in sentences with *enquanto* and *embora*. We have confirmed that the temporal interpretation of the Subjunctive is highly dependent on the type of syntactic configuration in which it appears, on the verb tense and aspectual class with which occurs and on the lexicon present in the predications. We have observed that the Subjunctive forms can choose as TPpt the utterance time or the time interval of the situation with which it is combined, which means that the situations represented by them are not always temporally subordinated to the situations with which they are combined.

The combination of the different verb tenses that belong to different time spheres permitted us to single out which types of sentences demand the representation of the situations on the same time spheres. We observed that this restriction is only applicable to sentence with *quando* and *enquanto*.

The tests concerning aspectual classes revealed that for the most cases all types of sentences which constituted our object of analysis allow the combinations event + event, event + state, state + event and state + state. The observation of these sequences led to the following conclusion:

(i) the different combinations with the same verb tenses imply different temporal relations with the majority of the verb tenses sequences, mainly when states are involved, due to the aspectual features of these situations;

(ii) the same type of aspectual sequence but with different predications can have different temporal interpretations in certain types of sentences even with the same verb tenses;

(iii) the variation of the verb tenses in the same aspectual sequence can determine, or not, different temporal relations, depending on the verb tense, on the type of sentence, on the lexicon and/ or the relation of meaning between the situations.

As far as their temporal and rhetorical relations are concerned, the analysis showed that the sentences with the adverbial clauses analysed behave differently. Insofar as these two parameters, the sentences with *quando* are the less limitative and allow different temporal and rhetorical relations. At the other end, there are the sentences with *antes de*, which license only a temporal relation of anteriority, indicative of Inverted Narration.

With the exception of *quando*, the other connectors act as cue-words/ phrases for the inference of a specific rhetorical relation and, in the case of *antes de*, *depois de* and *enquanto*, for a specific temporal relation.

Connectors such as *porque*, *embora*, *se* and *para* convey a lexical meaning that is related to a causal rhetorical relation, namely Explanation, Denial of Preventer, Condition and Result, respectively. However, in order to properly capture the semantic meaning of the sentences in which they occur, one has to combine those rhetorical relations with extrinsic rhetorical relations, such as Narration, Inverted Narration, Background or Parallelism and, in the case of sentences with *se*, also with other intrinsic rhetorical relations, namely Explanation and Result.

The comparison of the complex sentences in question with their non-complex counterparts, when possible, revealed that, although the relations of meaning are for the most cases preserved, which means that the discursive mechanisms of interpretation are similar, there are other relations of meaning which we can observe in the complex sentences and which are absent from the strings of independent sentences, which means that the discursive mechanisms of complex sentences' interpretation are more complex.

Within certain types of sentences, some relations of meaning at the content level are lost in their respective single sentences discourses. It is the case, for instance, of the rhetorical relation Condition present in sentences with *se*, which is not preserved in the respective single sentences discourses. The other relations of meaning that are absent from sequences of non-complex sentences are the ones at the text structuring level, that is, Frame and Specification.

All in all, we have demonstrated that our proposal for a semantic analysis and representation of sentences with adverbial clauses is able to account not only for the temporal and rhetorical features of these structures, but also for the interaction between these features and, ultimately, to contribute to a better semantic and discursive understanding of this type of sentences.

Conclusion

This dissertation aims at investigating the temporal and rhetorical relations in sentences with adverbial subordination in European Portuguese in order to present a systematic and unified semantic treatment within a framework that can adequately account for those features. This investigation is predicated on the assumption that a treatment of this type of structures in which we establish a relation between the temporal and rhetorical features can lead not only to a better semantic and discursive understanding of these sentences, but also to a more precise formal representation of them.

Traditionally, sentences with adverbial clauses are mainly analysed as conveying a specific meaning (time, reason, purpose, condition, among others), when, in fact, these sentences can represent situations connected by different relations of meaning (or rhetorical relations). Although some authors acknowledge this possibility, there is not any study of the adverbial clauses as a class in a framework which includes the parameter of rhetorical relations. Furthermore, despite the existence of some studies about temporal relations between the situations in sentences with adverbial subordination, those studies only target one or two types of adverbial clauses and follow different approaches from the one we propose in our investigation.

Before presenting our proposal for a systematic and unified semantic treatment of sentences with adverbial subordination, we deal with some relevant questions, namely:

(i) what are the semantic analyses of adverbial subordination?
(ii) which is the most well equipped proposal for the treatment of tense and aspect in sentences with adverbial subordination?
(iii) which theory of rhetorical relations can deal more accurately with the specificities of sentences with adverbial subordination?

In the first chapter, we deal with the first question by revising critically the main semantic proposals for the treatment of adverbial subordination. In this revision, we take into consideration the following elements:

(i) the connectors that introduce the adverbial clauses;
(ii) the classifications and typologies;
(iii) the sequences of verb tenses;
(iv) the aspectual classes;
(v) the discursive role.

In chapter 2, we deal with question (ii), that is, which the best equipped theory for the treatment of tense and aspect is. We analyse different approaches to the phenomena of tense, aspect and sequence of tenses and we also present a descriptive analysis of the verb tenses in European Portuguese.

In the third chapter, our purpose is to investigate question (iii): which theory of rhetorical relations can deal more accurately with the specificities of sentences with adverbial subordination. First, we analyse the concept of rhetorical relations in different proposals and, then, we revise the main discursive theories and taxonomies of rhetorical relations. We also look into the interaction between the temporal and rhetorical relations and into some semantic sources of temporal and rhetorical relations.

Chapter four is divided into two parts. In part one, we define our object of study and we point out some problems of analysis of adverbial subordination within SDRT. Bearing in mind those problems, we propose an enhancement of the SDRT, in order to account for data with complex sentences, namely those with adverbial subordination. We add some temporal and rhetorical relations' parameters and then show how these can be integrated in a formal representation of discourse.

In part two of chapter four, we analyse our object of study, that is, sentences with adverbial clauses introduced by the connectors *quando* ('when'), *antes de* ('before'), *depois de* ('after'), *enquanto* ('while'), *porque* ('because'), *embora* ('although'), *se* ('if') and *para* ('so that').

For each type of sentence, we adduce examples of different tenses' and aspectual classes' combinations, different mechanisms of temporal linkage between the situations, representations of the situations in different time spheres and different rhetorical relations. We test mainly combinations of tenses with the *Presente* ('Simple Present'), the *Pretérito Perfeito* ('Simple Past'), the *Pretérito Imperfeito* ('Simple Past *Imperfectum'*), the *Pretérito-mais-que-perfeito* ('Past Perfect') and the *Futuro* (*ir* in the *Presente* + *Infinitivo*). Whenever the adverbial clause selects the *Infinitivo* ('Infinitive')

or the *Conjuntivo* ('Subjunctive'), we combine these forms with the verb tenses mentioned above.

As far the aspectual classes are concerned, we do not distinguish between the several subclasses and we only test combinations of events and states without specifying their respective subclasses. Nonetheless, sometimes, we specify some differences inside the same eventive or stative class to show the complexity of temporal interpretation.

Regarding rhetorical relations, since we aim at unveiling the main relations of meaning in sentences with the aforementioned connectors, we present the most relevant examples to illustrate the most representative rhetorical relations.

Taking into consideration the questions that we posed early and that motivated the first three chapters, we present the following conclusions:

(i) What are the semantic analyses for adverbial subordination?

- **a.** the semantic analysis of adverbial clauses has not been pursued in the same manner for all types of adverbial clauses: there are adverbial clauses that have been widely studied (*when*-clauses, for instance), while there are others that have not been object of many investigations (the clauses of purpose, for instance).
- **b.** Regarding their temporal, aspectual and discursive properties, there is not a proposal that takes all these parameters into account in the analysis carried out.

(ii) Which is the most well equipped proposal for the treatment of tense and aspect in sentences with adverbial subordination?

- **a.** Kamp and Reyle's (1993) *Discourse Representation Theory* includes important theoretical elements to properly explain and represent temporal organisation in discourse, namely the concept of *Temporal Perspective Point* (TPpt). However, it does not deal in a systematic manner with complex sentences, nor takes into consideration the role of the rhetorical relations in inferring temporal relations.

b. In order to contribute to a better understanding of sequence of tenses, we propose a distinction between *Temporal Anaphora* and *Temporal Subordination*

i. *Temporal anaphora* is closely related to the notion of reference time: there is temporal anaphora when there is a time interval/ situation that can act as reference time for the situation in question.

ii. *Temporal subordination* is closely related to TPpt: there is temporal subordination when the TPpt of the new introduced situation is the time interval occupied by the situation with which occurs; and there is creation of a new temporal domain, when the TPpt of the new situation is the utterance time or a time interval that includes not only the time interval occupied by the situation with which occurs but also the utterance time.

c. In our analysis, we observed that Dowty's tests (1979), Moens (1987) and Moens and Steedman's (1988) proposals combined with the distinction between phase and non-phase states (Cunha (1998; 2004)) describe quite precisely the different aspectual classes.

(iii) Which theory of rhetorical relations can deal more accurately with the specificities of sentences with adverbial subordination?

a. We showed that the *Segmented Discourse Representation Theory*, from Asher and Lascarides (2003), was the most elaborated theory among those with rhetorical relations. However, this theory is not yet equipped with the necessary principles and stipulations to deal with all types of data, namely adverbial subordination. So, some extra stipulations are in order.

b. Furthermore, the analysis provided by the SDRT would benefit from the consideration of some temporal and aspectual parameters.

So, although we conclude that SDRT is indeed the most complete and grounded theory to deal with our object of study, we also observe that it needs further stipulations to deal with the specificities of sentences with adverbial subordination. The stipulations are related to:

(i) the directionality of the rhetorical relations;
(ii) the rhetorical relations at a text-structuring level;
(iii) two different sets of rhetorical relations and the combination of them to obtain the correct interpretation.

As far as the first issue is concerned, we argue in favour of different attachment points depending on the type of clause:

i. By default, we assume that, regardless of the linear order, the rhetorical relation is established from the subordinate clause to the main clause, because the former integrates the connector and it is the subordinate clause.
ii. However, in the case of the time clauses, since the situation of the subordinate clause locates the situation of the main clause, the former has to be processed first. Assuming that the temporal and rhetorical relations are established from the last situation to be processed to the first, then the temporal relations and rhetorical relations are established from the main clause to the subordinate clause, regardless of the linear order of discourse.

The second stipulation is motivated by the realisation that, although the position of the subordinate clause does not have any bearing in the inference of the rhetorical relations at the content level, it leads to differences at the text structuring level. For this reason, we put forward two new rhetorical relations at this level, *Frame* and *Specification*:

i. The rhetorical relation *Frame* holds when K_α describes a situation that frames the situation described by K_β, where α is represented by a subordinate clause and β by a main clause and K_α is in the initial position.
ii. The rhetorical relation *Specification* R holds when K_α describes a situation that provides more details about the situation described by K_β, where α is represented by a subordinate clause and β by a main clause and K_α is in the final position.

The third stipulation results from the possibility of having in the same sentence two rhetorical relations with different temporal consequences, which can be problematic from a theoretical and analytical point of view. To deal with this problem, we put forward the following proposals.

i. There are two different groups of rhetorical relations:
   a. the first group is composed of intrinsic rhetorical relations that unveil the link of causality between the situations. This group relies more on information sources such as lexicon and our world knowledge. Some of the intrinsic rhetorical relations are: Explanation, Result, Condition, among others.
   b. the other group includes extrinsic rhetorical relations whose meaning postulates do not integrate a relation of causality, but encompass temporal consequences. The inference of these rhetorical relations is based on temporal information. The extrinsic rhetorical relations are: Background, Narration, Inverted Narration and Parallelism.

ii. The rhetorical link between two situations results from the combination of rhetorical relations from these two different groups. For instance, two situations can be linked by Result and Narration. The first one represents the causal link between the situations and the second accounts for the temporal relation.
iii. Such an approach implies the reformulation of some of the rhetorical relations' definitions, namely Explanation and Result. In our proposal, these rhetorical relations do not include in their meaning postulates temporal consequences.

The additions to SDRT also include the consideration of some temporal and aspectual parameters so that the representation of the sentences with adverbial subordination was as complete as possible. For this reason, we add to the SDRSs new conditions, adopting Kamp and Reyle analysis (1993):

i. The first one, TPpt:=α, identifies the *Temporal Perspective Point* which can have two values [$speech_{time}$] or [$eventuality_{time}$], that is, the TPpt of an $eventuality_{\beta}$ can be the time interval that corresponds to the speech/ utterance time (*now*) or the

time interval in which eventuality$_{\alpha}$ is located, where eventuality$_{\beta}$ refers to the situation that co-occurs with eventuality$_{\alpha}$. In the first case, there is creation of a new temporal domain and, in the second case, there is temporal subordination.

ii. The second condition, e:=β, identifies the reference time which can be any discourse or time referent already present in the discourse. Since we were dealing with complex sentences which have different syntactic and semantic properties, we argue that in sentences with adverbial subordination, the Rpt is the situation of the main clause for all types, with the exception of time clauses. In this case, because of their locating function, the subordinate clause is the first to be processed and, thus, the Rpt is the situation of the subordinate clause.

iii. The third condition concerns the identification of the aspectual class: eventive (*e*) or stative (*s*).

The analysis carried out show that the sentences with adverbial subordination constitute a very heterogeneous group as far as temporal and rhetorical relations are concerned.

I. With respect to the temporal properties, there is not a common pattern.

(i) Regarding the possibility of representing the situations in different time spheres:

a. The majority of the sentences with adverbial clauses introduced by the selected connectors can represent the situations in different time spheres. The exceptions are the sentences with clauses introduced by *quando* and *enquanto*.

(ii) Regarding the temporal relations, the diversity is the common trend:

a. the connectors *antes de* and *enquanto* only allow a single type of temporal relation, anteriority and simultaneity, respectively.

b. By default, *depois de* + *Infinitivo* determines a relation of temporal successivity due to the lexical meaning of the connector. There is a relation of simultaneity when a state is in the subordinate clause.

c. *Para* + *Infinitivo* allows temporal relations of successivity and simultaneity, but not temporal relations of anteriority, due to its lexical meaning.

d. The situations of sentences with *quando* can establish relations of successivity, simultaneity and anteriority due to the temporal and rhetorical underspecification of the connector.

e. The connectors *porque*, *embora* and *se* permit the three different temporal relations and, thus, do not impose any specific temporal organisation.

(iii) Regarding the mechanisms of temporal linkage of situations:

a. the creation of a new temporal domain and temporal subordination is possible in all types of sentences, with the exception of the sentences with *depois de*, which only allow the creation of a new temporal domain.

II. With respect to the rhetorical relations, there are connectors that are more marked lexically than others and impose more restrictions to the inference of the rhetorical relations:

(i) The sentences with *quando* exhibit the greatest diversity of rhetorical relations: Narration, Inverted Narration, $\text{Background}_{\text{forward}}$, $\text{Background}_{\text{backward}}$, Parallelism, Elaboration, Requirement, Explanation + Background, Explanation + Narration, Explanation + Inverted Narration and Denial of Preventer + Background. The only ones that are not observed are Condition and some cases of Denial of Preventer.

(ii) *Antes de* and *depois de* are cue-phrases of Inverted Narration and Narration, respectively.

(iii) By default, the situations in sentences with *enquanto* are linked by Parallelism. However, there also cases in which we can infer $\text{Background}_{\text{forward}}$, $\text{Background}_{\text{backward}}$ and Result + Background.

(iv) The connector *porque* signals the rhetorical relations Explanation + Background, Explanation + Narration and Explanation + Inverted Narration.

(v) The situations in sentences with *embora* establish a causal link of Denial of Preventer in combination with the extrinsic relations Background, Narration and Inverted Narration.

(vi) The connector *para* marks the rhetorical relation of Result in combination with Narration, Background and Parallelism.

(vii) The sentences with the connector *se* convey two different strong causal meanings, namely Condition + Explanation or Condition + Result, in combination with the extrinsic rhetorical relations Inverted Narration or Background, in the first case, and with Narration, in the second case.

III. With respect to the relation between the temporal features and rhetorical features of sentences with adverbial subordination, we conclude that the interaction between the two is evident.

(i) The extrinsic rhetorical relations' main source of information is temporal information.

(ii) The different temporal relations can also be explained by the extrinsic rhetorical relations.

(iii) The temporal and rhetorical relations are also greatly influenced by the lexical meaning of the connector.

All in all, the theoretical framework in which we develop our analysis proves to be quite effective to describe and represent the temporal and rhetorical relations of sentences with adverbial subordination. In fact, we argue that the additional stipulations to the SDRT permit to analyse more effectively not only sentences with adverbial subordination, but also other types of complex sentences and discourses. Moreover, we show that a semantic treatment of the sentences with adverbial subordination taking into account temporal and rhetorical features contribute to a better knowledge of this type of linguistic data.

The investigation that we undertook opens new lines of research that we leave for future work, namely:

(i) The extension of this research to sentences with adverbial clauses introduced by other connectors in order to verify if they behave in the same manner as far as the analysed parameters are concerned.

(ii) Further investigation of the possible combinations of aspectual classes in sentences with adverbial sentences so that we could determine the aspectual restrictions imposed by the semantics of the different types of clauses.

(iii) The application of the same analysis to other types of complex sentences and to texts composed of complex and non-complex sentences would also allow us to verify the productivity of our proposal.

(iv) The stipulation of more causal and temporal constraints in the rhetorical relations meaning postulates to narrow down the possible choices in the process of inference.

(v) The mapping of connectors onto rhetorical relations so that the former can also be added to the meaning postulates of the latter.

(vi) The consideration of a modal dimension in the rhetorical relations' framework to account for cases of data with modal interpretations, such as the hypothetic and contrafactual conditional clauses.

Bibliography

Abbot, B. (2004) "Some remarks on Indicative Conditionals", in R. Young (ed.) *Proceedings from Semantics and Linguistic Theory XIV* (SALT XIV), Ithaca, NY: Cornell University, 1-19.

Abusch, D. (1993) "Two Theories of Tense in Intensional Contexts", in Dekker, P. And M. Stokhof (orgs.) *Proceedings of the Ninth Amsterdam Colloquium*, University of Amsterdam, 47-66.

Abusch, D. (1997) "Sequence of Tense and Temporal De Re", in *Linguistics and Philosophy*, volume 20, 1, 1-50.

Adam, E. W. (1975) *The Logic of Conditionals*, Dordrecht: D. Reidel.

Andersen, H. L. (1995) "Dépendence entre propositions", in Andersen, H. L. and G. Skytte (1995) *La subordination dans les langues romanes. Actes du colloque international*, *Copenhague 1994*, Copenhague: Université de Copenhague.

Asher, N. (1993) *Reference to Abstract Objects in Discourse*, Kluwer Academic Publishers.

Asher, N. and L. Vieu (2005) "Subordinating and Coordinating Discourse Relations", in *Lingua* 115, 591-610.

Asher, N.; L. Prévot and L. Vieu (2008) "Setting the Background in Discourse", in Discours(e), vol.1. revues.org.

Bates, E.; A. Devescovi and S. D'Amico (1999) "Processing Complex Sentences: A Cross Linguistic Study", *Language and Cognitive Processes*, 14 (1), 69-123.

Beaver, D. and C. Condoravdi (2003) "A Uniform Analysis of Before and After", in Young, R. B. & Y. Zhou (eds) *Proceedings from Semantics and Linguistic Theory XIII*, Ithaca: Cornell University, 37-54.

Bechara, E. (2002) *Moderna Gramática Portuguesa*, Rio de Janeiro: Editora Lucerna.

Bennett, M. and B. Partee (1978) *Toward the Logic of Tense and Aspect in English*, Bloomington: Indiana University Linguistics Club.

Binnick, R. (1991). *Time and the Verb. A Guide to Tense & Aspect*. Oxford: Oxford University Press.

Bosque, I. and V. Demonte (orgs) (1999) *Gramática Descriptiva de la Lengua Española*, Madrid: Editorial Espasa Calpe, S.A..

Bras, M., A.; Le Draoulec and L. Vieu (2000) "*Puis* entre structure temporelle et structure du discours", in *Proceedings of the Colloquium on Temporal Reasoning and Discourse*, Lyon.

Campos, M. H. C. (1984) "Pretérito Perfeito simples/ pretérito perfeito composto: uma oposição aspectual temporal", *Letras Soltas* 2, 9-53.

Campos, M. H. C. (1997) "Pretérito Perfeito simples/ pretérito perfeito composto: uma oposição aspectual temporal", in Fonseca, J. (coord) *Tempo, Aspecto e Modalidade. Estudos de Linguística Portuguesa*. Porto: Porto Editora, 9-52.

Carecho, Judite (1996) *Sobre a semântica das construções com quando*, dissertação de mestrado, Lisboa, Faculdade de Letras da Universidade de Lisboa.

Carlson, G.N. (1979) "Generics and Atemporal when", in *Linguistics and Philosophy* 3:2, D. Reidel Publishing Company, 49-98.

Carrasco Gutiérrez A.. (1999) "El Tiempo Verbal y la Sintaxis Oracional. La *ConsecutioTemporum*", in Bosque, I. and V. Demonte *Gramática Descriptiva de la Lengua Española*, vol. 2. Madrid: Editorial Espasa Calpe, S.A., 3063-3124.

Comrie, B. (1985) *Tense*, Cambridge: Cambridge University Press.

Costa, A. L. (2005) "Aspectos sintáctico-semânticos de estruturas contrastivas", in Duarte, I. and I. Leiria (orgs) *Actas do XX Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: APL, 2004, 797-809.

Costa, M. A. (2003) *Processamento de Frases em Português Europeu. Informação Mofológica, Sintáctica e Semântica em Competição*, dissertação de Doutoramento, Faculdade de Letras da Universidade de Lisboa.

Couper-Kuhlen, E. and B. Kortmann (2000) (eds) *Cause, Condition, Concession and Contrast. Cognitive and Discourse Perspectives*, Berlin/ New York: Mouton de Gruyter.

Crevels, M. (2000) "Concessive on different semantic levels: a typological perspective" in Couper-Kuhlen, E. and B. Kortmann (eds) *Cause, Condition, Concession and Contrast. Cognitive and Discourse Perspectives*, Berlin/ New York: Mouton de Gruyter, 313-340.

Cristofaro, S. (2003) *Subordination*, Oxford: Oxford University Press.

Cunha, C. and L. Cintra (1994) *Nova Gramática do Português Contemporâneo*, Lisboa: Sá de Costa.

Cunha, L. F. (1998) *As Construções com Progressivo no Português: Uma Abordagem Semântica*, Dissertação de Mestrado, Porto: Faculdade de Letras da Universidade do Porto.

Cunha, L. F. (2000) "Alguns Operadores Aspectuais do Português", in *Actas do XIV Encontro Nacional da APL*. Coimbra: APL, 446-462.

Cunha, L. F. (2000) "Valores Temporais das Orações com *Quando*", in *Cadernos de Linguística*, nº 8, Centro de Linguística da Universidade do Porto.

Cunha, L. F. (2003) "Efeitos Aspectuais da Negação Frásica" in *Actas do XVIII Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa, APL, 315-325.

Cunha, L. F. (2004) *Semântica das Predicações Estativas para uma Caracterização Aspectual dos Estados*, Dissertação de Doutoramento, Porto: Faculdade de Letras da Universidade do Porto

Cunha, L. F. (2007) "Efeitos Aspectuais da Negação Frásica", in *Actas del VI Congreso de Lingüística General*, Vol. II, Madrid, Arco Libros, 2131-2140.

Cunha, L. F. and P. Silvano (2006) "A interpretação Temporal dos Infinitivos em Orações Completivas de Verbo", in Actas do *XXI Encontro Nacional da APL*, Faculdade de Letras da Universidade do Porto, 303-314.

Cunha, L. F. and P. Silvano (2008) "Algumas Evidências em favor da Existência de Temporalidade no Infinitivo Simples", in *Textos Seleccionados do XXIII Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: Associação Portuguesa de Linguística, 179-192.

Cunha, L. F.; A. Leal and P. Silvano (2008) "Relações Retóricas e Temporais em Construções Gerundivas Adverbiais", in Oliveira, F. and I. M. Duarte (orgs) *O Fascínio da Linguagem*, Actas do Colóquio de Homenagem a Fernanda Irene Fonseca, Porto: CLUP/ FLUP, 265-276.

Declerck, R. (1991) *Tense in English: Its Structure and Use in Discourse*, London and New York: Routledge.

Declerck, R. (1997) *When-clauses and Temporal Structure*, London and New York: Routledge.

Declerck, R. and S. Reed (2001) *Conditionals. A Comprehensive Empirical Analysis*, Berlin and New York: Mounton de Gruyter.

Dowty, David (1986) "The Effects of Aspectual Class on the Temporal Structure of Discourse: Semantics or Pragmatics", in *Linguistics and Philosophy*, Volume 9, 1, D. Reidel Publishing Company, 17-62.

Duarte, I. (2003) "Aspectos linguísticos da organização textual", in Mateus, M. H.; A. Brito; I. Duarte and I. Faria *Gramática da Língua Portuguesa*, Lisboa: Ed. Caminho, 5ª edição, revista e aumentada, cap. 5, 85-123.

Edgington, D. (1986) "Do Conditionals have Truth Conditions?", in Jackson, Frank (ed) *Conditionals*, Oxford: Oxford University Press, 176-201.

Ferreira, I. (1996) *O Tempo nas construções condicionais*, Dissertação de Mestrado, Porto: Faculdade de Letras da Universidade do Porto.

Flamenco García, L. (1999) "Las construcciones concessivas y adversativas", in Bosque, I. and V. Demonte (orgs), *Entre la Orácion y el Dsicurso. Morfologia*, vol. 3, cap. 59, Madrid: Editorial Espasa Calpe, S.A., 3805-3878.

Fonseca, F. I. (1994) "Para o estudo das relações do tempo no verbo português", in *Gramática e Pragmática. Estudos de Lingüística Geral e de Lingüística Aplicada ao Ensino do Português*, Porto: Porto Editora, 15-28.

Galán Rodriguez, C. (1999) "La Subordinación Final e Causal", in Bosque, I. and V. Demonte (orgs) *Entre la Orácion y el Discurso. Morfologia*, vol. 3, cap. 56. Madrid: Editorial Espasa Calpe, S.A., 3597-3642.

García Fernandez, L. (1999) "Los complementos adverbiales temporales. La subordinación temporal", in Bosque, I. and V. Demonte (*orgs*) *Las construcciones sintácticas fundamentales. Relaciones temporales, aspectuales y modales*, vol. 2, cap. 48, Madrid: Editorial Espasa Calpe, S.A., 3129-3208.

Grosz, B. J. and C. L. Sidner (1986) "Attention, Intentions, and the Structure of Discourse", *Computational Linguistics*, vol. 12 (3), 175-204.

Haiman, J. and S. Thompson (eds), (1988) *Clause Combining in Grammar and Discourse*, Amsterdam, John Benjamins.

Halliday, M. A. K. and R. Hasan (1976) *Cohesion in English*, Londres: Longman.

Harper, W. L. ; R. Stalnaker and G. Pearce (eds) (1981) *Ifs, Ifs*, Dordrecht: Reid Publishing Company.

Heim, I. (1994) "Comments on Abusch's Theory of Tense", in Kamp H. (ed) *Ellipsis Tense and Questions*, Dyana-2 Esprit Basic research Project 6852, Deliverable R2.2.B.

Hengeveld, K. (1998) “Adverbial Clauses in the Languages of Europe”, in van der Auwera, J. (ed) *Adverbial Constructions in the Languages of Europe*, Berlin/ New York, Mouton de Gruyter, 335-419.

Hinrichs, E. (1986) “Temporal Anaphora in Discourses of English”, in *Linguistics and Philosophy*, Volume 9, 1, D. Reidel Publishing Company, 63-82.

Hobbs, J. (1985) *On the Coherence and Structure of Discourse*, Report no CSLI-85-37, Center for the Study of Language and Information.

Huddleston, R. and G. K Pullum (2002) *The Cambridge Grammar of the English Language*, Cambridge: Cambridge University Press.

I. Álvarez, A. (1999) “Las Construcciones Consecutivas”, in Bosque, I. and V. Demonte (orgs), *Entre la Orácion y el Dsicurso. Morfologia*. Vol. 3, Cap. 58, 3739-3804.

Jackson, Frank (ed) (1986) *Conditionals*, Oxford: Oxfrod University Press

Kamp, H. and U. Reyle. (1993) *From Discourse to Logic: Introduction to Modeltheoretic Semantics of Natural Language, Formal Logic and Discourse Representation Theory*, Dordrecht: Kluwer Academic Publishers.

Kamp, H.; J. van Genabith and U. Reyle (2005) “Discourse Representation Theory”, in Gabbay D. and F. Guenthner, *Handbook of Philosophical Logic*, Springer.

Kaufman, S. (2001) “Probabilities of Conditionals”, in Hastings R.; B. Jackson and Z. Zvolensky (eds) *SALT XI*, Ithaca, New York: Cornell University, 248 – 267.

Kehler, A. (2002). *Coherence, Reference, and the Theory of Grammar*, United States: CSLI Publications.

Kleiber, Georges and Hélène Vassiliadou (2007) “Sur les approches intuitive de la relation d’elaboration”, in *SCOLIA*, 22, Université Marc Bloch, Strasbourg2, 147-161.

Klein, W. (2009) “Concepts of time” in Klein, Wolfgang and P. Li (eds) (2009) *The Expression of Time*, Berlin and New York: Mouton de Gruyter, 5-38.

Klein, W. (2009) “How time is encoded” in Klein, Wolfgang and P. Li (eds) (2009) *The Expression of Time*, Berlin and New York: Mouton de Gruyter, 39-82.

Klein, W. and P. Li (eds) (2009) *The Expression of Time*, Berlin and New York: Mouton de Gruyter.

Knott, A. (2001) “Semantic and Pragmatic Relations and their Intended Effects”. Sanders, T.; J. Schilperoord and W. Spooren (eds) *Text Representation: Linguistic and Psycholinguistic Aspects*, Amsterdam: John Benjamins.

Knott, A. and R. Dale (1994) "Using Linguistic Phenomena to Motivate a Set of Coherence Relations", in *Discourse Processes,* 18, (1), 35-62.

Knott, A. and T. Sanders (1998) "The Classification of Coherence Relations and their Linguistic Markers: an Exploration of two Languages", in *Journal of Pragmatics*, 30, 135-175.

König, E. and P. Siemund (2000) "Causal and concessive clauses: formal and semantic relations", in Couper-Kuhlen, E. and B. Kortmann (eds) *Cause, Condition, Concession and Contrast. Cognitive and Discourse Perspectives*, Berlin/ New York: Mouton de Gruyter, 341-360.

Kortmann, B. (1997) *Adverbial Subordination. A Typology and History of Adverbial Subordinators Based on European Languages*, Berlin/ New York, Mouton de Gruyter.

Lapata, M. and A. Lascarides (2006) "Learning Sentence-internal Temporal Relations", in *Journal of Artificial Intelligence Research*, 27, 85-117.

Lascarides, A., N. Asher, and J. Oberlander (1992) "Inferring Discourse Relations in Context", in *Proceedings of the 30th Annual Meeting of the Association of Computational Linguistics (ACL92)*, Delaware USA, 1-8.

Lascarides, A. and N. Asher (1993) "Temporal Interpretation, Discourse Relations and Commonsense Entailment", in *Linguistics and Philosophy*, 16(5), Dordrecht: Kluwer Academic Publishers, 437-493.

Lascarides, A. and J. Oberlander (1993) "Temporal Coherence and Defeasible Knowledge", in *Theoretical Linguistics*, 19(1), Berlin, New York: Walter de Gruyter, 1-35.

Lascarides, A. and J. Oberlander (1993) "Temporal Connectives in a Discourse Context", in *Proceedings of the European Chapter of the Association for Computational Linguistics (EACL93)*, Utrecht, the Netherlands, 260-268.

Leal, A. (2009) *Semântica aspectual e nominal. Contributo das expresssões nominais para a construção aspectual das frases*, Dissertação de Doutoramento, Porto: Faculdade de Letras da Universidade do Porto.

Lehmann, C. (1988) "Towards a typology of clause linkage", in Haiman, J. and S. Thompson (ed) *Clause combining in grammar and discourse*, Amsterdam/ Philadelphia: John Benjamins Publishing Company, 181-226.

Lewis, D. (1973) "Counterfactuals and Comparative Possibility", in *Journal of Philosophical Logic* 2, Dordrecht: D. Reidel Publishing Company, 418-446.

Lima, J. P. (1997) "Caminhos semântico-pragmáticos da gramaticalização: o caso de *embora*", in Brito, A. M.; F. Oliveira; I. P. de Lima and R. M. Martelo (orgs) *Sentido que a Vida Faz. Estudos para Óscar Lopes*, Porto, Campo de Letras: 643-655.

Lluïsa Hernanz, M. (1999) "El Infinitivo", in Bosque, I. and V. Demonte (*orgs*), *Las construcciones sintácticas fundamentales. Relaciones temporales, aspectuales y modales*, vol. 2, cap. 36, Madrid: Editorial Espasa Calpe, S.A., 2195-2356.

Lobo, M. (2001) "As Orações Adverbiais na Tradição Gramatical Portuguesa", in *Saberes no Tempo – Homenagem a Maria Henriqueta Costa Campos*, Lisboa, Edições Colibri, 353-370.

Lobo, M. (2003) *Aspectos da Sintaxe das Orações Subordinadas Adverbiais*, Dissertação de Doutoramento, Lisboa, Universidade Nova de Lisboa.

Lopes, A. C. M. (1995) *Para uma análise semântica dos tempos do presente em Português*, Cadernos de Semântica n.º 21, Lisboa: Faculdade de Letras da Universidade de Lisboa.

Lopes, A. C. M. (1997) "Para uma análise semantic e pragmatic do Pretérito-Mais-Que-Perfeito do Indicativo em Português Contemporâneo", in Brito, A.; F. Oliveira; I. Pires de Lima and R. M. Martelo (orgs), *Sentido que a vida faz. Estudos para Óscar Lopes,* Porto: Campo das Letras, 657-670.

Lopes, A. C. M. (1998) "Contribuição para o estudo dos valores discursivos de *sempre*", in *Actas do XIII Encontro Nacional da APL*, Lisboa, Colibri, 3-14.

Lopes, A. C. M. (1999) "Contributos para uma análise dos valores temporais e discursivos de *logo*", in Faria, I. (org.) *Lindley Cintra. Homenagem ao Homem, ao Mestre e ao Cidadão*, Lisboa, Cosmos, 433-443.

Lopes, A. C. M. (2002) "Elementos para uma análise semântica das construções com *enquanto*", in Mateus, M.H.M. and C. Correia (orgs.) *Saberes no tempo. Homenagem a Henriqueta Costa Campos*, Lisboa, Colibri, 371-380.

Lopes, A. C. M. and M. F. Morais (1999) *"Antes* e *Depois:* Elementos para uma Análise Semântica e Pragmática", in *Revista Portuguesa de Filologia*, vol. XXIII, 1999-2000, 183-243.

Lopes, H. C. (2004) *Aspectos Sintácticos, Semânticos e Pragmáticos das Construções Causais. Contributo para uma Reflexão sobre o Ensino da Gramática*, Dissertação de Doutoramento, Porto: Faculdade de Letras da Universidade do Porto.

Lopes, O. (1983) "Sobre as contrastivas em Português", in *Actes du XVII Congrès International de Linguistique et Filologie Romanes*, Aix-en-Provence, vol.4, 543-554, in Oliveira, F. and A. M. B. (orgs) (2005) *Entre a palavra e o discurso. Estudos de linguística 1977-1993*, Porto: Campo das Letras, 177-191.

Lopes, O. (1997) "Construções concessivas. Algumas reflexões formais lógico-pragmáticas", in Oliveira, F. and A. M. Brito (orgs) (2005) *Entre a palavra e o discurso. Estudos de linguística 1977-1993*, Porto: Campo das Letras, 177-191.

López García, A. (1999) "Relaciones paratácticas e hipotácticas", in Bosque, I. and Demonte, V. (orgs), *Entre la Orácion y el Dsicurso. Morfologia*, vol. 3, cap. 54. Madrid: Editorial Espasa Calpe, S.A., 3507-3548.

Lyons, J. (1977) *Semantics*, Vol. 2, Cambridge: Cambridge University Press.

Mani, I.; J. Pustejovsky and R. Gaizauskas (eds) (2005) *The Language of Time. A Reader*, Oxford: Oxford University Press.

Mann, W. C. and S. A. Thompson (1988) "Rhetorical Structure Theory: A Theory of Text Organization", in *Text*, 8, 243-281.

Marques, R. (1995) *Sobre o valor dos modos Conjuntivo e Indicativo em Português*, Dissertação de Mestrado, Lisboa: Faculdade de Letras da Universidade de Lisboa.

Martin, F. (2009) *Prédicats statifs - Etude sémantique et pragmatique*, Duculot, Collection Champs Linguistiques, 211-248.

Mateus, M. H.; A. Brito; I. Duarte and I. Faria (1989) *Gramática da Língua Portuguesa*. Lisboa: Ed. Caminho, 2ª edição.

Mateus, M. H.; A. Brito; I. Duarte and I. Faria (2003) *Gramática da Língua Portuguesa*, Lisboa, Ed. Caminho, 5ª edição, revista e aumentada.

Matos, S. (1999) *Adverbiais de tempo em Português contemporâneo: forma e significação*, Dissertação de Doutoramento, Porto: Faculdade de Letras da Universidade do Porto.

Matos, G. (2003) "Estruturas de coordenação", in Mateus, M. H.; A. Brito; I. Duarte and I. Faria (2003) *Gramática da Língua Portuguesa*, Lisboa, Ed. Caminho, 5ª edição, revista e aumentada, cap. 14, 549-592.

Matthiessen, C. and S. Thompson (1988) "The structure of discourse and "subordination", in Haiman, J. and S. Thompson (ed) *Clause combining in grammar and discourse*, Amsterdam/ Philadelphia: John Benjamins Publishing Company, 181-226.

Meyer, P. G. (2000) "The relevance of causality" in Couper-Kuhlen, E. and B. Kortmann (eds) *Cause, Condition, Concession and Contrast. Cognitive and Discourse Perspectives*, Berlin/ New York: Mouton de Gruyter, 9-34.

Mills, K. K. and M. A. Just (1994) "The Influence of Connectives on Sentence Comprehension" in *Journal of Memory and Language*, 33:1, 128-147.

Moens, M. (1987) *Tense, Aspect and Temporal Reference*, Ph.D. thesis, Edinburgh: Centre for Cognitive Science, University of Edinburgh, Scotland.

Moens, M. and M. Steedman (1988) "Temporal Ontology and Temporal Reference". In *Computational Linguistics*, Volume 14, number 2, 15-28.

Móia, T. (1995) "Aspectos da Semântica das Expressões Temporais com *desde* e *até* - Questões de *Aktionsart*", in *Actas do X Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: Associação Portuguesa de Linguística, 341-358.

Móia, T. (2000) *Identifying and Computing Temporal Locating Adverbials with a particular focus in Portuguese and English*, PHd dissertation, Lisbon: Faculdade de Letras da Universidade de Lisboa.

Móia, T. (2001) "Aspectos sintáctico-semânticos das orações relativas com *como* e *quando*", in *Actas do XVI Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa, APL, 349-361.

Montolío, E. (1999) "Las construcciones Condicionales", in Bosque, I. and V. Demonte (orgs) *Entre la Orácion y el Dsicurso. Morfologia*, vol. 3, cap. 57. Madrid: Editorial Espasa Calpe, S.A., 3642-3738.

Moore, J. D. and M. E. Pollack (1992) "A Problem for RST: The Need for Multi-Level Discourse Analysis", in *Computational Linguistics*, 18 (4), 537-544.

Morais, M. F. A. (2006) *Marcadores da Estruturação Textual. Elementos para a Descrição do Papel dos Marcadores Discursivos no Processamento Cognitivo do Texto*, Dissertação de Doutoramento, Universidade de Trás-os-Montes e Alto Douro.

Mourelatos, P. D. A. (1978) "Events, Processes, and States", in *Linguistics and Philosophy*, Volume 2, number 3, 415-435.

Nerbonne, J. (1986) "Reference Time and Time in Narration", in *Linguistics and Philosophy*, Volume 9, 1, D. Reidel Publishing Company, 83-96.

Neves, M. H. M. (1997) "Uma Versão Integrada das Construções Complexas de Causalidade", in *Actas do XIII Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: APL/ Colibri, 143-154.

Noordman, L. G. M. (2001) "On the Production of Causal-Contrastive Although-Sentences in Context", in Sanders, T.; J. Schilperoord and W. Spooren (eds) *Text Representation: Linguistic and Psycholinguistic Aspects*, Amsterdam: John Benjamins, 153-179.

Noordman, L. G. M & F. Blijzer (2000) "On the processing of causal relations", in Couper-Kuhlen, E. and Bernard Kortmann (eds) *Cause, Condition, Concession and Contrast. Cognitive and Discourse Perspectives*, Berlin/ New York: Mouton de Gruyter, 35-56.

Oberlander, J. and A. Lascarides (1991) "Discourse Generation, Temporal Constraints and Defeasible Reasoning", in *Proceedings of the AAAI Fall Symposium on Discourse Structure in Interpretation and Generation*, Asilomar, California.

Ogihara, T. (1996) *Tense, Attitudes and Scope*. Dordrecht: Kluwer Academic Publishers.

Oliveira, F. (1985) "O Futuro em Português: alguns aspectos temporais e / ou modais", in *Actas do 1º Encontro da Associação Portuguesa de Linguística*, Lisboa, 353-374.

Oliveira, F. (1986) "Algumas considerações acerca do Pretérito Imperfeito", in *Actas do 1º Encontro da Associação Portuguesa de Linguística*, Lisboa, 78-96.

Oliveira, F. (1989) "Modais e condicionais", in *Actas do V Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa, 146 – 161.

Oliveira, F. (1990) "Sobre condicionais", in *Actas do VI Encontro Nacional da Associação Portuguesa de Linguística*, Porto, 239 – 258.

Oliveira, F. (1994) "Algumas Peculiaridades do Aspecto em Português", in *Actas do Encontro Internacional sobre o Português*, Volume II, Lisboa: APL/Colibri, 151-190.

Oliveira, F. (1998) "Algumas Questões Semânticas acerca da Sequência de Tempos em Português", in Revista da Faculdade de Letras *Línguas e Literaturas Modernas*, XV, Porto, 421-436.

Oliveira, F. (2003) "Tempo e Aspecto", in Mateus, M. H.; A. Brito; I. Duarte and I. Faria (2003) *Gramática da Língua Portuguesa*, Lisboa, Ed. Caminho, 5ª edição, revista e aumentada, cap. 6, 127-178.

Oliveira, F. (2003) "Modalidade e Modo", in Mateus, M. H.; A. Brito; I. Duarte and I. Faria (2003) *Gramática da Língua Portuguesa*, Lisboa, Ed. Caminho, 5ª edição, revista e aumentada, cap. 9, 243-274.

Oliveira, F. (2004) "O Imperfeito e o Tempo dos Indíviduos", in Oliveira, F. and I. M. Duarte (orgs) *Da Língua e do Discurso*, Campo das Letras, col. Campo da Linguística, 505 – 528.

Oliveira, F. (2008) "Sobre os tempos do Conjuntivo", in Oliveira, F. and I. M. Duarte (orgs) *O Fascínio da Linguagem. Actas do Colóquio de Homenagem a Fernanda Irene Fonseca*, Porto: Centro de Linguística da Universidade do Porto, 109-118.

Oliveira, F. and A. C. M. Lopes (1995) "Tense and Aspect in Portuguese", in Thieroff, R. (ed). *Tense Systems in European Languages II*, Tubinga: Max Niemeyer Verlag, 95-115.

Oliveira, F.; L. F. Cunha and A. Gonçalves (2004) "Aspectual verbs in European and Brazilian Portuguese", in *Journal of Portuguese Linguistics* 3 (1), 141-173.

Oliveira, F.; L. F. Cunha and P. Silvano (2010) "Rhetorical Relations in Texts: the Contribution of Aspect", in *Estudos Linguísticos*, n. 5, Julho 2010, Lisboa: Edições Colibri, 277-292.

Partee, B. (1984) "Nominal and Temporal Reference", in *Linguistics and Philosophy* 7, 243-286.

Partee, B.; A. ter Meulen and R. E. Wall (1990) *Mathematical Methods in Linguistics*, Dordrecht, Kluwer Academic Publishers.

Peres, J. A., (1997) "Sobre Conexões Proposicionais em Português" in Brito, A. M.; F. Oliveira; I. P. de Lima and R. M. Martelo (orgs) *Sentido que a Vida Faz. Estudos para Óscar Lopes*, Porto, Campo de Letras, 775-787.

Peres, J.; T. Móia and R. Marques (1999) "Sobre a forma e o sentido das construções condicionais em português", in Faria, I. H. (org.) *Lindley Cintra. Homenagem ao Homem, ao Mestre e ao Cidadão*, Lisboa: Ed. Cosmos/FLUL, 627-653.

Peres, J. and S. Mascarenhas (2006) "Notes on sentential connections (predominantly) in Portuguese", in Peres, J. (ed) *Journal of Portuguese Linguistics*, Volume 5, n.º 1, Lisboa: Faculdade de Letras da Universidade de Lisboa, 113-167.

Pérez Saldanya, M. (1999) "El modo en las subordinadas relativas y adverbiales", in Bosque, I. and V. Demonte (orgs) *Las construcciones sintácticas fundamentales. Relaciones temporales, aspectuales y modales*, vol. 2, cap. 50. Madrid: Editorial Espasa Calpe, S.A., 3253-3322.

Prada, E. (2003) "Produção de contraste no Português Europeu", in Mendes, A. and T. Freitas (orgs) *Actas do XVIII Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: APL-Colibri, 663-675.

Prior, A. N. (1968) "Tense Logic and the Logic of Earlier and Later", in Mani, I.; J. Pustejovsky and R. Gaizauskas (eds) (2005) *The Language of Time. A Reader.* Oxford: Oxford University Press, 79-92.

Quirk, R.; S. Greenbaum; G. Leech and J. Svartvik (eds) (1980) *Studies in English Linguistics for Randolph Quirk*, London, Longman.

Quirk, R.; S. Greenbaum; G. Leech and J. Svartvik (1985) *A Comprehensive Grammar of the English Language*, London/ New York, Longman.

Reinchenbach, H. (1947) *Elements of Symbolic Logic*, London: Macmillan.

Sanders, T.; J. Schilperoord and W. Spooren (eds) (2001) *Text Representation: Linguistic and Psycholinguistic Aspects*, Amsterdam: John Benjamins, 127-151.

Sanders, T. J. and L. G. M. Noordman (2000) "The Role of Coherence Relations in Text Processing", in *Discourse Processes*, 29 (1), 37-60.

Sanders, T.; J. W. Spooren and Leo G. M. Noordman (1992) "Toward a Taxonomy of Coherence Relations", in *Discourse Processes*, 15, 1-35.

Sandström, G. (1993) *When-clauses and the temporal interpretation of narrative discourse*, Ph.D. thesis, University of Umeå.

Santos, P. (1997) "Observações acerca das condicionais", in Brito, A. M.; F. Oliveira; I. P. de Lima and R. M. Martelo (orgs) *Sentido que a vida faz. Estudos para Óscar Lopes*, Porto: Campo de Letras, 835 – 844.

Silva, P. N. (2005) *O Tempo no Texto*, Dissertação de Doutoramento, Universidade Aberta.

Silvano, P. (2002) *Sobre a semântica da sequência de tempos em Português Europeu. Análise das relações temporais em frases complexas com completivas*, Dissertação de Mestrado, Braga: Universidade do Minho.

Silvano, P. (2007) "Semantic Analysis of temporal *when*-clauses in European Portuguese", in *Actas (CD) da Conferência Internacional Lingüística 2007*, Instituto de Literatura y Lingüística *José Antonio Portuondo Valdor*.

Silvano, P. (2007) "A Questão Semântica da Subordinação Temporal em Frases Complexas com Completivas Finitas e Não Finitas", in *Actas del VI Congreso de Linguistica General*. II.B *Las Lenguas y su Estructura*. Madrid: Editorial Arco Libros, 2261-2269.

Silvano, P. (2008) “The rhetorical mechanisms in complex sentences with *when*-clauses in European Portuguese", paper presented at the *International Conference on Discourse and Grammar*, in the University of Ghent.

Silvano, P.; L. F. Cunha & A. Leal (2008) “Consecutive Clauses in European Portuguese: towards a quantificational approach”, in *Actas do 8º Congreso de Lingüística General. El valor de la diversidad [meta]lingüística*. Madrid: Universidad Autónoma de Madrid.

Silvano, P. and L. F. Cunha (2009) “O papel das restrições aspectuais nas relações retóricas: o caso das frases complexas com quando”, in *Textos Seleccionados do XXIV Encontro Nacional da Associação Portuguesa de Linguística*, Lisboa: Associação Portuguesa de Linguística, 239-250.

Silvano, P. and L. F. Cunha (2009) “*After* and *Before*-Clauses in European Portuguese: Temporal and Aspectual Properties”, paper presented at *the International Conference on Tense, Aspect and Mood, Chronos 2009*, at the University of Paris.

Smith, C. (2004) “Domain of tense”, in Guéron, J, and J. Learme (eds) *The Syntax of Time*, Massachussets: the MIT Press, 597 – 620.

Soares Barbosa, J. (1830) *Grammatica Philosophica da Lingua Portuguesa*, Lisboa: Academia Real das Sciencias.

Stalnaker, R. (1968) “A theory of Conditionals”, in Harper, W. L.; R. Stalnaker and G. Pearce *(*eds) (1981) *Ifs*, Dordrecht: Reid Publishing Company, 41-55.

Stevenson, R.; A. Knott; J. Oberlander and S. MacDonald (2000) “Interpreting Pronouns and Connectives: Interactions among Focusing, Thematic Roles and Coherence Relations”, in *Language and Cognitive Processes*, 15 (3), 225-262.

Taboada, M. and W. C. Mann (2006) “Rhetorical Structure Theory: Looking Back and Moving Ahead”, in *Discourse Studies*, 8 (3).

Trauggot, E; A. ter Meulen; J.S. Reilley and C. A. Ferguson (orgs) (1986) *On Conditionals*, Cambridge: Cambridge University Press.

van Benthem, J. F. A. K. (1983) *The Logic of Time. A Model-Theoretic Investigation into Varieties of Temporal Ontology and Temporal Discourse*, Dordrecht: D. Reidel Publishing Company.

van Eijck, J. (2005) “Discourse representation theory”, in K. Brown (ed.), *Encyclopedia of Language and Linguistics*, Amsterdam: Elsevier.

van Eijk, J. and H. Kamp (2010) "Representing Discourse in Context", in van Benthem, J. and A. ter Meulen (eds) *Handbook of Logic and Linguistics*, Amsterdam, Elsevier (*to appear*).

Available at http://homepages.cwi.nl/~jve/papers/10/pdfs/dric.pdf

Varela, L. (2000) *Para uma semântica das construções concessivas e adversativas do Português*, Dissertação de Mestrado, Faculdade de Letras da Universidade de Lisboa.

Veltman, F. (1986) "Data Semantics and the Pragmatics of Indicative Conditionals", in Trauggot, E; A. ter Meulen; J.S. Reilley and C. A. Ferguson (orgs) (1986) *On Conditionals*, Cambridge: Cambridge University Press, 147-168.

Veltman, F. (2005) "Making Counterfactual Assumptions", in *Journal of Semantics*, 22, Oxford: Oxford University Press, 159-180.

Vendler, Z. (1967) "Verbs and Times", in *Linguistics in Philosophy*, 4, Cornell University Press: Ithaca, New York, 97-121.

Webber, B. L. (1988) "Tense as Discourse Anaphor", in *Computational Linguistics*,14 (2), Association for Computational Linguistics, 61-73.

Webber, B.; A. Knott; M. Stone and A. Joshi (1999) "Discourse Relations: a structure and presuppositional account using lexicalised TAG", in *Proceedings of the 37th Annual Meeting of the Association for Computational Linguistics*, Maryland, 41-48.

Woods, M. (1997) *Conditionals*, (edited by David Wiggins, with a commentary by Dorothy Edgington), Oxford: Clarendon Press.