Building a nonfinite domain:
the syntax of gerund clauses in Brazilian Portuguese

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No universo da cultura, o centro está em toda a parte.

Miguel Reale

Abstract

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In this dissertation, I investigate gerund clauses (GC) in Brazilian Portuguese, nonfinite clauses the verb of which is in gerund form, $\{-ndo\}$. GCs can show up in a series of different syntactic environments. They can be selected by different predicates, both as subjects and as complements. When they are thematic, GCs can be adjoined both to nominal and to verbal elements. When they are verbal adjuncts, they can be attached to different portions of the structure. Despite this diversity, I try to analyze GCs in unified fashion. The main proposal I put forth is that there are three classes of GCs, such that they differ in structural make-up. On one end of scale are the GCs that project only the bare minimum to build a GC at all, namely, an AspP. I claim that the gerund morpheme heads this phrase because it seems to contribute aspectual meaning to the overall sentence. On the other end of the scale are the GCs that project the most complex structure, a CP that dominates a TP, which in turn dominates the minimal AspP. Between these two ends are GCs of intermediate size, a TP. For convenience, the most structurally complex GCs are dubbed *class 1*, the intermediate GCs, *class 2* and the smallest GCs, *class 3*. All GC subtypes will undergo this tripartite analysis. It will allow us to capture their individual behavior, as well as the way the classes are grouped together along a series of syntactic properties. Some of these properties, I analyze as TP-dependent, namely, sentential negation and sentential adverbial licensing. As far as these properties as concerned, *class 1* and *class 2* GCs behave alike. This is captured by the presence of TP in their structure. *Class 3* GCs are different from both and this is captured by the absence of TP in their structure. The remaining properties are the ones I propose to be phase-based. The proposal is that this concept plays a unifying role in syntax, allowing it to be simpler. More precisely, I propose that both syntactic operations and relations are phase-dependent. Thus, phenomena as diverse as feature valuation, binding and quantifier raising are unified in that their domain is a phase. Now it is *class 2* and *class 3* GCs that behave alike, to the exclusion of *class 1* GCs. The topmost projection of *class 2* GCs is TP, while that of *class 3* GCs, an AspP. Neither of them is a phase. On the other hand, the topmost projection of *class 1* GCs is CP, a phase. I try to derive the characteristic behavior of each GC subtype and the way the classes proposed are clustered together from their syntactic computa-

tion. To this end, based on minimalist assumptions, I outline the way I take the computational system to work. The same system will be an important asset in accounting for the control and temporal properties of some GC subtypes.

Contents

Introduction

In the present dissertation,[1] I investigate the properties of **gerund clauses** (GCs) in Brazilian Portuguese (BP), that is, clauses the verb of which is in gerund form ($\{-ndo\}$).

(1)   a.   O João quer   os filhos não soltando nenhum pio   durante o   jantar.
           the João wants the sons   not releasing no-one   chirp during the dinner
           'João wants his children not to say a single word during dinner time.'

       b.   Algum professor assistiu todo aluno   se apresentando na   cerimônia de
           Some   teacher   watched all   student SE presenting   in.the ceremony of
           encerramento.
           closing
           'Some teacher watched all students making a presentation in the closing ceremony.'

       c.   Tem umas crianças gritando no   apartamento ao   lado.
           has some children shouting in.the apartment   at.the side
           'There are children shouting in the apartment next door.'

       d.   O   médico *manteve* os pacientes esperando por várias   horas.
           the doctor kept   the patients waiting   for several hours
           'The doctor made the patients keep waiting for several hours.'

       e.   O João imagina a Maria jogando na   seleção daqui a   quinze anos.
           the João imagines the Maria playing in.the selection of.here fifteen years
           'João imagines Maria playing in the national soccer team in fifteen years' time.'

       f.   O João considera a   Maria como sendo uma boa   pessoa.
           the João considers the Maria as   beind a   good person
           'João considers Maria to be a good person.'

       g.   O João adorou   a Maria jogando na   seleção.
           the João loved   the Maria playing in.the selection
           'João loved Maria playing in the national soccer team.'

(2)   a.   A Maria assistindo tevê no   último incomoda muito a   mãe.
           the Maria watching TV in.the last   annoys   much the mother
           'Maria watching TV really loud annoys her mother a lot.'

       b.   A Dilma fazendo o   discurso inaugural na   Copa foi assistido em cadeia
           the Dilma doing   the speech   inaugural in.the Cup was watched in chain
           nacional.
           national
           'Dilma making the opening speech in the World Cup was watched nationwide.'

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[1]This is an unofficial English translation of my master's dissertation, Fong (2015). For comments, which are always welcome, please contact me: `sznfng@gmail.com`.

(3) a. O João ouvindo música no   último, a   Maria vai ficar brava.
         the João listening music in.the last   the Maria goes to-get mad
         'If João listens to music too loud, Maria will get mad.'

     b. A Maria não consegue estudar para a   prova com os irmãos   fazendo
         the Maria not manages to-study for   the test   with the brothers doing
         bagunça.
         mess
         'Maria cannot study for the test with her brothers making such a mess.'

     c. Tendo realizado todas as tarefas,   a Rosa pôde ir   para a   casa mais
         having realized   all   the assignments the Rosa could to-go for   the house more
         cedo.
         early
         'Having finished all her assignments, Rosa was able to go home earlier.'

     d. A Paula sempre faz a   caminhada dela   ouvindo mp3.
         the Paula always does the walking   of.her listening mp3
         'Paula always goes for a walk listening to her mp3 player.'

     e. Esses meninos jogando bola na   rua   são filhos do   vizinho.
         these boys   playing ball in.the street are sons of.the neighbor
         'These boys playing soccer on the street are the neighbor's children.'

At first glance, we seem to be dealing with constructions that have little in common. First of all, there is a difference in the syntactic function that the GC fulfills in the sentence: they can be complements – (1) –, clausal subjects – (2) – or adjuncts – (3). When they are complements, they can be selected by diverse predicates: desiderative (*querer* 'want'), perceptual (*assistir* 'watch'), existential (*ter* 'have'), to name but a few. When they are adjuncts, they can be adjoined to different elements, like the verb – (3-d) – or a noun – (3-e).

   In order to make sense of the data, I describe the GCs listed above according to a series of syntactic properties, namely, sentential negation and sentential adverbial licensing, raising of the subject, binding of this subject and quantifier raising possibilities. When we take into account these properties, we can group GCs in three classes. On the one hand, there is a class of GCs that does not allow for much interaction with the matrix clause and which can license certain sentential elements. On the other hand, there is a class that displays mirroring behavior: the GC subtypes in this class can interact with the matrix clause in various ways and cannot license sentential elements. Between these two ends, there is a third class, which can interact with the matrix clause and at the same time can license sentential elements. These contrasts are illustrated in the small sample below:

(4) a. O João preferiu a   Maria não mexendo um dedo.
         the João preferred the Maria NEG moving   a   finger
         'João preferred Maria not to do anything at all.'

     b. O João imaginou a   Maria não mexendo um dedo.
         the João imagined the Maria NEG moving   a   finger
         'João imagined Maria not doing anything at all.'

    c. *O João assistiu a   Maria não mexendo um dedo.
         the João watched the Maria NEG moving   a   finger

(5)   a. *A Maria foi preferida *t* cantando.
          the Maria was preferred *t* singing

    b. A Maria foi imaginada *t* cantando.
         the Maria was imagined   *t* singing
         'Maria was imagined singing.'

    c. A Maria foi assistida *t* cantando.
         the Maria was watched *t* singing
         'Maria was watched singing.'

The GC subcategorized for by the desiderative verb *preferir* 'prefer' can license sentential nega-tion (*não*) – (4-a) –, but does not allow for its subject to be raised all the way to the matrix subject position – (5-a). In contrast, the GC subcategorized for by a perceptual verb *assistir* 'watch' cannot license sentential negation – (4-c) –, but allows for its subject to be raised – (5-c). Finally, the GC subcategorized for by *imaginar* 'imagine' shares similarities with both desiderative and perceptual GCs, without being identical to either. It can license sentential negation – (4-b) – and allows for its subject to be raised – (5-b) – as well.

    The same pattern is basically replicated throughout the whole data set. It raises two ques-tions. Trying to answer them is the major goal of this dissertation.

(6)   a.   What explains the individual behavior of each GC subtype?
      b.   What explains the way GCs are clustered in three classes?

In order to answer these questions, I propose a syntactic derivation of these properties. Specif-ically, the main proposal I put forth here is that there are three classes of GCs, such that they differ in their syntactic structure. Moreover, the syntactic structures of the classes proposed are not completely different from each other. Rather, the GC classes may share structural prop-erties. While the structure of the GCs that belong to a given class underlies their individual properties, that they share or do not share syntactic projections accounts for they way GCs are grouped the way they are. The structures I will propose for the three classes are the following:

(7)   a.   b.   c.
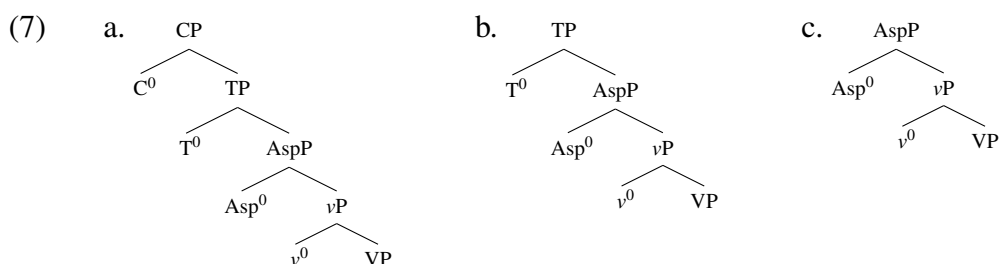
Class 3 GCs project the simplest structure, (7)-c. I will claim that this is the bare minimum structure that must be projected in order to build a GC at all. In the other end of the scale, *class 1* GCs project the most complex structure, (7)-a; it contains not only the bare minimum, but also

TP and CP. Between these two ends are *class 2* GCs, (7)-b. They are like (7)-a in projecting more structure than the bare minimum, but they resemble (7)-c in that neither contains a projection like CP. In phase theory, this projection enjoys special status,

This grouping of the GCs, quickly sampled above, can be schematized as follows:

	Class 1	**Class 2**	**Class 3**
Properties P		✓	*
Properties Q	*		✓

Table 1: Schema of the clustering of GCs

There is a set of properties *P* that groups together *class 1* and *class 2* GCs, to the exclusion of *class 3* GCs. I relate these properties to the presence of a TP projection in the structure. More precisely, I incorporate the common assumption that elements like sentential negation and sentential adverbials like *provavelmente* 'probably' presuppose the presence of TP. This projection is present in *class 1* – (7)-a – and in *class 2* – (7)-b –, but absent in *class 3* GCs – (7)-c –, hence the grouping of GCs with respect to the set of properties *P*. There is also a set of properties *Q*, which groups together *class 3* and *class 2* GCs, to the exclusion of *class 1* GCs. These are the properties that I propose are phase-dependent.

One of the major proposals I make here is that syntactic relations and operations are all defined in terms of phases. The derivation proceeds in such a way that a phase is built and then all syntactic operations (e.g., feature valuation and movement) triggered by the building blocks of that phase are effected the phase itself. In turn, syntactic relations such as binding are also resolved inside a phase. Because the three classes differ in their phasal status, we expect them to differ with respect to these syntactic relations and operations as well.

All that was said up to now would lead us to believe that the tripartite division of the GCs subtypes in (1)–(3) is clear-cut. It is not. It will often be the case that a given GC subtype displays contrasting behavior with respect to other members of its class. Does this not negate the whole purpose of grouping the GCs in three different classes? No. I will try to show that the behavior of all GC subtypes, both when they behave exactly the same way as the other members of its class and when they do not, will fall out from the structural differences depicted in (7), along with the independent properties of the functioning of the computational system and idiosyncratic properties of certain lexical items.

One example is the subject realization possibilities of adverbial GCs:

(8)   a.   O João ouvindo música no   último, a Maria vai ficar brava.
             the João listening music in.the last   the Maria goes to-get mad
             'If João listens to music too loud, Maria will get mad.'

        b.   *PRO* ouvindo música no   último, o   João vai ficar surdo.
             PRO listening music in.the last   the João goes to-get deaf
             'If he listens to music too loud, João will get deaf.'

(9)   a.   O João não consegue estudar com a   Maria ouvindo música no   último.
the João NEG manages to-study with the Maria listening music in.the last
'João is unable to study with Maria listening to music too loud.'

        b. *O João não consegue estudar com *PRO* ouvindo música no   último.
the João NEG manages to-study with *PRO* listening music in.the last

(10)   a. *O João corre a   Maria ouvindo música no   último.
the João runs the Maria listening music in.the last

        b.   O João corre *PRO* ouvindo música no último.
the João runs *PRO* listening in.the   last
'João runs listening to music too loud.'

The pair in (8) indicates that there are adverbial GCs that allow either for an overt subject (*o João*) or for a null subject. In contrast, there are both adverbial GCs that require an overt subject, as in (9), and adverbials that require a null subject, as in (10). I will try to show that this interesting pattern falls out from the structural make-up of each adverbial GC, coupled with independent grammatical resources.

As a matter of fact, the independent working of the computational system will be an important component of the analysis. Following the common desiderata in Principles and Parameters theory, neither the three classes of GCs nor the individual subtypes will be primitives in the grammar of BP. Rather, their derivation are just a product the computational system can yield starting from a given numeration. This derivation has to compply with the properties of the particular lexical items in that numeration and the resources available to the computation. Under this proposal, there is no need to stipulate the subject properties of GCs in (8)–(10); the properties of the subject of a given adverbial GC are just a byproduct of the way the derivation proceeds.

Another example to illustrate the gist of the analysis is the definiteness effects found in existential GCs.

(11)   a. Tem *um menino* correndo no   estacionamento.
has a   boy   running in.the parking-lot
'There is a boy running in the parking lot.'

        b. Tem *meninos* correndo no   estacionamento.
has boys   running in.the parking-lot
'There are a boy running in the parking lot.'

        c. Tem *alguns meninos* correndo no   estacionamento.
has some boys   running in.the parking-lot
'There are some boys running in the parking lot.'

(12)   a. *Tem *o   João* correndo no   estacionamento.
has the João running in.the parking-lot

        b. *Tem *o   menino* correndo no   estacionamento.
has the boy   running in.the parking-lot

> c. *Tem todos *os meninos* correndo no   estacionamento.
>   has all   the boys   running in.the parking-lot

No other GC subtype displays the same property. I will try to show that these prima facie surprising property falls out from an independent idiosyncratic property of the existential predicate *ter* 'have', namely, the possibility of assigning inherent partitive Case to its complement. Partitive Case can be borne only by indefinite nouns. This idiosyncrasy considered, the derivation of existential GC just proceeds the way any other computation should.

However, alone, the claim that the existential predicate assigns inherent partitive Case is not enough. The DP that displays definiteness effects is not an argument of the existential predicate; rather, it is an argument of the GC subcategorized for by this verb. Because there is no exceptional inherent Case marking, the GC subject is not expected to be assigned inherent partitive Case and therefore there should not be a definiteness requirement imposed on it. And yet, there is, as witnessed by the contrast in (11), (12). I will show that, in reality, no problem arises because the partitive Case is just assigned to the GC. However, this Case can be taken up by the unvalued Case feature I propose the gerund morpheme $\{-ndo\}$ bears. Later on, when the subject inside the GC has to have its own Case feature valued, the first position where can have this requirement satisfied is a position where it can take up the partitive Case assigned to the gerund morpheme. Because the subject is assigned partitive Case, it has to be an indefinite noun, hence the definiteness effects. These effects arise without resorting to exceptional inherent Case marking, as desired. The proposal that $\{-ndo\}$ has a Case feature to be valued is another of the major proposals I advance here. It is motivated by the distribution of prepositions in the complement of certain predicates that can subcategorize for a GC. There seems to be empirical motivation for this proposal and besides it will be an important ingredient in the derivation of some GC subtypes, as it is the case of the existential GCs above.

This proposal is in chapter 1, where I describe complement desiderative, propositional and perceptual GCs along a series of syntactic properties. The particular behavior of each of these GCs and crucially the way they are clustered together are the empirical basis for the proposal that there are three classes of GCs. In the same chapter, I outline some assumptions and proposals concerning the syntactic properties I use to describe the behavior of GCs. On the one hand, I assume that properties like the licensing of sentential negation and of sentential adverbials presuppose the projection of TP. On the other hand, I define the domain for syntactic operations like Case-valuation and for syntactic relations like binding and scope-taking as a phase. Based on these proposals and assumptions, I refine the tripartite analysis claiming that the difference between the GC classes is of structural nature. The final output is the three structures in (7). In chapter 1, I also describe the other GC subtypes, a task made easier once we describe complement GCs. This chapter is concluded with a few considerations regarding the features there are in a GC structure.

In chapter 2, I outline the workings of the computational system as assumed in this dissertation. First of all, I introduce feature inheritance, which will be important to distinguish

the three structural classes of GCs. Secondly, I outline the feature valuation system I assume. This system will be important in the derivation of the distinctions between the three classes and in accounting for the particular properties of each GC subtype. I try to provide independent conceptual arguments for the way I assume feature valuation to be effected, in an attempt to avoid a construction-specific approach to GCs. Another proposal I make in this chapter is that phases are a unifying concept in syntactic relations and operations. Again, this proposal will be important in the computational system at large and in deriving the properties of GCs.

Chapters 3, 4 and 5 are each dedicated to a GC class. In these chapters, we will see a step-by-step derivation of the GC subtypes in each class. In chapter 3, we see *class 1* GCs, which includes desiderative and high adverbial GCs. The derivation of the latter is delayed until chapter 6, where I deal with the control properties of all adverbial GCs in the data set. In chapter 4, we see *class 3*, which includes perceptual, existential, object control, low adverbial and adnominal GCs. Having seen the two ends in the spectrum, we turn to *class 2*, the intermediate class, in chapter 5.

In chapter 6, the challenge is to explain the subject realization possibilities in adverbial GCs, of which we took a glimpse in (8)–(10). There are three possibilities, namely, an obligatorily *PRO* subject, an obligatorily overt subject and a *PRO*–overt subject alternation. Again, I try to derive these possibilities from the way the computation proceeds. Two important ingredients both with independent motivation, will be the movement theory of control and sideward movement.

Chapter 7 is a sketch of temporal properties in desiderative, propositional and perceptual GCs. These properties will be made to fall out from the workings of an overarching system of temporal interpretation, in conjunction with feature inheritance. I also discuss an interesting temporal ambiguity displayed by adnominal GCs in subject position. Then, we turn to high adverbials, the temporal ordering of which is obtained in the absence of overt instructions. Finally, I point out a challenge high adverbials introduce, namely, the licensing of an instance of aspectual recursion that seems unavailable elsewhere. I leave this question unanswered.

Chapter 8 is the concluding remarks.

Chapter 1

Description and overall analysis

As we saw in the previous chapter, there seems to be a thicket of GC subtypes. However, when we inquire into some syntactic properties of these GC subtypes, we can begin to make out patterns of behavior that group GCs in distinguishable classes. The properties considered here are: (i) individual-level predicate (ILP) licensing; (ii) sentential negation licensing; (iii) sentential adverbial modification; (iv) raising of the subject into the matrix clause; (v) anaphoric subject bound by the matrix subject; (vi) inverse scope; (vii) coordination with a full CP.

1.1   Sorting through the data

Before going through the behavior of each GC subtype, it is worth labeling each one of them. The labels are taxonomical, for convenience's sake only. I will dub GCs subcategorized for by desiderative verbs like *querer* 'want' in (1-a) and *preferir* 'prefer' in (1-b) *desiderative GCs*. This GC subtype is considered in section 3.2.

(1)   *Desiderative GCs*

    a.   O João *quer* os filhos não soltando nenhum pio   durante o   jantar.
         the João wants the sons not releasing no-one chirp during the dinner
         'João wants his children not to say a single word during dinner time.'

    b.   O João *preferiu* crianças atuando na   peça dele.
         the João preferred children acting   in.the play of.he
         'João preferred children playing the roles in his play.'

GCs can also be the complement to perceptual verbs such as *assistir* 'watch' in (2-a), *flagrar* 'catch' in (2-b) and *ouvir* 'hear' in (2-c). I dub these GCs *perceptual GCs*. They are inspected in section 4.1.

(2)   *Perceptual GCs*

    a.   O professor *assistiu* os alunos   se apresentando na   cerimônia de
         the teacher   watched the students SE presenting   in.the ceremony of

encerramento.
closing
'The teacher watched the students making a presentation in the closing ceremony.'

b.   O   monitor   *flagrou* o   aluno   colando na   prova.
the teaching-assistant caught the student glueing in.the test
'The teaching assistant caught the student cheating during the exam.'

c.   A   população pôde *ouvir*   o   morro desabando a quilômetros de distância.
the population could to-hear the hill   collapsing at kilometers   of distance
'The population could hear the hill collapsing from kilometers away.'

GCs can also be the complement to a handful of verbs such as *imaginar* 'imagine', as in (3-a), *considerar* 'consider', as in (3-b) and *adorar* 'like', as in (3-c). These GC subtypes prove not to undergo the analysis to be proposed very easily. While I do not yet have a fuller analysis, I gloss over differences and lump together these GC subtypes under the heading *propositional GCs*.[1] These constructions and the problems they raise to the analysis are considered in section 5.1.

(3)   *Propositional GCs*

a.   O João *imagina* a   Maria jogando na   seleção daqui a   quinze anos.
the João imagines the Maria playing in.the selection of.here fifteen years
'João imagines Maria playing in the national soccer team in fifteen years' time.'

b.   O   João *considera* a   Maria como sendo uma boa   pessoa.
the João considers the Maria as   being a   good person
'João considers Maria to be a good person.'

c.   O   João *adorou* a   Maria jogando na   seleção.
the João loved   the Maria playing in.the selection
'João enjoyed Maria playing in the national soccer team.'

Furthermore, existential predicates like *ter* 'have' can select a GC as a complement as well. These are the *existential GCs* and they are the topic of section 4.2.

(4)   *Tem* umas crianças gritando no   apartamento ao   lado.
has some children shouting in.the apartment   at.the side
'There are children shouting in the apartment next door.'

Still in the domain of complement GCs, another subtype of GC considered here is what I dubbed *object control GC*. This type of construction is the complement of verbs like *manter* 'keep' in (5-a) and *deixar* 'let' in (5-b).

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[1] I take 'propositional' to mean "constructions in which the embedding predicate does not presuppose or assert anything about the embedded event", following Wurmbrand (2014b).

(5) *Object control GCs*

    a.   O médico *manteve* os pacientes esperando por várias horas.
            the doctor kept   the patients waiting   for several hours
            'The doctor made the patients keep waiting for several hours.'

    b.   O João *deixou* os filhos brincando no   quintal e   foi   preparar   o
            the João let   the sons playing   in.the backyard and went to-prepare the
            jantar.
            dinner
            'João left his children playing in the backyard and went off to cook dinner.'

In addition to being complements, GCs can also be the clausal subject of verbs like *incomodar* and *orgulhar*. These are the *subject GCs*. They are considered in section 5.2.

(6)   A Maria acertando   os exercícios *incomoda*/*orgulha*   o   João.
        the Maria getting-right the exercises annoys/makes-proud the João
        'Maria getting the exercises right annoys João/makes João proud.'

Finally, GCs can be not only argumental, but also adjuncts. When they are adjuncts, they can be either verbal or nominal. Furthermore, there are different subtypes of adverbial GCs. The GCs that seem to modify the verbal predicate and which have either a simultaneity reading, like (7-a), or a manner reading, like (7-b), I call *low adverbial GCs*. They are the subject matter of sections 4.4 and 6.4. When the GC seems to modify a higher portion of the clause, bearing either a conditional reading, like (7-c), or a causal reading, like (7-d), I dub it *high adverbial GC*. They are considered more carefully in sections 3.3, 6.3 and 6.6. An adverbial GC can also be preceded by a preposition, as in (7-e). These are the *prepositional adverbial GCs*, which are looked into in sections 5.3 and 6.5.

(7) *Adverbial GCs*

    a.   A Paula sempre faz a   caminhada dela   ouvindo mp3.
            the Paula always does the walking   of.she listening mp3
            'Paula always goes for a walk listening to her mp3 player.'

    b.   Os ladrões arrombaram a   porta usando um pé-de-cabra.
            the robbers broke-down the door using   a   crowbar
            'The robbers broke the door down using a crowbar.'

    c.   Você terminando de preencher esse formulário, pode me chamar.
            you finishing   of to-fill-in this form   can me call
            'If you finish filling in this form, you can call me.'

    d.   Tendo terminado de preencher o   formulário, a   Rosa pôde me chamar.
            having finished   of to-fill-in the form   the Rosa could me to-call
            'Because she finished filling in the form, Rosa could call me.'

    e.   A Maria não consegue estudar para a   prova com os irmãos   fazendo
            the Maria not manages to-study for   the test   with the brothers doing
            bagunça.
            mess
            'Maria cannot study for the test with her brothers making such a mess.'

GCs can modify nouns as well, as in (8). I dub them *adnominal GCs* and regard them more a little more carefully in section 4.5.[2]

(8)   *Adnominal GCs*

    a.   Esses meninos jogando bola na   rua   são filhos do   vizinho.
        these boys   playing ball in.the street are sons of.the neighbor
        'These boys playing soccer on the street are the neighbor's children.'

    b.   O passageiro esperando pelo   vôo 234 reclamou   para o comissário de
        the passenger waiting   for.the flight 234 complained for   the agent   of
        bordo.
        board
        'The passenger waiting for flight 234 complained to the flight attendant.'

Having presented and labeled the GC subtypes to be considered here, I turn to their description in the next sections.

1.2   Description and grouping of complement GCs

In order to describe the behavior of GCs, I first look at the complement desiderative – (1) –, propositional – (3) – and perceptual GCs – (2). This choice is justified on the grounds that it seems to be easier to control for the factors that determine the behavior of GCs in complement position. In the next section (1.4), I describe the remaining subtypes of GCs, a task made easier if we consider the complements first. In addition, I also outline the grouping of GCs along the properties considered. The properties I consider here are: (i) individual-level predicate (ILP) licensing; (ii) sentential negation licensing; (iii) sentential adverbial modification; (iv) raising of the subject into the matrix clause; (v) anaphoric subject bound by the matrix subject; (vi) inverse scope; (vii) coordination with a full CP.

The first property to be considered is the occurrence of individual level predicates (ILPs).[3] In order to distinguish these predicates, I will rely on the modifier *várias vezes* 'several times', which, as we can see in (9), can modify stage-level predicates (SLPs) like *atravessar a rua* 'cross the street', but not ILPs like *saber matemática* 'know mathematics':

(9)   a.   O João atravessou a   rua   várias vezes.
        the João crossed   the street several times
        'João crossed the street several times.'

    b.   O João sabe   matemática (*várias vezes).
        the João knows mathematics several   times
        'João knows mathematics.'

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[2]These constructions are traditionally called 'reduced relative clauses'. I find the term misleading, so I refrain from using it.

[3]Although ILP occurrence is a useful property to distinguish GC classes, I will not be able to explain the contrasts. Nevertheless, it is possible that this semantic property is correlated with syntactic structure (see e.g., Diesing 1992), which is the gist of the analysis put forth here.

Thus, when *várias vezes* 'several times' is ruled out in the examples to follow, we are likely to be looking at an ILP.

(10)   **Licensing of ILP**

    a.   O João quis/preferiu   os filhos sabendo matemática (*várias vezes).
        the João wanted/preferred the sons knowing mathematics several times
        'João wanted/preferred his children knowing mathematics.'

    b.   O João imagina/adorou a Maria sabendo matemática (*várias vezes).
        the João imagines/loved the Maria knowing mathematics several times
        'João imagines/loved Maria knowing mathematics.'

    c.   *O monitor   flagrou os alunos sabendo matemática (várias vezes).
        the teaching-assistant caught the students knowing mathematics several times

While desiderative – (10-a) – and propositional GCs – (10-b) – allow for an ILP, perceptual GCs – (10-c) – do not.

Next, we consider sentential negation. Following Stowell (2007) (among many others), I take *lift a finger* as part of the expression *not lift a finger*, in the idiomatic meaning 'not to do anything at all', as a negative polarity item (NPI). The PB expression *mexer um dedo* 'move a finger' behaves just like its English counterpart. In this idiomatic reading, negation is obligatory; in the absence of negation, only a literal reading is available (cf. (11-a) vs. (11-b)). I also take this negation that licenses an NPI to be an instance of sentential negation. In addition, as is well known, NPI licensing is a local relation, locality generally being equivalent to clause-boundedness (cf. (11-c) vs. (11-d)).

(11)   *Licensing of an NPI:* mexer um dedo

    a.   O João não mexeu um dedo para ajudar a   gente.
        the João NEG moved a   finger for   to-help the people
        ✓'João did not do anything at all to help us.'

        ✓'João did not move a finger to help us.'

    b.   O João mexeu um dedo para ajudar a   gente.
        the João moved a   finger for   to-help the people
        *'João did not do anything at all to help us.'

        ✓'João did not move a finger to help us.'

    c.   A Maria disse que o   João não mexeu um dedo para ajudar a   gente.
        the Maria said that the João NEG moved a   finger for   to-help the people
        ✓'Maria said that João did not do anything at all to help us.'

        ✓'Maria said that João did not move a finger to help us.'

    d.   A Maria não disse que o   João mexeu um dedo para ajudar a   gente.
        the Maria NEG said that the João moved a   finger for   to-help the people
        *'Maria did not say that João did not do anything at all to help us.'

        ✓'Maria did not say say that João moved a finger to help us.'

In order to make the contrasts clearer, I rely on another NPI, namely, post-nominal *algum* 'some', which, if combined with negation, means 'none at all'. The data below shows that

post-nominal *algum* patterns like idiomatic *mexer um dedo* 'lift a finger' in (11): it requires negation (cf. (12-a) vs. (12-b)) and negation has to be clause-mate, otherwise, the construction is ungrammatical (cf. (12-c) vs. (12-d)).

(12) *Licensing of an NPI: post-nominal* algum

    a.   O João não leu livro algum.
        the João NEG read book some
        'João did not read any book at all.'

    b. *O João leu livro algum.
        the João read book some

    c.   A Maria disse que o   João não leu livro algum.
        the Maria said that the João NEG read book some
        'Maria said that João did not read any book at all.'

    d. *A Maria não disse que o   João leu livro algum.
        the Maria NEG said that the João read book some

Bearing these properties of sentential negation in mind, let us now look at its distribution in complement GCs.

(13) **Licensing of sentential negation** ('mexer um dedo')

    a.   O João quis/preferiu   a Maria não mexendo um dedo.
        the João wanted/preferred the Maria NEG moving   a   finger
        'João wanted/preferred Maria not to do anything at all.'

    b.   O João imagina/adorou a   Maria não mexendo um dedo.
        the João imagines/loved the Maria NEG moving   finger
        'João imagines/loved Maria not doing anything at all.'

    c.???O monitor   flagrou os alunos   não mexendo um dedo.
        the teaching-assistant caught the students NEG moving   a   finger

(14) **Licensing of sentential negation** (post-nominal 'algum')

    a.   O João quis/preferiu   a Maria não cantando música alguma.
        the João wanted/preferred the Maria NEG singing   music some
        'João wanted/preferred Maria not to sing any song at all.'

    b.   O João imaginou a   Maria não cantando música alguma.
        the João imagined the Maria NEG singing   music some
        'João imagined Maria not singing any song at all.'

    c.???O João assistiu os alunos   não cantando música alguma.
        the João watched the students NEG singing   song some

So far as sentential negation is concerned, we witness the same grouping as have seen above for ILP: on the one hand, desiderative – (13-a), (14-a) – and propositional GCs – (13-b), (14-b) – allow for sentential negation, while perceptual GCs – (13-c), (14-c) – do not.

Complement GCs also differ on the possibility of licensing a sentential adverbial like *provavelmente* 'probably'.

(15) **Clausal adverb modification**

    a. O João não quer a   aeronave provavelmente sofrendo uma pane   na
       the João NEG wants the airplane probably   suffering a   breakdown in.the
       volta.
       return
       'João does not want the airplane to probably break down on its way back.'

    b. O João imaginou a   aeronave provavelmente sofrendo uma pane   na
       the João imagined the airplane probably   suffering a   breakdown in.the
       volta.
       return
       'João imagined the airplane probably breaking down on its way back.'

    c. *O João flagrou a   aeronave provavelmente sofrendo uma pane   na
       the João caught the airplane probably   suffering a   breakdown in.the
       volta.
       return

The grouing is the same as that for sentential negation.

When we consider the behavior of GCs regarding properties like the possibility of raising their subject into the matrix clause, the picture is quite different. Now propositional GCs – (16-b) – are grouped together with perceptual GCs – (16-c) –, leaving desiderative GCs – (16-a) – aside.

(16) **Raising of the GC subject**

    a. *A Maria foi preferida *t* cantando na   peça.
       the Maria was preferred *t* singing   in.the play

    b. A Maria foi imaginada *t* cantando na   peça.
       the Maria was imagined *t* singing   in.the play
       'Maria was imagined singing in the play.'

    c. O morro pôde ser   ouvido *t* desabando a quilômetros de distância.
       the hill   could to-be heard *t* collapsing at kilometers of distance
       'The hill could be heard collapsing from kilometers away.'

Next up, we consider the licensing of an anaphoric subject.[4] Again, while propositional – (17-b) – and perceptual GCs – (17-c) – allow for their subject to be an anaphor bound by the matrix subject, desiderative GCs – (17-a) – do not.

(17) **Anaphoric subject**

    a. *O João$_i$ se$_i$ quis/preferiu   cantando na   peça.
       the João SE wanted/preferred singing   in.the play

    b. O João$_i$ se$_i$ imaginou cantando na   peça.
       the João SE imagined singing   in.the play

---

[4]A more complete paradigm would include the distribution of pronominal subjects, but it seems to be the case that pronouns like *ele* 'he' in BP can also display some sort of anaphoric reading, so I refrain from relying on them (for now). I would like to thank Marcus Lunguinho (p.c.), Esmeralda Negrão (p.c.) and Jairo Nunes (p.c.) for useful comments.

'João imagined himself singing in the play.'

c. O João*i* se*i* flagrou cantando no chuveiro.
the João SE caught singing in.the shower
'João caught himself singing in the shower.'

The next property we consider is the possibility of an inverse scope reading. A sentence like (18), which contains both a universal and an existential quantifier, is ambiguous between a reading where the universal quantifier takes scope over the existential quantifier – (19-a) – and a reading where it is the existential quantifier that takes scope over the universal quantifier – (19-b). The latter reading is called an 'inverse scope' reading.

(18) Algum aluno leu todo livro.
some student read all book
'Some student read all books.'

(19) a. $\exists > \forall$ *There is a particular student who read all books.*
b. $?\forall > \exists$ *For every* x, x *is a book and* x *was read by some student or other.*

With this background in mind, let us see how complement GCs behave regarding them.

(20) **Inverse scope** ($\forall > \exists$)

a. Algum professor quis/preferiu todo aluno cantando.
some professor wanted/preferred every student singing
'Some teacher wanted/preferred every student singing.'

???*For every* x, x *is a student and some teacher or other wanted/preferred* x *to sing.*

b. Algum professor imagina todo aluno cantando.
some professor imagines all student singing
'Some teacher imagines all student singing.'

?*For every* x, x *is a student and some teacher or other imagined* x *singing.*

c. Algum professor assistiu/ouviu todo aluno cantando.
some professor watched/heard all student singing
'Some teacher watched/heard all student singing.'

?*For every* x, x *is a student and some teacher or other watched/heard* x *sing.*

Judgment is not at all clear, but it seems to be the case that propositional – (20-b) – and perceptual GCs – (20-c) – allow for an inverse scope reading more easily than desiderative GCs – (20-a) – do.

Similar behavior is displayed by cardinal NPs. As we see in (21), when there are two cardinal NPs in the same sentence, in principle, it is possible that the second NP in the linear string take scope over the first NP, rendering an inverse scope reading.

(21) Três alunos leram dois livros.
three students read two books
'Three students read two books.'

(22)   a.   *three > two*
                Three students read each two books (with up to six different books).

         b.   *two > three*
                There are two specific books such that three students read them (with up to two different books).

If we add a follow-up sentence with a pronoun the reference of which is determined by the cardinal NP, only the inverse scope reading seems to be available:

(23)   Três alunos leram dois livros. Eles foram best-seller mês passado.
         three students read two books they were best-seller month past
         'Three students read two books. They were last month's best-sellers.'

When these cardinal NPs are in the subject of the matrix clause and of the complement GC, if the complement is a desiderative GC – (24-a) –, an inverse scope reading is quite difficult to get, but it is more readily available when the GC is propositional – (24-b) – or perceptual – (24-c).

(24)   **Inverse scope** (*two > three*)

        a.   Três professores queriam/preferiram duas alunas   cantando.
             three professors wanted/preferred   two students singing
             'Three teachers wanted/preferred two students to sing.'

             ???*There are two specific students such that three teachers wanted/preferred them to sing.*

        b.   Três professores imaginaram dois alunos   cantando.
             three professors imagined   two students singing
             'Three teachers imagined two students singing.'

             ?*There are two specific students such that three teachers imagined them singing.*

        c.   Três professores ouviram dois alunos   cantando.
             three professors heard   two students singing
             'Three teachers heard two students singing.'

             ?*There are two specific students such that three teachers heard them sing.*

If we add a follow-up sentence with a pronoun, the result is quite odd if the matrix complement clause is a desiderative GC, but it is well-formed if it is a propositional or perceptual GC.

(25)   a.   #Três professores queriam/preferiram duas alunas   cantando. Elas são sopranos.
             three professors wanted/preferred   two students singing   they are sopranos
             'Three teachers wanted/preferred two students singing. They are sopranos.'

        b.   Três professores imaginaram duas alunas   cantando. Elas são sopranos.
             three professors imagined   two students singing   they are sopranos
             'Three teachers imagined two students singing. They are sopranos.'

        c.   Três professores ouviram duas alunas   cantando. Elas são sopranos.
             three professors heard   two students singing   they are sopranos
             'Three teachers heard two students sing. They are sopranos.'

The contrast can be captured if we assume that pronouns cannot take a DP with a non-specific reading as an antecedent. The reading of *two students* in (25-a) seems to be non-specific only, hence the hypothesis that inverse scope is not allowed.

Comparable behavior is displayed when the matrix clause contains the quantificational adverb *geralmente* 'usually' and the complement GC, a cardinal NP like *três alunos* 'three students'. When these two elements are in the same simple clause, as in (26), the sentence is ambiguous between a reading where *geralmente* takes scope over *três* – (27-a) – and a reading where *três* takes scope over the quantificational adverbial – (27-b). The latter reading is also an instance of inverse scope.

(26)   Geralmente três alunos   cantam.
        generally   three students sing
        'Usually, three students sing.'

(27)   a.   ADV > *três*

              It is usually the case that some three students or other sing.

        b.   *três* > ADV

              There are three particular students such that they usually sing.

Back to complement GCs, again propositional – (28-b) – and perceptual GCs – (28-c) – seem to allow for an inverse scope reading more easily than desiderative GCs – (28-a) – do.

(28)   **Inverse scope** (*três* > ADV)

        a.   O João geralmente quer   três alunos   cantando.
              the João generally   wants three students singing
              'João generally wants three students to sing.'

              ???*There are three specific students such that João usually wants them to sing.*

        b.   O João geralmente imagina três alunos   cantando.
              the João generally   imagines three students singing
              'João generally imagines three students singing.'

              ?*There are three specific students such that João usually imagines them singing.*

        c.   O João geralmente assiste três alunos   cantando.
              the João generally   watches three students singing
              'João generally watches three students singing.'

              ?*There are three specific students such that João usually watches them sing.*

Finally, the last property we consider is the possibility of coordinating the complement GC with a full CP, that is, a finite CP with an overt complementizer. First of all, notice that desiderative, propositional and perceptual predicates can all subcategorize for a CP.

(29)   a.   O João quis   que a Maria trabalhasse com mais afinco.
              the João wanted that the Maria worked   with more earnestness
              'João wanted that Maria worked more earnestly.'

    b.   O João adorou que a   Maria trabalhou com mais afinco.
          the João loved   that the Maria worked   with more earnestness
          'João loved that Maria worked more earnestly.'

    c.   O João ouviu que a   Maria trabalhou com mais afinco.
          the João heard that the Maria worked   with more earnestness
          'João heard that Maria worked more earnestly.'

As a consequence, the impossibility of propositional – (30-b) – and perceptual GCs – (30-c) – coordinating with a full CP cannot be due to a selectional restriction of these verbs. Desiderative GCs – (30-a) –, in contrast, can be coordinated with a full CP.

(30)   **Coordination with a full CP**

    a.   O João quis   a   Maria chegando mais cedo e   que ela trabalhasse com
          the João wanted the Maria arriving   more early and that she worked   with
          mais afinco.
          more earnestness
          'João wanted Maria to arrive earlier and that she worked more earnestly.'

    b.???O   João adorou a   Maria chegando mais cedo e   que ela trabalhou com
          the João loved   the Maria arriving   more early and that she worked   with
          mais afinco.
          more earnestness

    c.   *O João ouviu a   Maria chegando e   que ela trabalhou com mais afinco.
          the João heard the Maria arriving   and that she worked   with more earnestness

The behavior of complement GCs regarding coordination with a full CP, as well as the other properties considered above are summarized in the following table:

	Desiderative	Propositional	Perceptual
ILP licensing		✓	*
Sentential negation		✓	???
Sentential adverbial		✓	*
Raising	*	✓	
Anaphor	*	✓	
Inverse scope	???	?	
Coordination with a CP	✓	???/*	

Table 1.1: Grouping of complement GCs

    Given these data, two questions that readily arise are: (i) what underlies the particular behavior of each GC and (ii) why are GCs grouped the way they are?These questions are the core of the investigation reported here.

1.3 How to make sense of these properties? A tripartite analysis

What we have seen in the previous section was a description of the behavior of complement GCs (desiderative, propositional and perception) regarding (i) individual-level predicate (ILP) licensing; (ii) sentential negation licensing; (iii) sentential adverbial modification; (iv) raising of the subject into the matrix clause; (v) anaphoric subject bound by the matrix subject; (vi) inverse scope; (vii) coordination with a full CP. The general picture of the description was summarized on table 1.1 above.

A question that readily springs to mind is, what exactly underlies the behavior of each complement in particular and the way they are grouped. Of the seven properties considered, six are arguably syntactic, namely, sentential negation, sentential adverbial modification, raising, licensing of an anaphoric subject, the possibility of inverse scope and of coordination with a full CP. Moreover, the remaining property, namely, ILP licensing, can also be viewed in syntactic terms (see Diesing 1992). In view of the syntactic nature of the properties of the behavior of the GC complements considered, I propose that they have **different syntactic structures**.[5] It is from this structure that I derive the particular behavior of each GC complement. This structure is also what is behind the differences and similarities between the three classes, that is, their syntax also explains why they are grouped the way they are.

Having considered the nature of the differences between the GC complements, the next question to tackle is, what these structures look like. In order to answer this question, I make the following proposals and assumptions:

(31) a. The gerund morpheme $\{-ndo\}$ is uniformly the head of an aspectual phrase, AspP.[6]

  b. Sentential negation and sentential adverbial (e.g. *provavelmente* 'probably') licensing presupposes the projection of TP.

  c. Syntactic domains (e.g., for raising, binding and quantifier raising) are uniformly phase-defined.

The basis for proposal (31-a) is that the gerund morpheme seems to contribute some progressive meaning to the sentence, as can be seen by the following paradigm:

---

[5]The proposal that nonfinite constructions can have different sizes, despite superficial similarities, is by no means new. For analyses that propose different sizes for infinitives, see, among others, Bošković (1997), Boivin (1998), Wurmbrand (1998, 2014b), Pires (2001, 2006) and Grano (2012). For an analysis on BP perceptual infinitives and gerunds, see Rodrigues (2002).

[6]The same proposal is made by Moutella (1995) and Rodrigues (2006), among others, for some GC subtypes in BP. In addition, Lunguinho (2011), among others, propose that the $\{-ndo\}$ in progressive sentences (e.g.: *O João está lendo um livro* 'João is reading a book') is also the head of AspP. Ultimately, because I propose a comparable structural status to the gerund morpheme in clauses, it might be easier to compare the two kinds of structure (the progressive sentence just mentioned and the GCs that I analyze here) later. This, however, is left for future research.

(32)   a. #O João viu a   Maria atravessar a   rua,   mas ela nunca chegou do   outro
                 the João saw the Maria to-cross   the street but she never arrived of.the another
                 lado.
                 side
                 'João saw Maria cross the street, but she never got to the other side.'

        b. O João viu a   Maria atravessando a   rua,   mas ela nunca chegou do
                 the João saw the Maria crossing   the street but she never arrived of.the
                 outro   lado.
                 another side
                 'João saw Maria crossing the street, but she never got to the other side.'

The only difference between (32-a) and (32-b) lies in the form of the verb in the embedded clause. In (32-a), *atravessar* 'to cross' is in infinitive form, whereas, in (32-b), it is in gerund form. (In fact, (32-b) is an instance of perception GC.) Correlated with this difference in form is a difference in meaning. In (32-a), the embedded crossing event seems to be depicted in its entirety, including both its beginning and endpoint. This could explain why *O João viu a Maria atravessar a rua* 'João saw Maria cross the street' cannot be followed by *but she never got to the other side*: this follow-up contradicts what is said in the matrix clause. In contrast, in (32-b), the crossing event is not depicted as necessarily including its beginning and endpoint. This is the description of progressive aspect. This would be why *O João viu a Maria atravessando a rua* 'John saw Mary crossing the street' can be followed by *but she never got to the other side*: there is no contradiction.

    The same conclusion can be drawn from another paradigm:

(33)   a. #O João viu o   Pedro se afogar,   mas a   Maria conseguiu salvar ele.
                 the João saw the Pedro self to-drown but the Maria managed to-save he
                 'João saw Pedro drown, but Maria managed to save him.'

        b. O João viu o   Pedro se afogando, mas a   Maria conseguiu salvar ele.
                 the João saw the Pedro self drowning but the Maria managed to-save he
                 'João saw Pedro drowning, but Maria managed to rescue him.'

The sentences again differ only in the form of the embedded clause, infinitive (*afogar* 'to drown') in (33-a) and gerund (*afogando* 'drowning') in (33-b). Correlated with this difference is the possibility of coordinating this sentence with *mas a Maria conseguiu salvar ele* 'but Maria managed to rescue him'. When the embedded clause is infinitival – (33-a) –, the resulting complex is contradictory. However, when it is a gerund – (33-b) –, there is no contradiction. This can be explained if we assume again that the event described by an infinitive is depicted in its entirety, so that the main sentence in (33-a) entails that Pedro drowned. As a consequence, the follow-up in (33-a) renders the whole sentence contradictory. In contrast, gerunds depict events in such a way that neither its beginning nor end are picked out. Consequently, because the main sentence in (33-b) does not entail that Pedro drowned, there is no contradiction.

    We can conclude that the gerund morpheme in the sentences above contributes progressive

aspect meaning.[7] The null hypothesis is that there is just one gerund morpheme, progressive in meaning, as in (32-b) and (33-b). I propose therefore that the minimum structure any GC subtype must have consists of the lexical projections of the verbal predicate and at least an AspP projection on top of it, such that AspP houses the gerund morpheme.

(34)   *GC minimum structure*

```
        AspP
       /    \
   Asp⁰      vP
    |       /  \
  -ndo    v⁰    VP
```
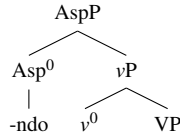
However, this cannot be everything there is to the structure of GCs under the assumption outlined above that the differences witnessed among complement GCs is of syntactic nature. To refine the analysis, I turn to assumption (31-b). It is generally (though not uncontroversially) assumed that sentential negation presupposes the projection of TP (see, among others, Zanuttini 1996). A comparable assumption is made regarding the occurrence of adverbials such as *provavelmente* 'probably': they are taken to be clausal and hence TP-adjoined (see, e.g., Pires 2007, 167). Given these assumptions, desiderative and propositional GCs should have the structure in (35)-a, which includes not only the minimum structure I propose for GCs (i.e., the AspP, in (34)), but also TP. The latter captures the possibility of both these GC complements to contain sentential negation and a sentential adverbial. In contrast, perception GCs should lack a TP projection, for they cannot license neither of the TP-related elements. Thus, they should contain only the minimum structure, as in (35)-b.

(35)   *Partial structures for GC complements*

```
a.        TP                    b.        AspP
         /  \                            /    \
      T⁰     AspP                    Asp⁰      vP
            /    \                    |       /  \
        Asp⁰      vP                -ndo    v⁰    VP
         |       /  \
       -ndo    v⁰    VP
```
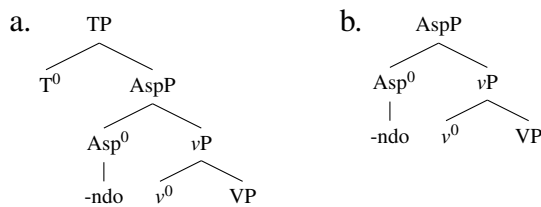
This is not yet enough. Recall again that I hypothesize that the behavior of GC complements is to be syntactically accounted for. Desiderative and propositional GCs are clustered together regarding sentential negation and sentential adverbial modification, to the exclusion of perception GCs. Nonetheless, desiderative and propositional GCs behave quite differently when we consider the other properties, namely, raising of the GC subject into the matrix clause, binding of an anaphoric subject, inverse scope and CP coordination. As far as these properties are concerned, it is perceptual GCs that propositional GCs are grouped with, to the exclusion of desiderative GCs. Thus, the next step is to tease apart desiderative and propositional GCs, in such a way that the resemblance of the latter GC subtype with respect to perception GCs is also captured.

In order to this, I propose that syntactic domains are uniformly defined in terms of phases –

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[7]Aspect is discussed on chapter 7.

(31-c). As we will see in chapter 2, I take phases to be relevant throughout the computational system, in the sense that phases are relevant both to syntactic representations and to syntactic operations. Tentatively, a conceptual argument in favor of this proposal is that uniformity may render the computational system simpler, thereby reducing computational complexity. For our purposes here, what the proposal (31-c) means particularly is that I take syntactic domains such as those for Case-marking, binding and quantifier raising (QR) to be uniformly phase-defined. Ultimately, assuming the activation condition, Case-marking is what is behind the possibility of raising.

Assuming that the domain of syntactic operations such as Case-marking is phase-defined, that desiderative GCs do not allow for the raising of their subjects into the matrix subject position can be taken to mean that a GC of this class is a domain where its subject can be Case-marked. As a consequence, this subject is no longer available and therefore, in minimalist terms, prohibited, to further raise into the matrix clause. To the same extent, the impossibility of the subject of a desiderative GC to be an anaphor correferent to a matrix argument could be analyzed as a consequence of the GC being a binding domain for this anaphor. A matrix argument falls outside from this domain, so that the impossibility of an anaphoric subject is a consequence of a Principle A violation. Finally, that a quantifier inside a desiderative GC cannot interact with a quantifier inside the matrix clause could be taken to be a consequence of the GC being a domain for QR, one that excludes a matrix quantifier. In section 2.3.2, I present the QR theory I assume here, the one in Wurmbrand (2013). According to her, QR is restricted both by semantic economy and by phase boundaries: a quantifier can only move if the movement results in scope extension and the movement has to be from phase edge to phase edge. In a desiderative GC, analyzed here as a QR domain, the movement of a quantifier, because it is phase-bound, could not extend the scope of this quantifier over a matrix one.

One way of relating all these different types of syntactic domains and, as a byproduct, of capturing the systematic behavior of desiderative GCs regarding them, is to say that, albeit superficially different, they are all phase-based. In other words, the domains for Case-marking, for binding and for QR are all but one type of domain, namely, a phase. This entails that desiderative GCs are phases. The question we should ask then is which of the phases they are. Here, I will gloss over the discussion concerning the definition of phase[8] and assume the "traditional" definition, that is, that the phases are CP and transitive *v*P. In the previous discussion, I put forth the proposal that desiderative GCs contain a TP projection (see (35)-a). There does not seem to be any reason to think that GCs have another layer of *v*P besides the lexical projections of their predicate, so I propose that desiderative GCs are CPs.

Conversely, propositional and perception GCs do allow for their subject to be raised into the matrix clause. This implies that this subject cannot be Case-marked inside the GC, freeing

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[8]For dynamic/contextual approaches to phase, see Bobaljik and Wurmbrand (2005) and Bošković (2014). See also Boeckx and Grohmann (2007) for conceptual challenges raised against a phasal approach to syntactic derivations.

it to be Case-marked by a matrix element. Under our assumptions and proposals, this means that these GCs are not domains for operations like Case-marking, that is, they are not phases. Propositional and perception GCs can also have an anaphoric subject correferent to a matrix argument. This means that these GCs do not constitute a binding domain for the anaphor, which therefore has to be something higher up in the sentence, including a matrix argument. Again, we conclude that these GC subtypes are not phases. Finally, an inverse scope reading is available for propositional and perception GCs, that is, a quantifier inside them can interact with a matrix quantifier. This possibility can be captured by saying that these GCs are not phases and therefore they are not domains for QR. The QR domain will have to be a bigger portion of the sentence structure, one that can include a matrix quantifier, thereby providing room for a legitimate instance of QR and hence of inverse scope. Given the proposal that desiderative GCs are phases of the CP type, I propose that propositional and perception, not being phases, lack this projection.

Further support for the proposal that desiderative GCs are CPs, while propositional and perception GCs lack this projection is provided by the CP coordination contrasts. Under the common assumption that coordination must involve phrases that are of the same grammatical category, the fact that desiderative GCs can be coordinated with a clause that is overtly is a CP can be explained if these constructions are also CPs. Conversely, the fact that neither propositional nor perceptual GCs can be coordinated with a full CP can be captured by the proposal that they are not CPs.

We are now in the position to provide the required refinement in the analysis. Desiderative GCs contain not only the bare minimum AspP, but also TP, capturing their licensing of sentential negation of clausal adverbials. Furthermore, this type of complement GC also projects CP, a phasal projection that captures the behavior of this GC regarding the Case-marking of their subject, the binding possibilities if it is anaphoric, as well as the QR possibilities.[9] Propositional

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[9]Pires (2007, 173) claims that the GCs (in his terms, CGs, 'clausal gerunds') cannot be CPs because they cannot combine with a *for* complementizer nor with a finite complementizer like *that*. In addition, GCs do not allow for short Wh-movement, which suggests that they lack a CP projection that could count as a landing site for this movement.

I think these arguments do not hold. First of all, in languages like English, there is no (overt) complementizer for root clauses, but this does not necessarily mean that CP is not projected in root clauses. Under the assumption that C bears information such as illocutionary force, given that this information is present in root clauses, we must assume that they project CP; it just happens to be the case that root C elements are not phonetically realized in English. Analogously, the C I claim *class 1* GCs to project could be another instance of a phonetically empty C.

Secondly, the presence of an intermediate CP does not necessarily guarantee that it is an adequate landing site for Wh-movement. Take, for example, the behavior of the clausal complement of a verb like *claim*:

(i)   a.   John claimed that Mary bought gluten-free pizza at the groceries store.
        b.   *John claimed what Mary bought at the grocery store.

(i-a) clearly shows that the complement to *claim* can be a CP. Nevertheless, short Wh-movement yields an ungrammatical result. A plausible explanation to (i-b)'s ungrammaticality is that the embedded C is not interrogative and therefore Wh-movement is not triggered. By economy, Wh-movement should not be triggered, hence (i-b)'s ungrammaticality.

In sum, I think Pires (2007)'s empirical arguments are not necessary nor sufficient conditions to exclude an analysis of GCs as CPs on principle.

GCs project the bare minimum AspP and a TP too, just like desiderative GCs do. This explains why these complement GCs behave alike as far as sentential negation and sentential adverbial modification are concerned. However, in contrast, propositional GCs do allow for their subject to be raised into the matrix clause, for it to be bound by the matrix subject if it is anaphoric and for an inverse scope reading. Under the proposals I put forth here, this means that the topmost projection of propositional GCs is not a phase. This can also be said of perceptual GCs, which project only the minimum AspP – AspP is not a phase, under the traditional definition. Given the absence of TP, sentential negation and clausal adverbials cannot be licensed in perceptual GCs, although they can in both desiderative and propositional GCs. In sum, the structure for each of the GC classes proposed are in (36). (36)-a is the structure of a desiderative GC, (36)-b, of a propositional GC and finally, (36)-c, of a perception GC.

(36)   *Final structure of GC complements*

a.
```
        CP
       /  \
      C⁰   TP
          /  \
         T⁰   AspP
             /   \
          Asp⁰    vP
           |     /  \
         -ndo   v⁰   VP
```

b.
```
        TP
       /  \
      T⁰   AspP
          /   \
       Asp⁰    vP
         |     /  \
       -ndo   v⁰   VP
```

c.
```
        AspP
       /    \
     Asp⁰    vP
       |    /  \
     -ndo  v⁰   VP
```
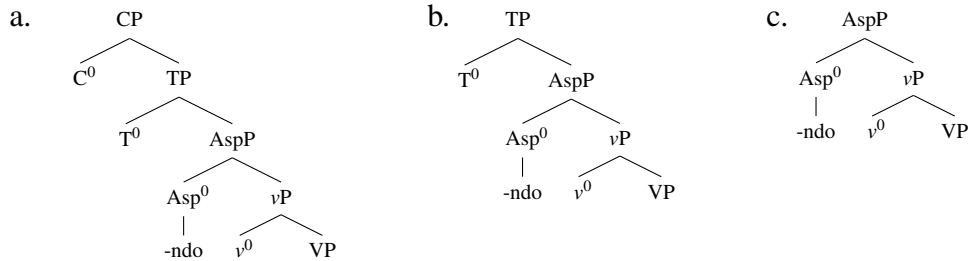
This three-way classification now makes room to capture the "mixed" behavior of propositional GCs. On the one hand, they are like desiderative GCs because they have a TP projection, which perceptual GCs lack. On the other hand, propositional GCs are like perception GCs for they both lack CP, which is projected by desiderative GCs.

In the previous section (1.2), we saw the behavior of complement GCs and the way are grouped together along the properties considered, such that desiderative and perceptual GCs seem to have mirroring behavior, while propositional GCs seem to be an intermediate class between these two ends. In this section, I advanced an analysis for these phenomena, according to which the particular behavior of each GC complement and the way they are clustered together are derived from their syntactic structure. In this next section, we will see that the other GC subtypes studied in this dissertation display comparable behavior, so that they can also undergo this tripartite analysis of complement GCs. In other words, the analysis outlined here is general enough to encompass all the GC subtypes this dissertation is concerned with. I will use the taxonomic term *class 1 GC* to refer to desiderative GCs and the other GCs that behave alike, namely, high adverbial GCs. Under the heading *class 3 GC*, I will include perceptual GCs, along with existential, object control, low adverbial and adnominal GCs. Finally, *class 2 GC* is how I dub the GCs that share some properties of each of the other two classes, but without being fully identical to either, namely, propositional, subject and prepositional adverbial GCs. This is schematized in the table below. The classification in the table is a simplification introduced in order to render the first approximation of the data simpler. In the next chapters, we will see

that there are extra factors determining the behavior of each GC subtype to be surveyed, so that it behaves differently from its kin in the same class. One of my goals in this dissertation is to pinpoint these factors.

Class	Subtype	ILP	TP-dependent		Phase-dependent		
			Negation	**Adverbial**	**Raising**	**Anaphor**	**Scope**
1	Desiderative				*	*	*
	High adv						
2	Propositional	✓	✓	✓			
	Subject						
	Prepositional adv						
3	Perceptual				✓	✓	✓
	Existential						
	Object control	*	*	*			
	Low adv						
	Adnominal						

Table 1.2: Tripartite classification of GCs: a first approximation

1.3.1 Is it necessary to stipulate three classes of GC?

The gist of the proposal outlined in this section is that there are three classes of GCs, such that they differ in structural size. *Class 1* GCs have the most complex structure, one that includes the bare minimum AspP necessary to build a GC at all, as well a TP and a CP. *Class 3* GCs are on the other end of the spectrum and project only the bare minimum AspP. *Class 2* GCs have intermediate size: they project AspP and TP, but not CP. I propose that these structures account for the behavior of each GC subtype in particular and the sharing of lack thereof of structural projections account for the way GCs are grouped.

But are these classes primitives in the grammar of BP? I claim here that this is not a necessary assumption and that the derivation of any GC abides with three independent factors: (i) the content of the numeration; (ii) rules governing the way the derivation should proceed; (iii) selection patterns. Although there are no well-formedness conditions imposed on numerations (Nunes, 2013), a numeration must contain a gerund morpheme to build the bare minimum AspP of a GC at all. Whether or not there is enough in the numeration to build a TP on top of AspP and, besides that, to build a CP dominating TP does not have to be stipulated either. All that the computational system has to do is resort to the usual operations to pull lexical items from the numeration and merge them together to build phrases and ultimately sentences. Under minimalist assumptions, these operations must comply with economy conditions, which obviously exist independently of GCs. A GC built, whatever its size, another set of rules comes into action, namely, selection rules. Regardless of the nature of these rules (categorial? se-

mantic? both?), if they exist, they are arguably independent of GCs, so that derivation of these constructions again just follows independent conditions.

In sum: the three classes of GCs are not primitives in the grammar of BP. Rather, they just automatically fall out from independent resources available in this language (i.e., the gerund morpheme and material that is needed to build functional projections, TP and CP), and independent resources available to any natural language (i.e., building operations), as well as independent conditions on derivations and representations.

1.4 Description and grouping of other GC subtypes

Having outlined this tripartite analysis, motivated by the behavior of complement GCs, we now turn to the description of the other GC subtypes. We saw in the previous section that desiderative – (37-a) – and propositional GCs – (37-b), (37-c) – allow for an ILP. Subject – (37-d) –, prepositional adverbial – (37-e) – and high adverbials – (37-f), (37-g) – GCs pattern alike these two subtypes of complement GC in that they can also be formed from an ILP. (See fn. 3.)

(37)   *Licensing of an ILP:* ✓

   a.   O   João quis/preferiu   os filhos sabendo matemática   (*várias vezes).
        the João wanted/preferred the sons   knowing mathematics several   times
        'João wanted/preferred his children knowing mathematics.'

   b.   O   João imagina/adorou a   Maria sabendo matemática   (*várias vezes).
        the João imagines/loved the Maria knowing mathematics several   times
        'João imagines/enjoyed Maria knowing mathematics.'

   c.   O   João considera a   Maria como sendo uma boa   pessoa (*várias vezes).
        the João considers the Maria as   being a   good person several   times
        'João considers Maria to be a good person.'

   d.   A   Maria sabendo matemática   (*várias vezes) orgulha   o   pai.
        the Maria knowing mathematics several   times   makes-proud the father
        'Maria knowing mathematics makes her father proud.'

   e.   A   Maria não consegue dar   aula sem   os alunos   sabendo álgebra
        the Maria not manages to-give class without the students knowing algebra
        básica (*várias vezes).
        basic   several   times
        'Maria cannot teach without her students knowing basic algebra.'

   f.   Sabendo matemática   (*várias vezes), é mais fácil de passar no   vestibular.
        knowing mathematics several   times   is more easy of to-pass in.the vestibular
        'Knowing mathematics, it is easier to pass the university admission exams.'

   g.   A   Maria sabendo matemática   (*várias vezes), a   firma   terminou o
        the Maria knowing mathematics several   times   the company finished the
        trabalho rápido.
        job   fast
        'Because Maria knew mathematics, her company finished the job fast.'

On the other hand, the perceptual GC – (38-a) – could not. Along with it are existential – (38-b) –, object control – (38-c) –, low adverbials – (38-d), (38-e) – and adnominal – (38-f) – GCs, which cannot be formed from an ILP either.

(38)   *Licensing of an ILP: ***

    a. *O monitor   flagrou os alunos sabendo matemática (várias vezes).
        the teaching-assistant caught the students knowing mathematics several times

    b. *Tem várias crianças sabendo matemática (várias vezes) na   sala 234.
       has   several children knowing mathematics several times in.the room 234

    c. *O João deixou os filhos sabendo matemática (várias vezes) e   foi   fazer
       the João left   the sons knowing mathematics several times and went to-do
       o   jantar.
       the dinner

    d. *A Maria faz a caminhada dela sabendo matemática (várias vezes).
       the Maria does the walk   of.she knowing mathematics several times

    e. *Os ladrões arrombaram a porta sabendo matemática (várias vezes).
       the robbers broke-down the door knowing mathematics several times

    f. *Esses meninos sabendo matemática (várias vezes) são filhos do   vizinho.
       these boys   knowing mathematics several times are sons of.the neighbor

In the previous section, we also saw that desiderative – (39-a) – and propositional GCs – (39-b), (39-c) – could license sentential negation. The other GC subtypes that also do are: subject – (39-d) –, prepositional adverbial – (39-e) – and high adverbials – (39-f), (39-g).

(39)   *Licensing of sentential negation: ✓*

    a. O João quis/preferiu   a Maria não mexendo um dedo.
       the João wanted/preferred the Maria not moving a   finger
       'João wanted/preferred Maria NEG doing anything at all.'

    b. O João imagina/adorou a Maria não mexendo um dedo.
       the João imagines/loved the Maria NEG moving a finger
       'João imagines/loved Maria not doing anything at all.'

    c. O João considera a Maria como não sendo uma boa pessoa.
       the João considers the Maria as   NEG being a   good person
       'João considers Maria not to be a good person.'

    d. A Maria não mexendo um dedo irrita o pai.
       the Maria NEG moving a finger annoys the father
       'Maria not doing anything at all annoys her father.'

    e. A Maria não consegue dar   aula com os alunos não mexendo um dedo.
       the Maria not manages to-give class with the students NEG moving a   finger
       'Maria cannot teach with the students doing nothing at all.'

    f. Não mexendo um dedo, não dá   para passar no   vestibular.
       NEG moving a   finger NEG gives for to-pass in.the vestibular
       'Without doing anything at all, it is not possible to pass the university admission exam.'

g. A Maria não mexendo um dedo, a   firma   levou anos para terminar o
    the Maria NEG moving   a   finger the company took   years for   to-finish the
    trabalho.
    job
    'Because Maria did not do anything at all, her company took ages to finish the
    job.'

In contrast, perceptual GCs – (40-a) – cannot include sentential negation. And neither do existential – (40-b) –, object control – (40-c) –, low adverbial – (40-d), (40-e) – and adnominal GCs – (40-f).

(40)   *Licensing of sentential negation: **

    a.???O monitor   flagrou os alunos   não mexendo um dedo.
        the teaching-assistant caught the students NEG moving   a   finger

    b.???Tem várias   crianças não mexendo um dedo na   sala   234.
        has   several children NEG moving   a   finger in.the room 234

    c. *O médico manteve o   paciente não mexendo um dedo e   foi   fumar
        the doctor left   the patients NEG moving   a   finger and went to-smoke
        um cigarro.
        a   cigarette

    d.???A Maria faz   a   meditação dela   não mexendo um dedo.
        the Maria does the meditation of.she NEG moving   a   finger

    e. *Os ladrões arrombaram a   porta não mexendo um dedo.
        the robbers broke-down the door NEG moving   a   finger

    f. *Esses meninos não mexendo um dedo são filhos do   vizinho.
        these boys   NEG moving   a   finger are sons of.the neighbor

Besides ILP and sentential negation licensing, another property we can rely on in order to describe GCs is the licensing of a sentential adverbial like *provavelmente* 'probably'. As we saw in the previous section, both desiderative – (41-a) – and propositional GCs – (41-b), (41-c) – allow for this kind of adverbial. GC subtypes that also do are the subject – (41-d) –, prepositional adverbial – (41-e) – and high adverbial GCs – (41-f).

(41)   *Sentential adverbial modification: ✓*

    a. O João não quer a   aeronave provavelmente sofrendo uma pane   na
        the João NEG wants the airplane probably   suffering a   breakdown in.the
        volta.
        return
        'João does not want the airplane to probably break down on its way back.'

    b. O João imaginou a   aeronave provavelmente sofrendo uma pane   na
        the João imagined the airplane probably   suffering a   breakdown in.the
        volta.
        return
        'João imagined the airplane probably breaking down on its way back.'

   c. O   João considera a   Maria provavelmente como sendo culpada.
       the João considers the Maria probably   as   being guilty
       'João considers Maria probably to be guilty.'

   d. A   aeronave provavelmente sofrendo uma pane   na   volta angustia
       the airplane probably   suffering a   breakdown in.the return anguishes
       o João.
       the João
       'The airplane probably breaking down on its way back anguishes João.'

   e. O João quer viajar   sem   a   aeronave provavelmente sofrendo uma
       the João wants to-travel without the airplane   probably   suffering a
       pane   na   volta.
       breakdown in.the return
       'João wants to travel without the airplane probably breaking down on its way
       back.'

   f. A   aeronave provavelmente sofrendo uma pane   na   volta, o   piloto
       the airplane probably   suffering a   breakdown in.the return the pilot
       contactou a   torre de controle.
       contacted the tower of control
       'Because the airplane was probably breaking down on its way back, the pilot got
       in contact with the control tower.'

On the other hand, perceptual GCs cannot be modified by adverbials like *provavelmente* – (42-a). The remaining GC subtypes cannot either, namely the existential – (42-b) –, object control – (42-c) –, low adverbial – (42-d) – and adnominal GCs – (42-e).

(42)   *Sentential adverbial modification: **

   a. *O   João flagrou a   aeronave provavelmente sofrendo uma pane   na
       the João caught the airplane probably   suffering a   breakdown in.the
       volta.
       return

   b. *Tem crianças provavelmente correndo no   estacionamento.
       has children probably   running in.the parking-lot'
       (Cf. *Provavemente, tem crianças correndo no estacionamento* 'There probably
       are children running in the parking lot'.)

   c. *O   mecânico manteve a   aeronave provavelmente sofrendo uma pane
       the mechanic kept   the airplane probably   suffering a   breakdown
       e   foi   tomar   um café.
       and went to-drink a   coffee

   d. *O   João corre provavelmente ouvindo música.
       the João runs probably   hearing music
       (Cf. *Provavelmente, o João corre ouvindo música* 'Probably, João runs listening
       to music.')

   e. *A   aeronave provavelmente sofrendo uma pane   está voltando para o
       the airplane probably   suffering a   breakdown is   returning for the

aeroporto.
airport
(Cf. *Provavelmente, a aeronave sofrendo uma pane está voltando para a pista*
'Probably, the airplane breaking down is going back to the airport.')

We now consider the possibility of the subject of the GC to be raised all the way up to the matrix subject position when the matrix clause is passivized. Adverbial (low adverbials, high adverbials and prepositional adverbials) and subject GCs were not considered because passivization is the movement of the embedded GC subject into the matrix subject position and movement is independently ruled out from non-thematic constituents and from subjects.[10] The same applies for adnominal GCs. Recall from the previous section that desiderative – (43-a) – GCs do not allow for this movement. Existential GCs – (43-b) – pattern alike.

(43)   *Raising of the GC subject: ***

    a.   *A Maria foi preferida *t* cantando na   peça.
        the Maria was preferred *t* singing   in.the play

    b.   *Crianças tem/têm *t* correndo no   estacionamento.
        children has/have *t* running   in.the parking-lot

This is one of the properties along which perceptual – (44-a) – and propositional GCs– (44-b) – clustered together. Object control GCs – (44-c) – join this group.

(44)   *Raising of the GC subject: ✓*

    a.   O morro pôde ser   ouvido *t* desabando a quilômetros de distância.
        the hill   could to-be heard   *t* collapsing at kilometers   of distance
        'The hill could be heard collapsing from kilometers away.'

    b.   A Maria foi considerada como *t* sendo uma boa   pessoa.
        the Maria was considered as   *t* being a   good person
        'Maria was considered to be a good person.'

    c.   Os pacientes foram mantidos *t* esperando por horas a fio.
        the patients   were   kept   *t* waiting   for hours at string
        'The patients were made to keep waiting for hours on end.'

A comment is in order regarding raising from existential GCs – (43-b). Outside the realm of GCs, in existential constructions in general, the expletive associate cannot raise:

(45)   a.   Tem crianças no   estacionamento.
           has   children in.the parking-lot
           'There are children in the parking lot.'

       b.   *Crianças tem/têm *t* no   estacionamento.
           children has/have *ec* in.the parking-lot

---

[10]However, see chapter 6, where I assume the movement theory of control (Hornstein, 1999, 2003; Boeckx et al., 2010).

It could be the case that there is an extra factor involved in ruling (43-b) out. This is indeed the avenue I will take in section 4.2.

The next property we consider is the licensing of an anaphor in the subject of the GC by the matrix subject. Low adverbials are not considered because these are GC subtypes that have a null subject . Recall from the previous section that this property teased apart desiderative GCs from the other complement GC inspected because desiderative GCs – (46-a) – cannot have an anaphoric subject. Existential – (46-b) –, subject – (46-c) –, high adverbial – (46-d) –, prepositional adverbial – (46-e) – and adnominal – (46-f) – GCs cannot either.

(46)   *Anaphoric subject: ***

    a. *O João$_i$ se$_i$ quis/preferiu   cantando na   peça.
       the João SE wanted/preferred singing   in.the play

    b. *Tem se correndo no   estacionamento.
       has SE running in.the parking-lot

    c. *Se$_i$ ganhando o   campeonato   orgulha/irrita   o   João$_i$.
       SE winning   the championship makes-proud/annoys the João

    d. *Se$_i$ chegando mais cedo, o   João$_i$ conseguiu terminar o   trabalho.
       SE arriving   more early the João managed to-finish the job

    e. *A Maria$_i$ não consegue estudar com se$_i$ checando o   celular   toda
       the Maria NEG manages to-study with SE checking the mobile-phome every
       hora.
       hour

    f. *Se passando pelo   portão é minha prima$_i$.
       SE passing by.the gate   is my   cousin

On the other hand, perceptual – (47-a) –, propositional – (47-b), (47-c) – GCs all allow for this option and so do object control GCs – (47-d).

(47)   *Anaphoric subject: ✓*

    a. O João$_i$ se$_i$ flagrou cantando no   chuveiro.
       the João SE caught singing   in.the shower
       'João caught himself singing in the shower.'

    b. O João$_i$ se$_i$ imaginou cantando na   peça.
       the João SE imagined singing   in.the play
       'João imagined himself singing in the play.'

    c. O João$_i$ se$_i$ considerou como sendo uma boa   pessoa.
       the João SE considered as   being a   good person
       'João considered himself to be a good person.'

    d. O João$_i$ se$_i$ manteve estudando para a   prova por tanto tempo quanto   pôde.
       the João SE kept   studying for the test for as   time how-much could
       'João made himself keep studying for as long as he could.'

A few remarks have to be made. First of all, existential constructions in general and not just of the GC type – (46-b) – cannot have an anaphor as the expletive associate:

(48)   a.   Tem crianças no   estacionamento.
                has   children in.the parking-lot
                'There are children in the parking lot.'

        b.   *Tem se no   estacionamento.
                has SE in.the parking-lot

The cause of ungrammaticality may quite simply be that there is no antecedent for the anaphor. Thus, the ungrammaticality of the existential GC in (46-b) and that of (48-b) may be straightforward instances of Principle A violation.[11] Something along these lines also carries over to subject GCs – (46-c): the GC is a clausal subject that is too high for its own subject, if it is anaphoric, to be bound. The same can be said yet again of high adverbials – (46-d) – and of prepositional adverbials – (46-e): the GC is in a configuration that does not allow for binding. In other words, the cause for ungrammaticality is independent: it has to do with the independent requirements of Binding Theory. Nevertheless, I will provide a more detailed explanation of the behavior of each GC subytpe in due course.

As far as adnominal GCs – (46-f) –, there also seems to be some independent factor at play behind the impossibility of licensing an anaphor. This is independently shown by the paradigm below, where it is not possible to replace a DP (*aquela menina* 'that girl') modified by an adnominal modifier (*bonita* 'pretty') with the anaphor *se*:

(49)   a.   A Maria conheceu aquela menina bonita.
                the Maria met   that   girl   pretty
                'Maria met that pretty girl.'

        b.   *A Maria$_i$ conheceu se$_i$ bonita.
                the Maria met   SE pretty

We now turn to inverse scope, for which, as mentioned, judgments are not as sharp as desired. Desiderative GCs do not seem to allow for an inverse scope reading.

(50)   a.   Algum professor quis/preferiu   todo aluno cantando.
                some   professor wanted/preferred every student singing
                'Some teacher wanted/preferred every student singing.'

                ???*For every* x*, x is a student and some teacher or other wanted/preferred* x *to sing.*

        b.   Três professores quiseram dois alunos   cantando.
                three professors   wanted   two students singing
                'Three teachers wanted two students singing.'

                ???*There are two specific students such that three teachers wanted them to sing.*

        c.   O João geralmente quer três alunos cantando.
                the João generally   wants three students singing
                'João generally wants three students to sing.'

                ???*There are three specific students such that João usually wants them to sing.*

---

[11]For the assumptions made here concerning Binding Theory, see section 2.3.1 below.

In contrast, in propositional – (51-b), (52-b), (53-b) – and in perceptual GCs – (51-a), (52-a), (53-a) –, an inverse scope reading seems to be more easily attained. Object control GCs – (51-c), (52-c), (53-c) – again behave like these two GC subtypes.

(51)   *Inverse scope ($\forall > \exists$): ?*

    a.   Algum professor assistiu/ouviu todo aluno   cantando.
           some   professor watched/heard all   student singing
           'Some teacher watched/heard all student singing.'

           ?For every x*, x is a student and some teacher or other watched/heard* x *sing.*

    b.   Algum professor imagina/adorou todo aluno   cantando.
           some   professor imagines/loved all   student singing
           'Some teacher imagines/loved all student singing.'

           ?For every x*, x is a student and some teacher or other imagined* x *singing.*

    c.   Algum professor deixou todos os monitores   tomando conta da
           some   professor left   all   the teaching-assistants taking   care of.the
           prova.
           test
           'Some teacher left all the teaching assistants watching over the exam.'

           ?For every x*, x is a teaching assistant and some teacher or other left* x *taking care of the exam.*

(52)   *Inverse scope (two > three): ?*

    a.   Três professores ouviram dois alunos   cantando.
           three professors   heard   two students singing
           'Three teachers heard two students singing.'

           ?There are two specific students such that three teachers heard them sing.

    b.   Três professores imaginaram dois alunos   cantando.
           three professors   imagined   two students singing
           'Three teachers imagined two students singing.'

           ?There are two specific students such that three teachers imagined them singing.

    c.   Três professores deixaram dois monitores   tomando conta da   prova.
           three professors   let   two teaching-assistants taking   care of.the test
           'Three teachers left two teaching assistant taking care of the exam.'

           ?There are two specific teaching assistants such that three teachers left them taking care of the exam.

(53)   *Inverse scope (três > ADV): ?*

    a.   O João geralmente assiste três alunos   cantando.
           the João generally   watches three students singing
           'João generally watches three students singing.'

           ?There are three specific students such that João usually watches them sing.

    b.   O João geralmente imagina três alunos   cantando.
           the João generally   imagines three students singing
           'João generally imagines three students singing.'

?There are three specific students such that João usually imagines them singing.

c. O João geralmente deixa três monitores tomando conta da prova.
the João generally lets three teaching-assistants taking care of.the test
'João usually leaves three teaching assistants taking care of the exam.'

?There are three teaching assistants such that João usually leaves them taking care of the exam.

Hence, there seems to be some contrast among GC subtypes when we take into consideration the possibility of inverse scope. This property has to do with the possibility of a quantified phrase (QP) within the GC to interact with another QP in the matrix clause. As a consequence, existential GCs cannot be considered: in the configuration of a sentence containing an existential GC, there is no space for another QP and therefore there can be no quantification interaction. Conversely, low adverbials cannot be considered either, as their subject is necessarily null, thereby making no room for interaction between quantifiers. As for subject, high adverbials and prepositional adverbials , there is enough space for two QPs, but it is the overall configuration that does not allow for interaction between them. In the sections where each of GC subtype is analyzed in more detail, I attempt to provide a more thorough explanation.

In sum, the classification of GCs afforded by these properties, under the tripartite analysis outlined in section 1.3, is the following:

Class	Subtype	ILP	TP-dependent		Phase-dependent		
			Negation	**Adverbial**	**Raising**	**Anaphor**	**Scope**
1	Desiderative	✓	✓	✓	*	*	???
	High adv	✓	✓	✓	⊘	*	⊘
2	Propositional	✓	✓	✓	✓	✓	?
	Subject	✓	✓	✓	⊘	*	⊘
	Prepositional adv	✓	✓	✓	⊘	*	⊘
3	Perceptual	*	???	*	✓	✓	?
	Existential	*	???	*	*	*	⊘
	Object control	*	*	*	✓	✓	?
	Low adv	*	???/*	*	⊘	⊘	⊘
	Adnominal	*	*	*	⊘	*	⊘

Table 1.3: Description and three-way classification of GCs

As we can see in the table, the behavior of GCs regarding raising and anaphor is not as clear-cut as the analysis suggests. Existential GCs do not behave like other *class 3* GCs because they do not allow for raising of their subject, one of the signature properties of this class. Similarly, subject, prepositional adverbial, existential and adnominal GCs do not allow for their subject to be an anaphor correferenti with the matrix subject. In the remainder of this dissertation, I will try to show that these "deviations" are not empirical counterarguments to the analysis

proposed. Rather, they follow from independent factors that govern the behavior of these GC subtypes. The task then is to identify these extra factors and to provide a principled account of their behavior.

1.5 Properties of the gerund morpheme and of GCs in general

In this section, we consider more over-arching properties of GCs, instead of drawing a classification for them, as we have done until now. First of all, I discuss the features the T of a GC can inherit from C (Chomsky, 2004, 2008). Because only *class 1* GCs have both T and C, the discussion ranges over this class only. Alternatively, we could say that these are the features that *class 2* and *class 3* GCs fail to have, either because C is missing (*class 2*) or because both T and C are (*class 3*). I will conclude that T in a (*class 1*) GC has no φ-features, nor EPP, but it does have Case and tense. Later on, I discuss the gerund morpheme itself, the very basic GC building block. Specifically, based on the distribution of certain prepositions in GCs, I argue that $\{-ndo\}$ has a Case feature to be valued, similarly to what is generally assumed of DPs.

1.5.1 T features of a *class 1* GC

It is commonly assumed that T bears three types of feature, namely, EPP, φ-features and Case, as well as tense. Let us take these features as a baseline to find out which features T has in a *class 1* GC.

In principle, the discussion would encompass both *class 1* and *class 2* GCs as they are, unlike *class 3* GCs, TP-containing structures, under the analysis put forth here. However, as we will see in section 2.1, I also assume feature inheritance (Chomsky, 2004, 2008), according to which T bears the features mentioned not as a lexical specification, but only through the derivation, as a consequence of C transferring these features onto T. Thus, the discussion of the present section concerns the features the T of a *class 1* GC inherits from C. T in *class 2* GCs fails to inherit these features due to the absence of C. As for *class 3* GCs, the discussion does not even arise, for these constructions are proposed to lack T altogether.

This said, let us consider T feature by T feature in order to determine which of them the T in a *class 1* inherits from C. I assume, following Bošković (2007) and Wurmbrand (2014a) (see, however, Nunes 2007 and Chomsky 2013), that there is no EPP.[12] I discuss tense properties in chapter 7. We will see there that, according to the analysis advanced here, only *class 1* GCs bear their own tense, since these are the only GCs that project CP and thus, their T can inherit a tense feature. Regarding φ-features, I conclude from the discussion in the two next sections that GCs do not have neither [number] nor [person] features.

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[12] See section 2.2.3 to see how EPP effects are derived in the analysis, which, as mentioned, is based on Bošković (2007).

1.5.1.1 Number feature

Assuming the baseline mentioned above, we move on to φ-features. As for these features, I assume and extend the analysis of bare singulars in BP in Ferreira (2010), where contrasts such as the following are analyzed:[13]

(54)   a.   Eu ignorei aluno   que estava se elogiando.
                I   ignored student that was   SE praising
                'I ignored a student/students who was/were praising himself/themselves.'

                (based on Ferreira 2010, 100, (11b))

          b.   Eu quero aluno   se elogiando.
                I   want   student SE praising
                'I want a student/students praising himself/themselves/each other.'

                (based on Ferreira 2010, 100, (10b))

There are two properties in these sentences for us to pay attention to. Firstly, these sentences contain a bare singular *aluno* 'student', which, in BP, can have either a singular or a plural interpretation. Secondly, the object to *elogiando* 'praising' is an anaphoric SE, which can have either a reflexive or reciprocal reading. The reciprocal reading only emerges when the antecedent is plural. What distinguishes (54-a) from (54-b) is that the reciprocal reading is available in (54-b), but not in (54-a). There are three important ingredients in Ferreira (2010)'s analysis: (i) one-to-one correlation between overt morphology and underlying abstract features; (ii) under-specification of BP singular nouns; (iii) φ-features are uninterpretable in functional heads, but interpretable in nouns.

Firstly, it is assumed that functional heads which display overt number morphology have a `[number]` feature, while heads which do not display overt number morphology do not have this feature. In other words, it is assumed that there is a one-to-one relation between morphology and formal features. As a consequence of this assumption, since the finite verb *estava se elogiando* 'was praising himself' in (54-a) is overtly inflected for number, it is analyzed as bearing a `[number]` feature. In contrast, the gerund *elogiando* 'praising' in (54-b), because it is not overtly inflected for number, is analyzed as not bearing `[number]`. I take up this proposal and assume that the T in a *class 1* GC as that in (54-b) does not inherit a `[number]` feature.

---

[13]Propositional and perceptual GCs display the same interpretations as those of the desiderative GC in (54-b):

(i)   a.   Eu vi   aluno   se elogiando.
                I   saw student SE praising
                'I saw a student/students praising himself/themselves/each other.'
                (Ferreira, 2010, 100, (10b))
          b.   Eu imaginei aluno   se elogiando.
                I   imagined student SE praising
                'I imagined a student/students praising himself/themselves/each other.'

The assumptions and proposals I make here are compatible with these facts: the same interpretations are possible because the structure of propositional and perceptual GCs also lack φ-features, the former because its T remains empty throughout the derivation, the latter because it lacks T altogether.

The second important ingredient is that Ferreira (2010) proposes that bare singular nouns in BP are under-specified for [number]. This implies that bare singular nouns have both *atoms* and *sums* in its extension (Ferreira, 2010, 107). *Sums* are crucial for the reciprocal reading in (54-b), which, recall, can only arise in the presence of a plural antecedent. Furthemore, the overt realization of bare singular nouns is the same as that of singular nouns, which do have a [number] specification, namely, *singular*. Thus the form *aluno* 'student' can be either the realization of a bare singular noun, which is underspecified for [number], or of a non-bare singular noun, which is specified for [number].

The third ingredient is that Ferreira (2010) follows the traditional assumption that φ-features are uninterpretable in functional heads, but interpretable in nouns. It is also assumed that uninterpretable features must be deleted via Agree, otherwise the derivation crashes.[14]

As a consequence, although it is in principle possible that *aluno* 'student' in (54-a) be the noun under-specified for [number], that is, that *aluno* be a bare singular, the only possibility that allows for the derivation to converge is that *aluno* be the morphological realization of a non-bare singular noun, which does have a [number] feature (the value of this feature is *singular*). It is only in the presence of this feature that the corresponding uninterpretable feature in the finite verb (*estava* 'was' in (54-a)) can be deleted. As a byproduct of this legibility requirement (that is, the requirement that the uninterpretable [number] feature in the finite verb delete before it reaches the interfaces), the reciprocal reading of *se* cannot arise. Such a reading requires a plural antecedent, but the antecedent in (54-a) is the non-bare singular noun *aluno*, which, as mentioned, does contain a specification for this feature, the specification being *singular*. As a consequence of this mismatch (plural antecedent is required vs. only a singular antecedent is available), the reciprocal reading cannot arise. Thus, only the reflexive reading, which does not require a plural antecedent, is available in (54-a). Schematically:

(55) *Possible derivations of (54-a)*

a. ✓

```
              TP
         ┌─────┴─────┐
        DP          ┌─┴─┐
      ┌──┴──┐      T⁰   vP
  non-bare singular  │
    +num:SG         was
                  -num:SG   SE praising
```

b. *

```
              TP
         ┌─────┴─────┐
        DP          ┌─┴─┐
      ┌──┴──┐      T⁰   vP
  bare singular     │
    ⌀num            was
                  -num:_   SE praising
```
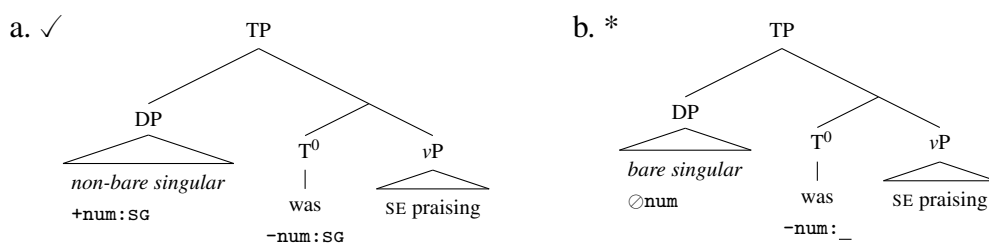
In contrast, the gerund – (54-b) – is not overtly inflected in number and thus, it does not have an uninterpretable [number] feature that must be deleted by a matching, but interpretable feature in a noun. Hence, *aluno* in (54-b) can be the realization of either a bare singular noun, which is underspecified for [number], or of a non-bare singular noun, which does indeed have a specification for this feature. The presence of a [number] feature in the non-bare singular version of *aluno* is irrelevant, as the verb, in gerund form, does not have a corresponding feature to delete. As an antecedent to SE, the non-bare singular version of *aluno* yields a reflexive

---

[14]The same assumption will be important in the feature valuation system assumed here. See section 2.2 below.

reading for SE, this reading being compatible with a singular antecedent. A reciprocal reading can also be yielded by a bare singular version of *aluno*, as a bare singular, according to Ferreira (2010), is underspecified for number, thus having both *atoms* and *sums* in its denotation. *Atoms* suffice for a reflexive reading. However, due to the presence of *sums* in the denotation of the bare singular version of *aluno*, a reciprocal reading is also available. Recall that in the embedded gerund in (54-b), unlike the embedded finite in (54-a), there is no uninterpretable [number] to delete, so that a [number]-less bare singular does not cause the derivation to crash due to undeleted uninterpretable features. This is why, under Ferreira (2010)'s analysis, (54-b) is ambiguous between a reflexive and a reciprocal reading. Schematically:

(56)   *Possible derivations of (54-b)*
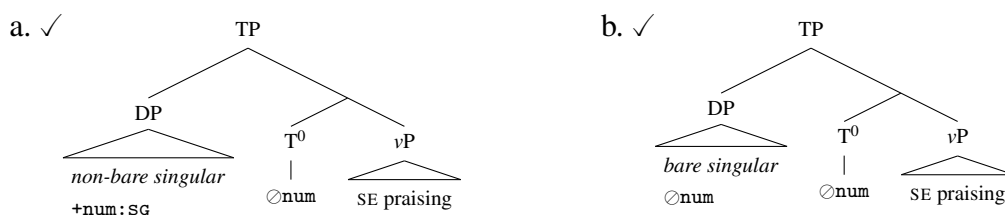
I incorporate this analysis of gerund clauses in Ferreira (2010). More precisely, I assume that *class 1* GCs lack [number].

1.5.1.2   Person feature: some remarks on the existential expletive in BP

In vernacular BP existential sentences, agreement between the existential verb and the associate seems to be optional.[15] The associate *crianças* 'children' and the verb *tinham* 'had' can agree in number, as in (57-b). However, it can also be the case that the number feature of the associate and that of the verb mismatch. This is what happens in (57-a), where the associate is plural (*crianças* 'children'), but the verb is singular (*tinha* 'had').

(57)   a.   Tinha   umas crianças no   estacionamento.
              had.SG some children in.the parking-lot
              'There were some children in the parking lot.'

              (lit.: 'There *was* some children in the parking lot.')

        b.   Tinham umas crianças no   estacionamento.
              had.PL some children in.the parking-lot
              'There were some children in the parking lot.'

The same pattern obtains when there is a GC embedded under the existential verb, as we see in (58). These are instances of what I dubbed 'existential GCs'.

(58)   a.   Tinha   crianças correndo no   estacionamento.
              had.SG children running   in.the parking-lot

---

[15]Normative grammar requires that the existential verb *ter* 'have' is always singular, but that is likely an arbitrary prescription. So much so that the same normative grammar requires that there be agreement when the existential predicate is *existir* 'exist' rather than *ter*.

'There were children running in the parking lot.'

(lit.: 'There was children running in the parking lot.')

    b.   Tinham crianças correndo no   estacionamento.
          had.PL children running in.the parking-lot
          'There were children running in the parking lot.'

However, though existential GCs are legitimate structures, they cannot be embedded under other predicates which otherwise can subcategorize for GCs. One example is an existential GC embedded under a desiderative verb.

(59)   *O João quer tendo crianças correndo no   estacionamento.
        the João wants having children running in.the parking-lot

In order to account for the agreement optionality in BP existential constructions – (57) – and the licensing – (58) – or impossibility thereof – (59) – of existential GCs, I propose that the source of grammaticality or ungrammaticality in these constructions is the licensing of the expletive, which is a null *pro* in BP. Ultimately, the discussion will bear on the presence or absence of a [person] feature in the T of GCs. More precisely, my proposal is that the existential expletive *pro* in BP is made up of the following set of features: [-Person:VAL; +Number:SG; -Case:_][16,17]. At this point, it is not possible yet to provide a more detailed derivation of the existential constructions under consideration. We will be in the position to do so as soon as the feature valuation system is introduced in section 2.2 below. A more thorough derivation of (57) will be provided at the end of that section (2.2.11), while existential GCs will be discussed in more detail in section 4.2.

For now it suffices to discuss how the features proposed for the BP existential expletive can help us capture some of the properties of existential constructions in BP, within or without the domain of GCs. First of all, let us discuss the [+number:SG] feature I propose the expletive to have. I claim that it accounts for the agreement optionality in (58). The optionality can be taken to be an effect of two different derivational paths. On the one hand, the existential verb (more precisely, T, which is the head that houses verbal inflection) can agree with the valued and interpretable [number] feature in the expletive. This yields an existential sentence where the verb is in singular form, even though the associate is plural – (57-a), (58-a). On the other hand, the existential verb could agree with the the valued and interpretable [number] feature of the associate. If it is plural, the verb will also be plural, as in (57-b), (58-b). Because the [number] feature of both the associate and of the expletive is interpretable, they do not have to be deleted and therefore, under my assumptions, they do not have to participate in an Agree relation. Thus, the existential verb can agree with either of them without causing the derivation

---

[16]The [-Case:_] feature I propose the expletive to have it not relevant for the discussion at hand. But it will be when I present a more detailed derivation of existential constructions in section 2.2.11.

[17]As we will see in section 2.2.1, I assume, following Pesetsky and Torrego (2004b), that there is no one-to-one relation between valuation and interpretability in a given feature, so a feature may well be valued and uninterpretable at the same time.

to crash, hence the optionality *effect*.

The same cannot be said of the `[-Person:3]` feature I claim the existential expletive to have. Because it is uninterpretable, even if it is valued, it must undergo an Agree relation in order to be deleted.[18] As a consequence, the `[-Person:_]` in the existential verb must agree with the corresponding feature in the expletive. Because the `[-Person:3]` in the expletive participates in an Agree relation, it can be deleted. This is what happens when this `[-Person:3]` feature in the expletive agrees with a finite verb, as in (57), (58) (regardless of there being verb-associate agreement or not).

Let us now consider a construction where the existential GC is embedded not under a finite verb, as in (58), but where it is itself inside another GC, as in (59). I propose that the ungrammaticality of (59) (as opposed to the grammaticality of (58)) is due to the absence of a `[person]` feature in the T of a GC. In the absence of a `[Person:_]` feature the expletive could agree with, the derivation is expected to crash because the uninterpretable, albeit valued, `[-Person:3]` feature in the expletive arrives at the interfaces. This expectation is borne out by facts, for (59) is indeed ungrammatical.

Furthermore, there does not seem to be any other factor causing such ill-formedness. If we take out the existential predicate from the desiderative GC, the construction obtained is grammatical – (60-a). If *ter* 'have' is used non-existentially, the result is also grammatical – (60-b).

(60)   a.   O João quer crianças correndo no   estacionamento.
            the João wants children running in.the parking-lot
            'João wants children running in the parking lot.'
       b.   O João quer a   Maria tendo um táxi esperando depois da balada.
            the João wants the Maria having a   taxi waiting   after the party
            'João wants there to be a taxi waiting for Maria after the party.'

To conclude. I provided a tentative and partial analysis for existential constructions in BP. The proposals made concerning the featural make-up of the existential expletive, along with the proposal that the T in GCs does not have a `[person]` feature played an important role in explaining the ungrammaticality of GCs constructions like (59).

1.5.1.3   Conclusion

Summing up the considerations made in the overall section, I make the following claims concerning the features in the T of a GC:

(61) T^0 *featural make-up in a GC*

       a.   There is no EPP (GC or not).
       b.   The T in a *class 1* GC does not inherit any φ-feature from C.

---

[18]As mentioned in the previous section, in the feature valuation system assumed here, as that in Ferreira (2010), deletion presupposes Agree.

    c.   The T of a *class 1* GC inherits from C `[-Case:VAL]` and `[Tense]` only.

Importantly, this section concerns only *class 1* GCs because these are the only GCs that contain both T and a C it can inherit features from. *Class 2* GCs have T, but no C, so that there is nothing T can inherit features from. *Class 3* GCs in turn do not even project TP.

1.5.2 Features of the gerund morpheme: the Case of $\{-ndo\}$

Having discussed the T features of a *class 1* GC, I now turn to the gerund morpheme itself – thus, the discussion in this section will be relevant to the GC of the three classes proposed, not just *class 1*. Taking into account the distribution of prepositions in the complement of certain GCs, I claim that this distribution can be accounted for if we propose that $\{-ndo\}$ has a Case feature to be valued (`[-Case:_]`), just like DPs do.

1.5.2.1 *Considerar como* 'consider as'

The complement to the verb *considerar* 'considerar' can optionally contain the preposition *como* 'as'.[19] The optionality seems to be governed by Case-marking, since *como* is excluded when the complement to *considerar* is a category that most likely dispenses with Case, such as PPs – (62-b) –, adjectives – (62-c) – and clauses (full CPs) – (62-d). However, *como* is optional when the complement is a DP – (62-a). For the nonce, I have no explanation for this optionality.[20] Crucially, when the complement to *considerar* is a GC – (62-e) –, *como* is obligatory. The complement to the verb *considerar* 'considerar' can optionally contain the preposition *como* 'as'.[21] The optionality seems to be governed by Case-marking, since *como* is excluded when the complement to *considerar* is a category that most likely dispenses with Case, such as PPs – (62-b) –, adjectives – (62-c) – and clauses (full CPs) – (62-d). However, *como* is optional when the complement is a DP – (62-a). For the nonce, I have no explanation for this optionality.[22] Crucially, when the complement to *considerar* is a GC – (62-e) –, *como* is obligatory.

(62)   a.   O João considera a   Maria (como) uma boa   pessoa.
                the João considers the Maria as   a   good person
                'João considers Maria (as) a good person.'

---

[19] I use the term 'preposition' for convenience only, as it is not necessarily clear that this *como* really is a preposition.

[20] Speculatively, this optionality could be related to the predicate status of the DP. However, this raises the question as to why the predicate status should be relevant for Case-marking and how this property is visible for this process at all.

[21] I use the term 'preposition' for convenience only, as it is not necessarily clear that this *como* really is a preposition.

[22] Speculatively, this optionality could be related to the predicate status of the DP. However, this raises the question as to why the predicate status should be relevant for Case-marking and how this property is visible for this process at all.

    b.   O João considera a   Maria (*como) de morrer.
           the João considers the Maria as   of to-die
           'João considers Maria to be drop-dead gorgeous.'

    c.   O João considera a   Maria (*como) inteligente.
           the João considers the Maria as   intelligent
           'João considers Maria to be intelligent.'

    d.   O João considera que a   Maria (*como) é uma boa   pessoa.
           the João considers that the Maria as   is a   good person
           'João considers that Maria is a good person.'

    e.   O João considera a   Maria *(como) sendo uma boa   pessoa.
           the João considers the Maria as   being a   good person
           'João considers Maria to be a good person.'

If *como*'s occurrence is obligatory in the GC subcategorized for by *considerar* and *como*'s occurrence is governed by Case needs, the conclusion is that there is something inside the GC that needs to be Case-marked. The question to be asked then is just what this 'something' is. There are four candidates, the GC subject (*a Maria*, em (62-e)), the copula *ser*, the gerund morpheme ($\{-ndo\}$) and the predicate (*uma boa pessoa* 'a good person'). The GC subject can be passivized – (63-a). This could be taken to be an indication that, in active sentences like (62-e), the subject is assigned accusative Case by the matrix *v*. If the predicate inside the GC is a category that does not have to be Case-marked, as we saw in (62-b) (PP) and (62-c) (AP), *como* is still obligatory – (63-b), (63-c). Finally, if we substitute the copula inside the GC with some other verb, *como* is again obligatory – (63-d). Correspondingly, we have to change *considerar* for some other verb (*interpretar* 'interpret'), as *considerar* seems to be compatible with the copula only. This change does not seem to be relevant for the issue at hand.

(63)   a.   A Maria é considerada *(como) *t* sendo uma boa   pessoa.
           the Maria is considered   as   *t* being a   good person
           'Maria is considered to be a good person.'

    b.   O João considera a   Maria *(como) sendo de morrer.
           the João considers the Maria as   being of to-die
           'João considers Maria to be drop-dead gorgeous.'

    c.   O João considera a   Maria *(como) sendo inteligente.
           the João considers the Maria as   being intelligent
           'João considers Maria to be intelligent.'

    d.   O João interpretou os dados *(como) indicando uma melhora   na
           the João interpreted the data   as   indicating a   improvement in.the
           qualidade do   ar.
           quality   of.the air
           'João interpreted the data as indicating improvement in air quality.'

Besides *como*, the element that is constant in (63) is the gerund morpheme $\{-ndo\}$. I propose thus that it is $\{-ndo\}$ that triggers the presence of *como*. In other words, my proposal is that

$\{-ndo\}$ has a Case feature to be valued.[23]

In the next section, we turn to data that is similar to what we have just seen, but now involving the verb *gostar* 'like'.

1.5.2.2 *Gostar de* 'love of'

Gostar 'like' display behavior that is similar to that of *considerar* 'consider'. Its complement can optionally include the preposition *de* 'of'. What seems to regulate this optionality is again Case. When *gostar*'s complement is a DP, *de* is obligatory – (64-a). When it is a *that*-clause, *de* is pretty much prohibited[24] – (64-b). Crucially, when the complement to *gostar* is a GC, *de* is again obligatory – (64-c).

(64)   a.   Os alunos   do   primeiro ano gostam *(de) lingüística.
              the students of.the first   year like   of   linguistics
              'The first year students like linguistics.'

        b.   Os alunos   do   primeiro ano gostam (???de) que o   professor deles dê
              the students of.the first   year like   of   that the professor of.they give
              exercício extra.
              exercise extra
              'The first year students like that their teacher assign them extra exercises.'

        c.   Os alunos   do   primeiro ano gostam *(de)o professor deles   dando
              the students of.the first   year like   of.the professor of.they giving
              exercício extra.
              exercise extra
               'The first year students like it when their teacher assign them extra exercises.'

In order to account for the distribution of *de* in the complement of *gostar*, I propose that this preposition is inserted only when a Case need arises. If no such need arises, *de* occurrence is ruled out by independent economy conditions governing the crash or convergence of a given derivation. Something along these lines hold of pairs such as the following:

(65)   a.   to grow *(of) tomatoes

        b.   the growth (*of) tomatoes

A DP is arguably a category that has a Case feature to be valued. Because a verb like *grow* is a Case-marker, the insertion of *of* is ruled out by economy: there already is a way, independent

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[23]This proposal is comparable to one that has been previously made by Reuland (1983) and, following him, Pires (2001, 2006, 2007) for some gerund clauses in English. However, the empirical motivation is quite different, for Reuland and Pires rely on the distribution of gerunds that occur necessarily in Case-marked positions. As a consequence, their proposal does not encompass absolute gerunds (high adverbials in this dissertation). In contrast, I base my proposal on the distribution of some prepositions that can occur in the complement of predicates that can also subcategorize for a GC. As we will see below, I then generalize this proposal to all GCs because the null hypothesis is that there is a single gerund morpheme (to build gerund clauses).

[24]Normative grammar requires that *de* occurs when *gostar*'s complement is a clause. However, this seems to be again an arbitrary stipulation. Still, we should ask what in the structure of *gostar*'s CP complement makes room for *de*, even if it is a stipulation. I am unable to tackle this question here.

of the insertion of *of*, to Case-mark the object DP, so that the insertion of the preposition is not triggered (in fact, it is prohibited). In contrast, nouns like *growth* are not Case-markers. *Of*'s occurrence is thus triggered. In fact, it is obligatory, since, otherwise, the DP object could not have its Case feature valued.

I claim that *de* in the complement of *gostar* behaves in the same way that *of* does in (65) because *gostar*, though a transitive verb, for some idiosyncratic reason, cannot assign Case to its complement.[25] A DP object as that in (64-a) needs to be Case-marked. As a consequence, the occurrence of *de* is triggered. This does not violate any economy condition because a Case feature can be valued by *de*. On the other hand, a *that*-clause as that in (64-b) does not seem to have a Case feature that is externally valued. Thus, *de* insertion is not triggered. If it were, an economy condition would be violated because *de*'s occurrence would be vacuous. Significantly, when the complement to *gostar* is a GC, as in (64-c), *de* is obligatory. Given the analysis put forth here, this means that there is something in a GC that must be Case-marked, thereby triggering *de* insertion.

A question that readily arises is, what is there in the GC in (64-c) that triggers the insertion of *de*? The GC subject – *o professor deles* 'their teacher' in (64-c) – does not seem to be a valid candidate because a preposition like *de* does not seem to be able to exceptionally Case-mark an argument of their argument. This can be seen in the pair below. *Gostar* can also subcategorize for an infinitival clause, provided that the subject of the clause is null – (66-a). What is more, that null subject must be correferent with the matrix subject. In other words, (66-a) is a control structure.

(66)   a.   Os alunos$_i$ do   primeiro ano gostam de *PRO$_i$* dar   exercício extras.
              the students of.the first   year like   of *ec*   to-give exercise extra
              'The first year students like to assign extra exercises.'
        b.   *Os alunos   do   primeiro ano gostam do   professor deles   dar
              the students of.the first   year like   of.the professor of.they to-give
              exercícios extras.
              exercises extra

As we will see below (chapter 6), in the analysis of control GCs, I assume the movement theory of control (Hornstein, 1999, 2003; Boeckx et al., 2010), according to which, what is traditionally taken to be *PRO* is actually a copy left by A-movement passing through more than one thematic position. Crucially, for this movement to take place, it is necessary that the moving argument have a feature to be valued, otherwise, the movement is ruled out by economy (more precisely, it violates the activation condition). Under this view of control, *os alunos* 'the students' in (66-a) is base-generated in the infinitival clause and only afterward it moves into the matrix clause. For such a movement to be legitimate, *os alunos* must not have had its Case feature valued inside the infinitival clause. This in turn means that *de* before the infinitival clause subcategorized for

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[25]Compare *gostar* to *adorar*. Both verbs mean 'like', but *adorar* is able to Case-mark its DP complement, without triggering *de* insertion (cf. *Os alunos do primeiro ano adoram lingüística* 'The first year students like linguistics').

by *gostar* in (66-a) cannot Case-mark *os alunos*, since this DP ends up in the matrix clause. If it were Case-marked inside the infinitival clause, (66-a) would be predicted to be ungrammatical, contrary to fact. As we will see below (chapter 6), in the analysis of control GCs, I assume the movement theory of control (Hornstein, 1999, 2003; Boeckx et al., 2010), according to which, what is traditionally taken to be *PRO* is actually a copy left by A-movement passing through more than one thematic position. Crucially, for this movement to take place, it is necessary that the moving argument have a feature to be valued, otherwise, the movement is ruled out by economy (more precisely, it violates the activation condition). Under this view of control, *os alunos* 'the students' in (66-a) is base-generated in the infinitival clause and only afterwards does it move into the matrix clause. For such a movement to be legitimate, *os alunos* must not have had its Case feature valued inside the matrix clause. This in turn means that *de* before the infinitival clause subcategorized for by *gostar* in (66-a) cannot Case-mark *os alunos*, since this DP ends up in the matrix clause. If it were Case-marked inside the infinitival clause, (66-a) would be predicted to be ungrammatical, contrary to fact.

That *de* cannot Case-mark the subject of the infinitival clause, that is, that *de* cannot Case-mark an argument of its argument, is further confirmed by (66-b). If that were possible, it is predicted that the infinitival subject could be an overt DP like *o professor deles* 'their teacher', a DP different from the matrix subject. This is again contrary to fact. We conclude then that *de* cannot effect exceptional Case-marking (ECM).[26]

Having concluded this, we can go back to our GC sentence (64-c). In that sentence, there does not seem to be anything that triggers *de* insertion. Specifically, the embedded subject *o professor deles* 'their teacher' cannot be a triggerer because, as just concluded, *de* is not an exceptional Case-marker. Yet, the sentence is grammatical, which implies that *de* insertion has not violated any economy condition. In order to account for the well-formedness of (64-c), I keep the proposal made in the previous section, where we discussed *considerar* 'consider' data, that the gerund morpheme {−*ndo*} has a Case feature to be valued. It is this feature that triggers the occurrence of *de*. This proposal allows us to keep the analysis of *de* in *gostar* complements as the result of a Case-triggered insertion, as well as its obligatory insertion when this verb subcategorizes for a GC.

1.5.2.3 Conclusion

In sum, the proposal I made in this section, based on the distribution of prepositions in the complement to verbs like *considerar* 'consider' and *gostar* 'love' is that {−*ndo*} must be Case-marked:[27]

(67)   *The Case of the gerund*

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[26]Given our considerations, a question readily arises: what is there in the infinitival clause in (66-a) that triggers *de* insertion? Tackling this issue is beyond my purposes here, so I leave it for future research.

[27]This is not a novel proposal (although the empirical support presented in this section, as far as I can tell, is). Reuland (1983) proposed it for English and Pires (2001, 2006, 2007) follows him. See also fn. 4 below.

The gerund morpheme {−*ndo*} bears a Case feature to be valued (i.e., a `[-Case:_]` feature), just like a DP does.

This proposal will be of particular importance when we talk about definiteness effects in existential GCs (section 4.2) and the control possibilities in adverbial GCs (chapter 6).

1.6 Conclusion

In this chapter, we saw the description of desiderative, propositional and perceptual GCs along a series of syntactic properties. Among other things, we inspected properties that I assume to be TP-dependent, namely, sentential negation and sentential adverbial licensing. We also inspected properties that I propose are phase-dependent, namely, raising, binding and QR. The description points to a three-way classification of complement GCs. More precisely, desiderative and perceptual GCs display mirroring behavior, while propositional GCs display intermediate behavior: on the one hand, propositional GCs are clustered together with desiderative GCs with respect to TP-dependent properties; on the other, they are clustered together with perceptual GCs with respect to phase-dependent properties.

In order to account for the individual properties of each of these complement GCs as well as for the way they are grouped together, I proposed that complement GCs differ in the size of their syntactic structure and that their behavior can be derived from this structure. More precisely, perceptual GCs were proposed to project the simplest structure, AspP, while desiderative GCs were proposed to project not only AspP, but also TP and CP. I attempt to capture the intermediate behavior of propositional GCs by proposing that they are similar to desiderative GCs in also projecting TP, but similar to perceptual GCs in that their topmost projections are not phases.

A description of the other GC subtypes that are analyzed in this dissertation was also provided. We saw that, for the most part, these GC can also undergo a tripartite classification. I used the taxonomical term *class 1 GC* in order to refer to desiderative and high adverbial GCs, which behave alike regarding the properties mentioned above. *Class 3 GC* was how I dubbed perceptual, existential, object control, low adverbial and adnominal GCs. Finally, the intermediate class, under the heading *class 2 GC*, comprised propositional, subject and prepositional adverbial GCs.

Each of these GC subtypes has its own particular characteristics and sometimes they display behavior that contrasts with the rest of its kin in the same class. Rather than considering that this is a counterargument to the analysis, I try to derive these specificities from extra factors governing their derivation. The challenge, which I take up in the chapters to follow, is to identify these factors and provide a uniform analysis for all GC subtypes.

Because I try to provide a syntactic derivation of the behavior of each GC, it is important to know their inner content. We concluded that the T in *class 1* GCs bears only tense and a valued Case feature. The discussion concerned *class 1* GCs only because I will also assume feature

inheritance (Chomsky, 2004, 2008). Another conclusion was that the gerund morpheme, a necessary building block in the derivation of the GCs in all three classes, bears a Case feature to be valued. These features will play crucial roles in the derivation of these constructions.

Chapter 2

Theoretical tools

In this chapter, I present the theoretical tools that I rely on to derive GCs, namely, feature inheritance (section 2.1), a particular feature-valuation system (2.2) and a hypothesis concerning the definition of syntactic domains, one that is uniformly based on phases (2.3). These are the core ingredients in the syntactic analysis of the properties of each GC subtype and of the way they are grouped in three classes. In later chapters, other elements will be added to the toolkit, namely, the movement theory of control (4.3.1), sideward movement (6.2) and a theory of temporal interpretation (chapter 7).

2.1 Feature inheritance

According to Chomsky (2008, 144), C and T work together, in the sense that the features that T is commonly taken to bear, such as φ-features, Case and even tense, are not properties T has a lexical specification. Rather these are T properties that are determined by C. In the absence of C, T would have neither φ-features or Case nor tense.[1]

Chomsky (2008) implements this C-T dependence relation through **feature inheritance**: properties such as φ-features, tense and Case are lexical specifications of C and they are transferred onto T during the derivation via feature inheritance from C to T. Chomsky (2008, 148) extends feature inheritance to v/V. Schematically:[2]

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[1]In other words, feature inheritance seems to require that T is completely devoid of features. This raises the question whether feature inheritance and its required implication that T is (at least in the beginning of the derivation) completely empty do not imply a generalized violation of the Principle of Full Interpretation. Three solutions to this problem come to mind. Firstly, it could be the case that the conceptual advantages of feature inheritance override Full Interpretation compliance (see Richards 2007). Secondly, if this principle can hold back and be verified only after C-to-T feature inheritance takes place, it may be possible that there is no violation. This solution, however, is not optimal if we assume that the computation system, in order to reduce complexity, does not hold back. Thirdly, we could claim that T may be relevant to interpretation even when empty. In Demirdache and Uribe-Etxebarria (2000, 2004, 2007), for example, an empty T plays a role in temporal computation. See chapter 7 for details.

[2]Notation used: Ph^0 is a phase head and $\neg Ph^0$, the head of Ph^0's non-phasal complement; transferred features (from Ph^0) are ~~crossed-out~~ and features inherited (by $\neg Ph^0$) are inside $\boxed{\text{boxes}}$.

(1)

```
                    PhP
             ┌───────┴───────┐
           Ph⁰             ¬PhP
            │          ┌─────┴─────┐
        ̶C̶a̶s̶e̶:̶V̶A̶L̶    ¬Ph⁰        ...
         ̶φ̶:̶=̶         │
        ̶T̶e̶n̶s̶e̶      ┌────────────┐
                   │ -Case:VAL  │
                   │ ┌────────┐ │
                   │ │ -φ:_   │ │
                   │ │ Tense  │ │
                   │ └────────┘ │
                   └────────────┘
```
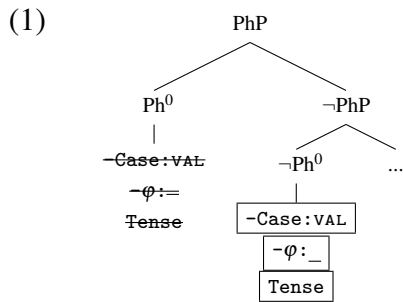
In the analysis to be advanced here, I assume feature inheritance because it allows us to anchor many of the GC contrasts on the presence or absence of CP. As seen in chapter 1, in order to capture the behavior of different subtypes of GCs, I propose that there are three classes of GCs and that the difference is in size. The biggest size of GC is CP (*class 1*) and the smallest, AspP (*class 3*). The intermediate case is GCs which contains TP, a projection above the minimum AspP, but which is not dominated by CP in this class (*class 2*). We can thus say that GCs differ as far as a CP projection is concerned.

According to the assumptions made here, two other differences fall out from this basic category contrast. First of all, I assume the traditional definition of phase, according to which, only transitive *v*P and CP are phases. Thus, only the GCs in *class 1* are phases; *class 2* (TP) and *class 3* GCs (AspP) are not phases. As a consequence of this first contrast, because I am also assuming (see section 2.3 below) that the domains for binding, QR and syntactic operations in general are phase-based, it follows that *class 1* GCs are domains for these syntactic operations, whereas *class 2* and *class 3* GCs are not. Secondly, because of feature inheritance, only Ts that are dominated by CP can bear Case, φ-features and tense. If C is absent, T does not bear any of these features, as there is nothing for them to be inherited from. The T of the GCs that project up to TP, excluding CP, have no Case, φ-features or tense. GCs of the smallest structure (AspPs) do not even have a T that could be the repository of inherited features. The consequences of feature inheritance in the analysis can be schematized as follows:

Class	Category	Phase	Feature inheritance
1	CP	✓	✓
2	TP	*	*
3	AspP	*	*

Table 2.1: Consequences of feature inheritance

2.2 A system of feature-valution

In this section, I outline the feature valuation system I assume in order to provide a derivation for each GC subtypes considered here. Throughout this section, besides presenting the system, I attempt to provide conceptual arguments supporting it.

2.2.1 Which features must be deleted?

Pesetsky and Torrego (2004b) (among others) argue that there is no principled explanation for there to be a one-to-one relation between feature interpretability and feature value. Such an assumption is taken up in Chomsky (2000, 2001). Thus, Pesetsky and Torrego (2004b) list the four logically possible feature types;[3] the only that are assumed to exist in Chomsky (2000, 2001) are (2-a) and (2-b)

(2)   a.   [+F:VAL]

        b.   [-F:_]

        c.   [+F:_]

        d.   [-F:VAL]

Following Pesetsky and Torrego (2004b), I assume that the features that must be deleted are those that do not have a value as a lexical specification, be it interpretable – (2-c) – or not – (2-b), and, in addition, those that are uninterpretable, regardless of whether they have a value – (2-d) – or not – (2-b). (On uninterpretable, but valued features, see section 2.2.8 below.) Features without a value are presumably not legible at the interfaces[4] and uninterpretable features are classified this way precisely because they cannot be interpreted at the interfaces. Implied here is the minimalist hypothesis that the computational system is designed in such a way that it complies with bare output conditions optimally.

I assume, following Chomsky (2000, 2001) that **Agree** consists of establishing a syntactic relation between a probe and a goal, such that this relation is based on a feature F, which is unvalued in the probe, but valued in the goal; the goal's value for F is copied onto the probe's F. After Agree takes place, the features involved, if they are not legible at the interfaces, are deleted. Tentatively, a conceptual motivation for the proposal that Agree is the operation through which features are "marked for deletion" is that Agree is perhaps independently needed, given the ubiquitous phenomenon of agreement. Thus, it might be feasible that the computational system capitalizes on an operation independently existent in order to implement an interface condition, that is, the need of deleting features that cannot be read there.

2.2.2 A generalized probing-based system of feature valuation

Following ideas developed in Bošković (2007) and the feature types assumed above (following in turn Pesetsky and Torrego 2004b), I assume that all the features that must be valued and deleted (i.e., features which do not bear a value, regardless of interpretability, and uninterpretable features, regardless of value) need to participate in an Agree relation for feature valuation to take place. I also assume that Agree implies probing, entailing that every feature

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[3]Notation used: '+' = interpretable; '–' = uninterpretable; 'VAL' = valued; '_' = unvalued; 'F' = a feature.

[4]This is relevant at least to the articulatory-perceptual interface/PF, as suggested by the fact that uninterpretable features, such as φ-features in a finite verb, after subject-verb agreement, can be pronounced.

that must be valued and deleted needs to act as a probe.

Potentially, a system based on generalized probing has some advantages over a system where there is asymmetry between probes and goals. In Chomsky (2000), for example, finite T and transitive v are probes and a DP, their goal. In addition, it is assumed there that for a goal to be so classified, it needs to have an unvalued/uninterpretable feature.[5] If the DP bears an uninterpretable feature, why can it not act as a probe? Besides, the asymmetric relation between probe and goal in this system (Chomsky, 2000, 2001) implies valuation as a *reflex*: the probe (T and v) has φ-features to be valued, while the goal has a Case feature to be valued. If the probe is φ-complete, as a reflex of the DP goal valuing the φ-features of the probe, its Case feature is valued. As argued in Bošković (2007), there is no principled explanation for feature valuation as a reflex, nor is there a principled explanation for the relationship between φ-features and Case.

A way of dealing with this conceptual problem is to assume that *probe* is any feature F which must be valued.[6] *Goal*, in turn, is a feature of the same type, F, inside the c-command domain of the probe, that is, in its *probing domain*. The c-command definition I assume is the following:

(3)   *C-command*
        X c-commands *Y* iff *X* does not dominate *Y*, *Y* does not dominate *X* and the first branching node that dominates *X* also dominates *Y*.

Furthermore, I assume that all syntactic operations take place at the phase level, that is, when a CP or a vP is derived.

(4)   *Timing of syntactic operations*
        All syntactic operations[7] take place at the phase level: a phase (vP or CP) is assembled by taking elements from the numeration and merging them together and only then are syntactic operations effected.

A potential conceptual advantage of the condition in (4) is that it renders the system more uniform.[8] As we will see below in section 2.3, I assume that syntactic domains, such as that for binding and that for QR, are uniformly defined in terms of phases, that is, a binding domain is phase and a quantified phrase can only raise phase by phase. It is also hinted there that syntactic operations such as Case valuation can be taken to be phase-based. Thus, the notion of phase can

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[5]Recall that, in Chomsky (2000), there is a one-to-one relation between value and interpretability.

[6]This is precisely the proposal put forth in Bošković (2007, 619), I just spell it out here in a different manner for the present purposes. In the original formulation: "I assume that the correlation between functioning as a probe and having an uninterpretable feature is a two-way correlation: just as a probe must have an uninterpretable feature, so an uninterpretable feature (i.e., an element with an uninterpretable feature) must function as a probe."

[7]By 'syntactic operations', I mean probing, Agree, feature valuation, feature deletion, copy and remerge etc. In (4), I am not considering the formation of a numeration, selection of elements from it and merging them together because these are needed to build a syntactic object (ultimately, a phase) in the first place.

[8]See, however, Bobaljik and Wurmbrand (2005), where it is argued that the domains for agreement and for A-movement are different.

perhaps be relied on to make the computational system more uniform and therefore simpler, as desirable both methodologically and conceptually.

Bringing together the considerations above regarding which features must be valued (those which do not have a value, regardless of interpretability), the way feature valuation and deletion takes place (via Agree) and the definition of probe assumed here (every feature that must be valued), the consequence is that the features $[\pm F:\_]$ – (2-b), (2-c) – are the ones considered here as probes.

In sum, these are the important definitions for the feature valuation system relied on here:

(5)   a.   *Probe*: a feature that must be valued, regardless of interpretability (i.e., $[\pm F:\_]$);

        b.   *Goal*: a feature within the probing domain of the syntactic object which bears the probe, such that it bears the same feature type of the probe, regardless of interpretability (i.e., $[\pm F:\text{VAL}]$), 'probing domain' being defined as 'c-command domain';

        c.   *Agree*: a syntactic relation between two features, one that is mediated by c-command and one where an unvalued feature (probe) c-commands a corresponding, but valued feature (goal); the value in the goal is copied onto the probe.

Schematically, probing and valuation of $[\pm F:\_]$ (an unvalued feature and therefore a probe) take place as follows:

(6)   a.
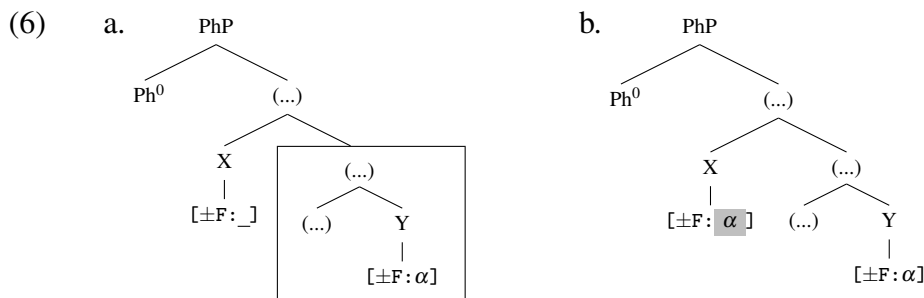
The structure in (6)-a corresponds to a phase, PhP. After the phase level is reached, syntactic operations are triggered (the c-command/probing domain of X, the syntactic object that bears the probe $[\pm F:\_]$, is in a box in (6)-a.). The probing of $[\pm F:\_]$ finds $[\pm F:\alpha]$ in Y as a goal, as it is a feature of the same type F of the probe, but it bears a value, regardless of interpretability. After Agree between probe and goal, the value α in the goal can be copied onto the probe – (6)-b.[9]

2.2.3   Feature valuation and movement: deriving EPP effects

It is generally assumed that there is correlation between (i) the Agree relation involving T and the DP that will become the subject and (ii) the movement of such a DP to [Spec, TP]. A way of

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[9]Notation used: the value copied onto probes is inside a gray box .

implementing this movement is to assume EPP as a feature that triggers movement to the Spec position of the head that bears it.

One of the goals in Bošković (2007) is to eliminate the EPP. The reason is that this feature cannot be accommodated very easily within the overall system and is therefore conceptually suspicious. One of the problems is that the EPP does not have to be valued, nor does it value a corresponding feature. As a matter of fact, there does not seem to be any feature that is comparable to EPP. Furthermore, the EPP requires movement for it to be deleted, unlike all other features, which can be valued simply by Agree at long distance. In sum, EPP is a feature like no other and it requires special mechanisms to be deleted. Thus, this raises the question as to whether it is possible to correct its exceptionality. The simplest way to do it is eliminating EPP altogether. This is precisely the strategy taken up in Bošković (2007).

Nevertheless, there must be a way of implementing movement of a subject generated inside *v*P targeting the subject position, as such a movement is empirically attested. To this end, it suffices to keep Bošković (2007)'s proposal that a probe must c-command its goal. A subject bears a Case feature to be valued; under the definitions taken up here (following Bošković 2007), a subject bears a probe. The subject needs therefore to be in a position from which it can c-command a syntactic object that bears a corresponding, but valued Case feature, a goal in the present system. This syntactic object can be a finite T, which bears nominative Case (after feature inheritance from C, according to the assumptions laid out in section 2.1). The subject then moves to [Spec, TP], the first position where the subject, which bears an unvalued Case feature, can c-command T, which bears a valued corresponding feature. This is how the EPP *effect*, that is, movement of a DP to a high position like [Spec, TP], is derived. This was done without resorting to a theoretical artifact like EPP.

What allows the movement of a subject or, in more general terms, of a syntactic object bearing a probe, is the following definition of Last Resort:

(7)   *Last Resort* (Bošković, 2007, 610)
      X undergoes movement iff without the movement, the structure will crash (with crash evaluated locally).

For convenience, I dub the movement of a syntactic object bearing a probe 'probing domain extension':

(8)   *Probing domain extension*[10]
      If a syntactic object *X*, which bears a probe (i.e., a feature [±F: _] to be valued), cannot find an appropriate goal in its initial c-command/probing domain, *X* can move to the first

---

[10]This idea bears some resemblance to the EPP as an *Extended Peeking Principle* developed in Nunes (2007). One of the differences is that, in the system advanced here, based on Bošković (2007), the motivation for movement (which has as a result the extension of a probing domain) lies in the moving element, rather than in the movement target, as in Nunes (2007). A worked-out comparison between the two systems lies outside the scope of the current research.

position where it can c-command such a goal. This movement is phase-bound (i.e., it is restricted to the domain of a phase, where syntactic operations take place).

The movement to extend a probing domain can be schematized as follows:

(9)

```
            PhP
           /   \
         Ph⁰    YP
               /  \
             Y⁰    (...)
              |      \
          [±F:α]      X
                      |
                  [±F:_]   [ ⊘F (...) ]
```
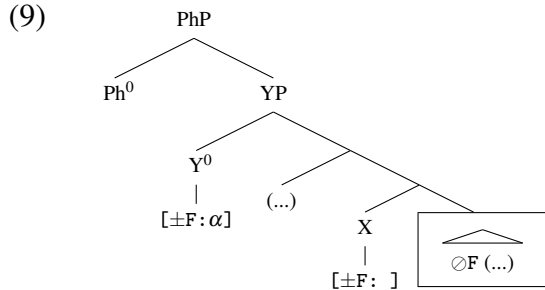
In the c-command/probing domain of the probe $[\pm F:\_]$ in X, there is no appropriate goal, as indicated by '⊘F'. According to (8), X can move – at the phase level – in order to extend the probing domain of $[\pm F:\_]$. This movement has as its target the first position inside a phase where the probe can c-command a goal.

(10)

```
            PhP
           /   \
         Ph⁰    YP
               /  \
              X    [        Y'          ]
              |           /    \
          [±F:_]        Y⁰     (...)
                         |        \
                     [±F:α]        X
                                    \
                                   ⊘F (...)
```
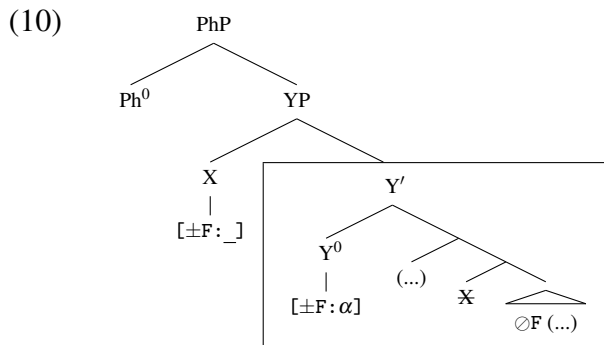
From the new position ([Spec, YP]), the probe $[\pm F:\_]$ has a new probing domain, which includes the goal $[\pm F:\alpha]$. In this new configuration, it is possible that the probe c-command its goal and then there can occur Agree between them. This results in the probe being valued as α, the goal's value (i.e., the value α of the goal is copied onto the probe). Notice that the movement of X was effected in the absence of EPP: X moved so as to extend the probing domain of the probe $[\pm F:\_]$ it bears, in accordance with Last Resort.

(11)

```
            PhP
           /   \
         Ph⁰    YP
               /  \
              X    Y'
              |   /  \
         [±F: α ] Y⁰  (...)
                   |     \
               [±F:α]     X
                           \
                          ⊘F (...)
```
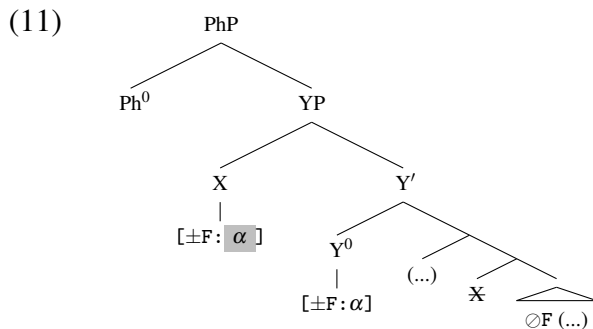
As we will see in the derivation example in section 2.2.10, that is how I implement movement to the subject position, [Spec, TP], as befits this particular instantiation of the feature valuation system in Bošković (2007).

2.2.4 Movement to escape Spell-out

Another consequence of the definition of Last Resort in (7) is that, besides licensing the movement of a probe to a position where it can c-command a goal (i.e., movement to extend a probing domain – (8)), it makes room for some movement not to necessarily result in feature valuation. It could be the case that movement takes place for the sole purpose of allowing a probe contained in a Spell-out domain to escape Spell-out before it gets the chance of being valued. If the probe stays in the Spell-out domain, it will be transferred to the interfaces unvalued, causing the derivation to crash at that moment. Schematically:

(12)   a. [tree diagram]   b. [tree diagram]
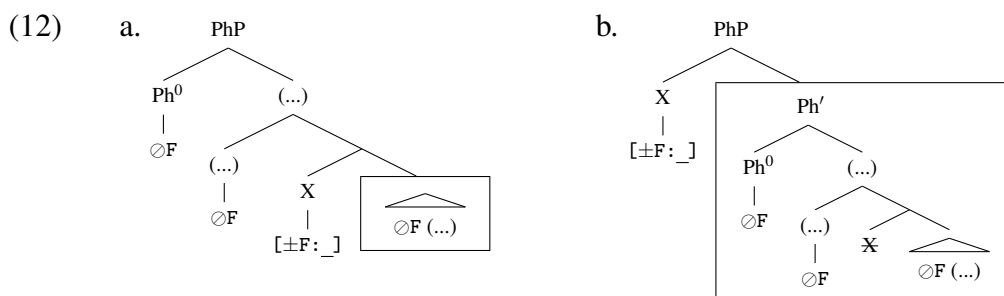
In (12)-a, the probe [±F:_] in its initial position cannot find a goal to value it. As a consequence, by Probing Domain Extension – (8) –, X is allowed to move to the first position that c-commands a goal. However, there is no such a position in (12). But if X stays where it is in (12)-a, it will be transferred to the interfaces after Spell-out is effected, as soon as the phase PhP is derived. This causes the derivation to crash at that moment. By Last Resort – (7) –, X can move to the edge of a phase because, otherwise, the derivation will crash at that moment. This movement does not have to result in the valuation of [±F:_]. In fact, after the movement in (12)-b, the extended probing domain of this feature remains goal-less. Even so, this movement is permitted because it allows the derivation not crash at this point.

2.2.5 Economy restrictions on syntactic operations: Spell-out and ordering of syntactic operations

The definition of Last Resort assumed – (7) – restricts the range of syntactic elements that can move, namely, those with a feature to be valued ([±F:_], i.e., a probe) but which cannot find a corresponding, but valued feature ([±F:VAL], i.e., a goal) in its initial c-command domain. Movement of such a syntactic object is allowed in order for it to escape Spell-out. Last Resort, in combination with Probing Domain Extension – (8) – restrict the range of possible landing sites: the moving syntactic object bearing [±F:_] must target either the edge of a phase or the first position from which it can c-command a goal.

I also assumed here that all syntactic operations take place at the level of the phase – (4) –, that is, a phase PhP is derived and all syntactic operations triggered by elements contained in PhP take place as soon as PhP is built. I assume further that Spell-out takes place immediately

after all the possible operations that could (in fact, should) take place within a given phasal domain are effected. In other words, Spell-out is never delayed. In sum:

(13)   *Timing of Spell-out*
       Spell-out is not delayed: it is effected right after the operations within a given phase have all been effected.

Speculatively, a potential conceptual argument in support for this assumption is that, if Spell-out takes place as soon as possible, there will be less material for the syntactic computation to deal with at later steps, thereby possibly reducing the computational burden. As a consequence of these assumptions, an additional restriction on movement is automatically yielded, rendering the valuation system assumed more restrictive.

In addition, it seems to be a logical possibility that more than one operation inside the same phase can be triggered at the same time. This is the case for operations triggered by different features of the same head. I propose the following condition in order to determine the ordering between them:

(14)   *Ordering between operations*
       If a given syntactic head H^0 triggers the operations OP_i and OP_j, such that OP_i can result in the deletion of imperfections, while OP_j results in introducing new imperfections in the workspace, OP_i is effected before OP_j ('imperfections' = features that must be deleted because they are not legible at the interfaces).

The underlying idea is that the computation can be simpler if it is geared towards eliminating imperfections already present in the workspace before more syntactic objects are introduced. The introduction of more syntactic objects results in extending the structure and potentially introducing new imperfections. In other words, the computational system would work in such a way that it attempts to eliminates features that cannot be read at the interfaces (= imperfections) before it can extend the structure.[11]

2.2.6   Feature valuation via mutual c-command

A consequence of the proposal that Agree depends on c-command is that **mutual c-command** (symmetrical c-command) suffices for this operation to be effected. Hence, the configuration below is one where Agree between a goal and a probe can be established.

---

[11]It is necessary to guarantee that (14) does not incur in look-ahead problems. Tentatively, this can be done by the assumption that syntactic objects always bear some feature that is not legible at the interfaces, thereby triggering the need to participate in an Agree relation. Thus, extending the structure would always imply at least one Agree operation. This Agree operation is an addition to the operations triggered by the syntactic objects previously introduced in the derivation, which, according to (14), need to be effected first. Besides, (14) goes against the idea that external merge is more economical than internal merge/movement. See, however, Chomsky (2013), where it is proposed that both are equally economical.

(15)   a.   PhP

Ph⁰   (...)

X   Y

[±F:_]   [±F:α]

b.   PhP

Ph⁰   (...)

X   Y

[±F: α]   [±F:α]
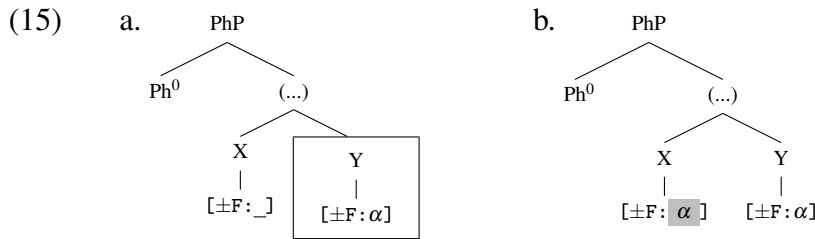
In (15), X, the syntactic object that bears the probe $[\pm\text{F}:\_]$, and Y, the syntact object that bears the goal $[\pm\text{F}:\alpha]$, are in a mutual c-command relation. Feature valuation in (15) is very similar to that in (6). The only difference is that, in (6), the c-command relation is asymmetrical, while in (15), symmetrical.

In addition, assuming Bare Phrase Structure (Chomsky, 1995a), in the resulting configuration in (11) above, we could say that there is a mutual c-command relation between X and Y, since the label of a phrase is taken to be simply one of the heads involved in the merger necessary for a new syntactic object to be formed. Hence, the node indicated as 'Y′' contains the same features as those of the head Y, from which Y′ is "projected". As a consequence, Y′, sister to the moved X, is also specified for a feature that counts as a goal to the probe in X (i.e., $[\pm\text{F}:\alpha]$). From this viewpoint, we could say that the Agree that results from movement to extend the probing domain also takes place under mutual c-command, under a broader view of this relation.

I also assume Grimshaw (2000)'s definition of **extended projection**:[12]

(16)   *Extended projection* (Grimshaw, 2000, 117, (3))

X is a *head* of YP, and YP is a *projection* of X iff:

a.   YP dominates X

b.   YP and X share all categorial features

c.   All nodes intervening between X and Y share all categorial features (where a node N *intervenes* between X and YP if YP dominates X and N, N dominates X, and N does not dominate YP),

d.   No node intervening between X and YP is lexical.

According to (16), YP in (17) below, is an extended projection of X^0: (i) YP dominates X^0; (ii) YP and X^0 share all categorial features, namely, [C]; (iii) the only node N^0 that intervenes between YP and X^0 also bears this categorial feature [C]; (iv) there is no lexical node intervening between YP and X^0.

---

[12]I would like to thank Jairo Nunes (p.c.) for the suggestion.

(17)

```
              YP
           ╱      ╲
         Y⁰        NP
         │      ╱     ╲
        [C]   N⁰       XP
              │      ╱     ╲
             [C]   X⁰       (...)
                   │
                  [C]
```
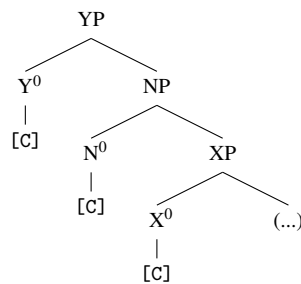
As argued by Grimshaw (2000), extended projections can be taken to be independently necessary in syntax, since otherwise, certain syntactic relations and operations could not be local. For instance, it is generally assumed that nouns are represented syntactically not just as NPs, but as DPs, regardless of there being an overt determiner or not.[13] It is also generally assumed that selection proceeds in local fashion. However, how could this local relation come to be if there were no extended projections, in other words, if DP were not an extended projection of the noun? The relation between, say, a selecting verb and the selected noun would not be local, there being a DP between them. But, with (16) in the picture, DP qualifies as an extended projection of the noun and selection can be local, as desired.

Based on the definition of extended projection in (16), I propose that, for feature valuation to take place, it suffices that the extended projection of a syntactic object bearing a probe (i.e., a [±F: _] feature) mutually c-commands a syntactic object bearing a corresponding goal (i.e., a [±F:VAL] feature).

(18)   *Feature valuation based on extended projection*
       If the syntactic object *W* bearing a goal [±F:VAL] is not c-commanded (neither mutually nor asymmetrically) by the syntactic object *X* that bears the probe [±F: _], but *W* is in a mutual c-command relation with *Y*, *Y* an extended projection of *X*, feature valuation of the probe can be effected.

Schematically:

(19)

```
                 PhP
              ╱       ╲
           Ph⁰         WP
                    ╱     ╲
            ┌──────────┐   YP
            │   W⁰     │ ╱    ╲
            │   │      │Y⁰      NP
            │ [±F:VAL] │ │    ╱    ╲
            └──────────┘[C]  N⁰     XP
                             │    ╱    ╲
                            [C]  X⁰   ┌──────────┐
                                 │    │  ⌀F (...) │
                                [C]   └──────────┘
                           [±F: VAL ]
```

---
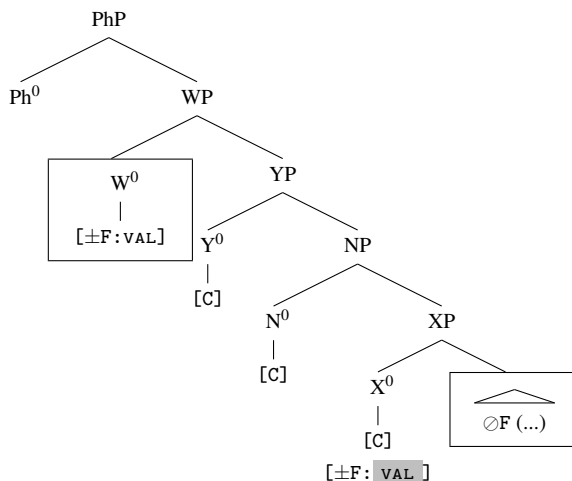
[13]See however Bošković (2014, appendix).

In (19), X bears a probe and, in its c-command domain, there is no matching, but valued feature to act as a goal, as indicated by '$\varnothing$F'. W, however, does bear such a feature and it is in a mutual c-command relation with YP. YP, in turn, by the definition in (16), is an extended projection of X: YP dominates X, they share the same set of categorial features, `[C]`, and the intervening node N between them also bears `[C]` and is not lexical. By (18), if an extended projection of the syntactic object bearing a probe mutually c-commands a goal, that is enough for the probe to be valued. Thus, in (19), the probe `[±F:_]` in X can be valued by the goal `[±F:VAL]` in W because an extended projection of X, namely, YP, is in a mutual c-command relation with W.

2.2.7 Feature valuation as a byproduct of a previous movement

There are four important ingredients in the feature valuation assumed here:

(20) a. The syntactic object bearing the probe `[±F:_]` can move to the phase edge with the sole purpose of escaping Spell-out; there is no need for the movement to result in valuing `[±F:_]` (cf. section 2.2.4);

b. Agree can be effected via mutual c-command, 'mutual c-command' relativized to Bare Phrase Structure and to Extended Projection (cf. section 2.2.6);

c. Syntactic operations can only take place at the phase level (cf. (4));

d. Spell-out takes place immediately after the operations within a given phase have all be effected (cf. (13)).

As a consequence of these ingredients, the system allows a probe `[±F:_]` to be valued as a byproduct of a c-command relation established previously in the derivation, that is, a c-command relation established for reasons independent of `[±F:_]` valuation. Let us see an example of how this could come to be. In (21), a phase, the head of which happens to bear a probe `[±F:_]`, is derived. X, which also bears `[±F:_]`, moves to the phase edge in order to escape Spell-out. This movement does not result in feature valuation, since, at this point in the derivation, there is no feature that is of the same type as that of the probes, but which is valued (i.e., there is no goal); X moves only for it to escape Spell-out, preventing the derivation from crashing at this point.

(21) a.   b.
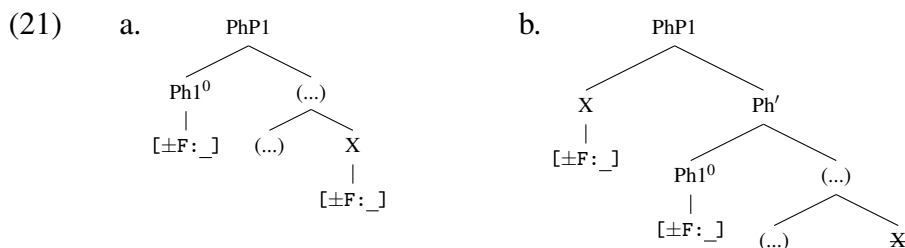
In (22) the derivation proceeds by W, which bears a feature F with value (α), merging with YP. Then, a new phase PhP2 is formed. After the derivation of a phase, syntactic operations are triggered. Since W and (a projection of) Ph1 are in a mutual c-command relation, the valued

feature $[\pm\text{F}:\alpha]$ in W qualifies as a goal for the probe $[\pm\text{F}:\_]$ in Ph1. This probe can then be valued.

(22)

```
                    PhP2
            ┌────────┴────────┐
          Ph2⁰              WP
                     ┌───────┴────────┐
                    W⁰              PhP1
                     │        ┌───────┴────────┐
                  [±F:α]      X             Ph′
                             │        ┌───────┴──────┐
                          [±F:_]    Ph1⁰           (...)
                                     │         ┌─────┴─────┐
                                  [±F: α ]   (...)         X̶
```
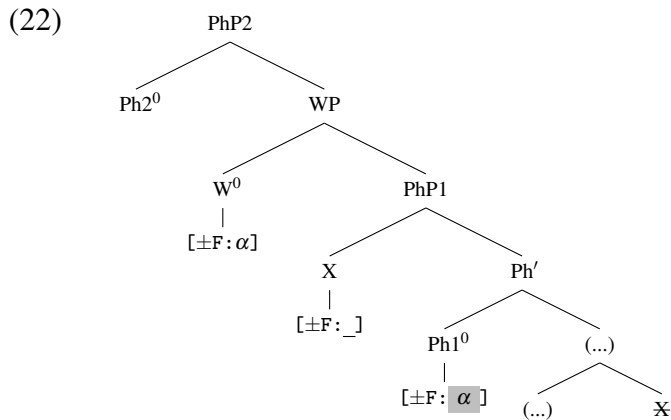
Previously in the derivation – at (21) –, X had moved to [Spec, PhP] to escape Spell-out. As a consequence of this movement, according to the assumptions made here, X and Ph1 are in a mutual c-command relation. Now that the feature F in Ph is valued, it is an appropriate goal to the probe in X (the feature $[\pm\text{F}:\_]$). This probe can now be valued as well by the corresponding feature in Ph.

(23)

```
                    PhP2
            ┌────────┴────────┐
          Ph2⁰              WP
                     ┌───────┴────────┐
                    W⁰              PhP1
                     │        ┌───────┴────────┐
                  [±F:α]      X             Ph′
                             │        ┌───────┴──────┐
                          [±F: α ]   Ph1⁰           (...)
                                     │         ┌─────┴─────┐
                                  [±F:α̲]     (...)         X̶
```
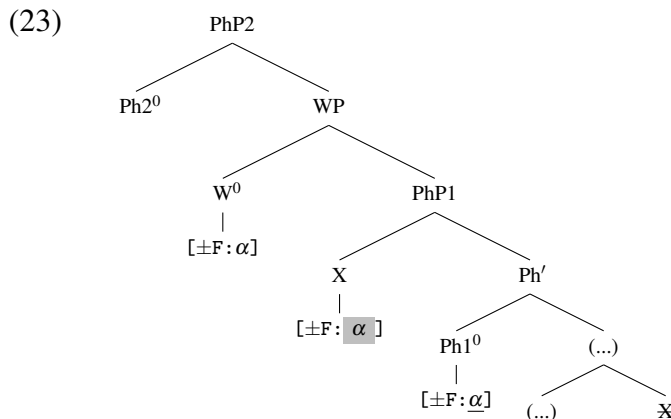
The probe $[\pm\text{F}:\_]$ in X is valued as a consequence of a c-command relation established in a previous moment in the derivation. Furthermore, it is a consequence of an operation that is not directly related to feature valuation – in the abstract case used as an illustration, it occurs in order for X to escape Spell-out.

2.2.8 Uninterpretable valued features: parasitic valuation

I assumed that unvalued features, both interpretable and uninterpretable, are probes and need to undergo Agree in order to be legitimate at the interfaces. If they are interpretable, valuation provides them with a value for them to be read at the interfaces; if they are uninterpretable, they must undergo Agree in order to be deleted before they reach the interfaces.

There is another feature type that must be deleted, namely, uninterpretable valued features

([-F:VAL]),[14] which are so classified precisely because they cannot be interpreted at the interfaces. Assuming that Agree is the only operation through which features are marked for deletion, [-F:VAL] must also undergo Agree in order to be deleted, so that they do not reach the interfaces, causing the derivation to crash.

However, under the assumptions made here, Agree is an operation through which a value is provided for an unvalued feature by a matching valued feature. Thus, it could be the case that valued features cannot trigger Agree, even if they are uninterpretable, since they already have a value. This prohibition could be economy-based: since syntactic operations are thought to be triggered only when strictly necessary, because Agree consists of providing unvalued features with a value, it would be anti-economic for features that already bear a value to trigger Agree.

If uninterpretable valued features do not trigger Agree, how can they be deleted? I make the claim here that they can take part in an Agree relation as long as it is triggered by some other feature, more precisely, a matching feature, but one that is unvalued. In other words, uninterpretable valued features can participate in an Agree relation not as the probe that triggers this operation, but as the goal of a feature that can indeed trigger it (i.e., a probe). For convenience, I dub this dependence relation necessary for [-F:VAL] features to be deleted 'parasitic valuation':

(24)   *Parasitic valuation*
         Features of type [-F:VAL], being uninterpretable, must be deleted, but cannot themselves trigger Agree because only unvalued features, by economy, can do so. The deletion of a [-F:VAL] feature is parasitic on an Agree operation triggered by a corresponding [±F:_] in an appropriate configuration.[15]

Schematically:

(25)   a.

        b.
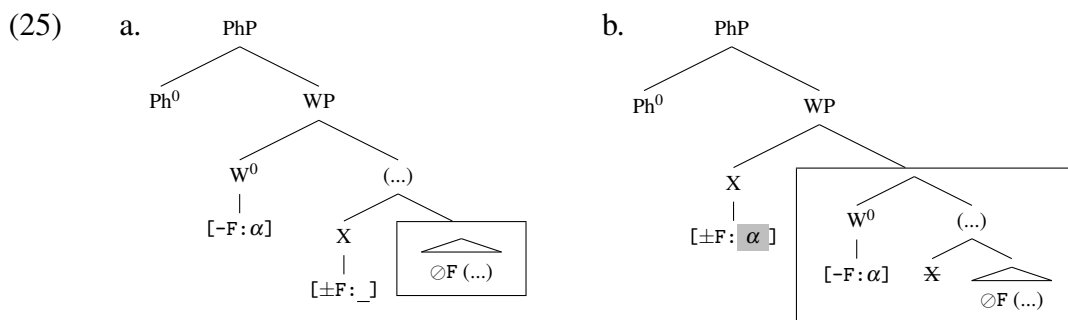
In (25)-a, X bears a probe (i.e., a [±F:_] feature). In its initial c-command/probing domain, there is no goal (i.e., a [±F:VAL] feature). Recall that this probing takes place in order for [±F:_] to be provided with a value, so that the derivation can comply with legibility conditions imposed by the interfaces. The same should be said of [-F:α] in W, which, being

---

[14]The fourth logically possible type is [+F:VAL], which does not trigger Agree nor is parasitic in any Agree relation, as it both is interpretable and has a value.

[15]By 'appropriate configuration', I mean a c-command configuration, which can be asymmetrical or mutual and, in the latter case, can be based on Bare Phrase Structure and on Extended Projection.

uninterpretable, should be deleted before it reaches the interfaces. However, by economy, a feature like $[\text{-F}:\alpha]$ could not itself trigger Agree because this operation's role is to provide a feature with a value and $[\text{-F}:\alpha]$ already has a value.

The derivation proceeds in (25)-b, where X moves in order to extend its probing domain. At this new position, the probe $[\pm\text{F}:\_]$ in X can find an appropriate goal, the feature $[\text{-F}:\alpha]$ in W. Agree between these two feature takes place, so that $[\pm\text{F}:\_]$ is provided with a value (α), as required by bare output conditions. In addition, because the feature $[\text{-F}:\alpha]$ participated in an Agree relation, it can also be deleted. Therefore, it will not reach the interfaces, where it would cause the derivation to crash. Crucially, $[\text{-F}:\alpha]$ does not itself trigger probing, Agree and deletion. $[\text{-F}:\alpha]$'s deletion is a byproduct of the Agree triggered by another feature, namely $[\pm\text{F}:\_]$ in X. Alternatively said, the deletion of $[\text{-F}:\alpha]$ is parasitic on the Agree triggered by some other feature.

2.2.9 How are features deleted?

I assume, following Chomsky (1995b) and Nunes (2004) (among others), the copy theory of movement, according to which, movement leaves behind not a trace, but a copy.

The copy theory of movement raises the following question: how are the uninterpretable features of lower copies deleted? Chomsky (1995b), for example, proposes that if a given copy of a chain is affected in a certain way, all the other copies in the same chain are affected in that way too. Thus, if the uninterpretable feature of a copy is deleted, the equivalent feature in the other copies are also deleted.

Nunes (2004, ch. 2), however, provides conceptual and empirical arguments against this proposal. Nunes (2004) then presents an alternative approach, proposing that chains must be featurally uniform – (26) – and that chain uniformization is effected via deleting the smallest number of features in the chain – (27).

(26)   *Feature Uniformity Condition* (Nunes, 2004, 70, (11))
        Given a chain CH = $(\alpha_1,...,\alpha_n)$, every α_i ($1 \leq i \leq$ n) must have the same set of features visible at LF.

(27)   *Chain Uniformization* (Nunes, 2004, 71, (13))
        Delete the minimal number of features of a nontrivial chain CH in order for CH to satisfy the Feature Uniformity Condition.

I incorporate (26) and (27) into the feature valuation system assumed here. However, recall that I assume that feature deletion is contingent on Agree. Thus, in a way similar to that envisioned in Nunes (2011), I assume that a higher copy acts as a probe in order to value the uninterpretable features of its lower copies, thereby rendering the chain uniform at LF, as required by (26).[16]

---

[16]I am indebted to Jairo Nunes (p.c.) for the suggestion.

This probing is different from what I have assumed above (see (5)), but it could be justified on Full Interpretation grounds: in the absence of this probing and of feature deletion in chains, the derivation would crash at LF. In any case, notice that no operation or relation is added to the toolkit in order to effect deletion of uninterpretable features in lower copies; all operations (probing, Agree and deletion) seem to be independently needed.

Schematically:

(28)   a.

b.
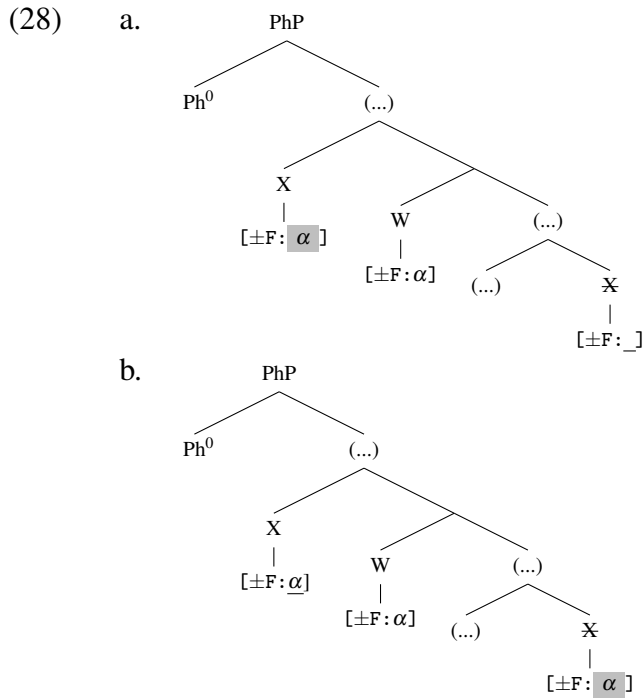
In (28-a), X bears an F feature to be valued. At the phase level, because there is no matching feature in its initial probing domain, it is free to move to extend its probing domain; it moves to the first position where it c-commands W, which bears a valued F. [±F:_] is then valued. In (28-b), the higher copy of X probes the structure searching for its lower copies in order to delete their uninterpretable features, thereby satisfying (26). Via Agree, the F feature of the lower copy can be valued and deleted too, so that the chain formed as a consequence of movement can be uniformized.

2.2.10   An example of derivation

Let us see how the system works by looking at a concrete derivation, like that for the sentence (29).

(29)   John reads books.

The derivation starts by assembling the lexical projections of *read*. At this point of the derivation, there are two probes, the φ-features of *v* and the Case feature of the DP *books*.

(30)

```
              vP
            /    \
          v⁰      VP
          |      /   \
      -Case:ACC V⁰    DP
        -φ:_    |     |
               read  books
                    -Case:_
                    +φ:VAL
```
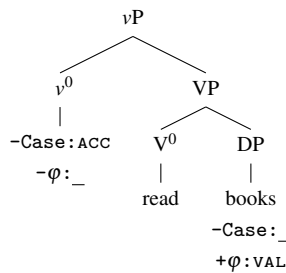
v being a phase head, a phase is assembled, so that all syntactic operations (e.g., probing, Agree, deletion etc) take place at this point. The first of these operations is feature inheritance from *v* to V:

(31)

```
                 vP
               /    \
             v⁰      VP
             |      /   \
        ̶-̶C̶a̶s̶e̶:̶A̶C̶C̶ V⁰    DP
          ̶-̶φ̶:̶=̶   |     |
                 read  books
              ┌─────────┐
              │-Case:ACC│ -Case:_
              └─────────┘ +φ:VAL
                ┌─────┐
                │ -φ:_│
                └─────┘
```
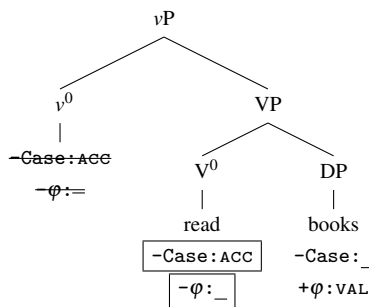
According to the assumptions made here, for feature valuation to take place, an unvalued feature [±F:_], a probe, must c-command the feature that provides the required value, [±F:VAL], a goal. Such a c-command relation can be either asymmetrical or symmetrical. In the latter case, it also suffices for an extended projection of the syntactic object bearing the probe and not this syntactic object itself to c-command the goal. After feature inheritance from *v* to V, the φ-features in V and the corresponding features in the DP *books* are in a mutual c-command relation. The same can be said of the Case feature in the DP *books* and the corresponding feature in V (arrived there by inheritance). Because of these mutual c-command relations, the φ-features in V and the Case feature in the DP, initially unvalued, can now be valued.[17,18]

(32)

```
                 vP
               /    \
             v⁰      VP
                   /   \
                  V⁰    DP
                  |     |
                 read  books
              ┌─────────┐
              │-Case:ACC│ -Case: ACC
              └─────────┘ +φ:VAL
              ┌─────────┐
              │ -φ: VAL │
              └─────────┘
```

---
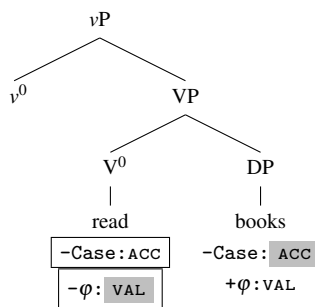
[17]To simplify the representation, transferred features are omitted from the phase head where they are engendered when they are no longer relevant for the derivation step at hand.

[18]Bringing together feature valuation based on c-command and feature inheritance can perhaps solve a potential issue in Bošković (2007) regarding accusative Case-marking in objects, as noted by Nunes (2013). If accusative Case-marking is *v*'s job and feature valuation requires c-command, then an object would always have to move to [Spec, *v*P] or, alternatively, V assigns inherent Case to the object, which can then remain in situ. Rather, if feature inheritance from *v* to V occurs first, there is no need for the object to move to be Case-valued, nor do we have to rely on generalized inherent Case.

The Case feature in v/V is valued, but uninterpretable. As a matter of fact, in the feature valuation system taken up here, this can be said of all traditional "Case-valuers", such as finite T and transitive v. Being uninterpretable, it must take part in an Agree relation in order to be deleted before it reaches the interfaces, where it would cause the derivation to crash. However, being valued, it cannot trigger Agree. This type of feature (i.e., `[-F:VAL]`) is thus parasitic on an Agree relation triggered by a corresponding, but unvalued feature (i.e., `[±F:_]`) (cf. (24)). This is possible to be attained in the derivation at hand, given the presence of a corresponding, but unvalued Case feature in the DP object. In the absence of such indirectly triggered Agree, features of the `[-F:VAL]` type would end up causing the derivation to crash. Because there was no movement for the unvalued features that came up in the derivation up to now to be valued, there is no need to carry out the operations that are necessary for chain uniformization (see section 2.2.9).

After all the operations in a given phase (here, vP) have been carried out, Spell-out is immediately triggered, in accordance with (13). Hence, the VP in (32), the c-command domain of v, the phase head, is Spelled-out, becoming inaccessible to the remaining steps in the derivation.[19]

The derivation proceeds by finishing the derivation of vP: the external argument *John* merges with v.

(33)
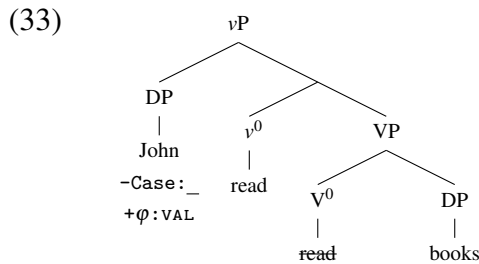
There are two syntactic operations triggered by v, feature inheritance to V and merge of an external argument. In the derivation represented above, the former takes place before the latter. This specific order for syntactic operations triggered by the same head is grounded on the computational economy condition (14), repeated below:

(34)   If a given syntactic head H^0 triggers the operations OP_1 and OP_2, such that OP_1 can result in the deletion of imperfections, while OP_2 results in introducing new imperfections in the workspace, OP_1 is effected before OP_2 ('imperfections' = features that must be deleted because they are not legible at the interfaces).

---

[19]I think this solves a problem Jairo Nunes (p.c.) pointed out to me: in (33) below, if the Case feature `[-Case:ACC]` in V remained in the derivation, that is, had it not been spelled-out in a previous step in the derivation, the subject *John* would be able to probe this feature, thereby having its Case feature valued in situ. This is empirically undesirable, as it would prevent the system from yielding subject movement to a higher position like [Spec, TP]. In addition, the prediction is that both the object and the subject of a given sentence could be simultaneously accusative. This is not the case. However, if we adopt the condition in (13) regarding the timing of Spell-out, no problem arises. I would like to thank Jairo Nunes for raising this question.

In (33), OP_1 is feature inheritance and OP_2, merge of the external argument *John*. Feature inheritance can potentially result in eliminating imperfections from the workspace, while the introduction of *John* in the derivation would only add up to the already existing imperfections in the workspace. Hence, by (34), feature inheritance from v to V takes place before the external argument of v is fulfilled.

The derivation proceeds by assembling TP and CP. CP is a phase and hence syntactic operations are triggered at this point in the derivation. The first of them is feature inheritance from the phase head C to T, C's non-phasal complement head. T, initially feature-less, via feature inheritance, comes to bear Case, φ-features and tense.

(35)
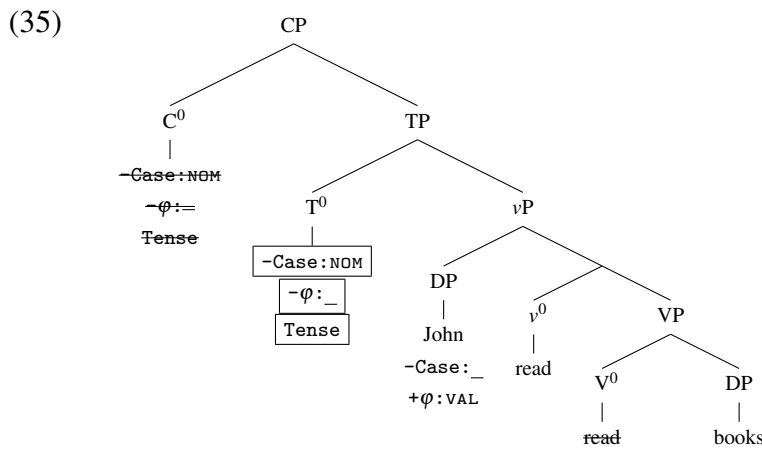
T now bears unvalued φ-features, that is, a probe. In accordance with the feature valuation system assumed, T probes its c-command domain for corresponding, but valued features, that is, a goal. This probing finds the valued φ-features in the DP *John*. The φ-features in T can then be valued.

(36)
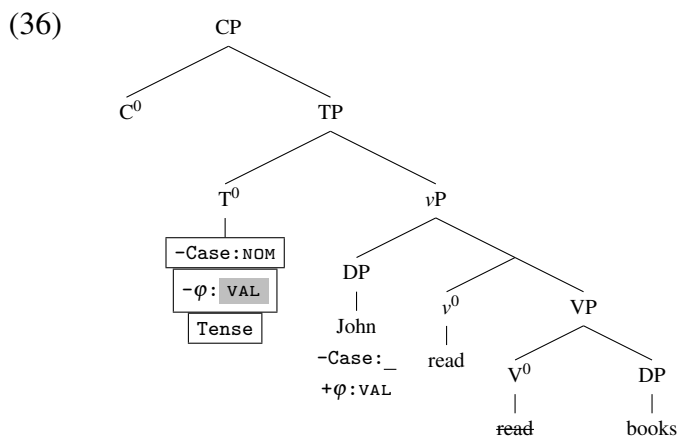
The DP also has an unvalued feature, namely, Case. Being unvalued, this feature is a probe. In its probing domain, there is no corresponding, but valued feature. By (8), repeated below, this DP can move in order to extend its probing domain.

(37)   If a syntactic object X, which bears a probe (i.e., a feature $[\pm F:\_]$ to be valued), cannot find an appropriate goal in its initial c-command/probing domain, X can move to the first position where it can c-command such a goal. This movement is phase-bound (i.e.,

it is restricted to the domain of a phase, where syntactic operations take place).

In (36), the first position *John* can move to in order to c-command a goal is [Spec, TP]. From this position, this DP can c-command T, which has a valued Case feature. According to the definitions assumed here, the valued Case feature in T is a goal. The required c-command relation having been attained (as a consequence of movement), the Case feature in the DP can be valued.

(38)
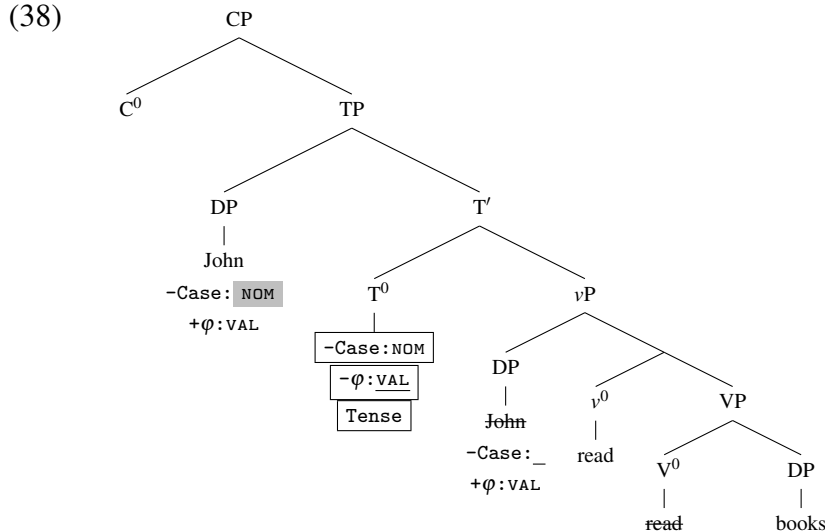
T's Case feature is valued, so that it can be an appropriate goal for the corresponding feature in *John*. However, T's Case feature is also uninterpretable. Being uninterpretable, it has to participate in an Agree relation in order to be deleted, preventing it from reaching the interfaces. However, due to economy conditions, `[-Case:NOM]` cannot itself trigger Agree. Yet, it can be deleted because it is parasitic on the Agree relation triggered by `[-Case:_]` in *John*, which can trigger Agree without violating any economy condition assumed here.

All features that cannot be read at the interfaces (either because they are unvalued or because they are uninterpretable) can be adequately deleted, so that the sentence (29), *John reads books*, can be derived.

At this point of the derivation, there was an instance of movement required to value features, that of the subject *John*. Chain Uniformization (cf. (27)) is now necessary. The highest copy of *John* probes the structure and values the Case feature in the lower copy. Having undergone Agree, the Case feature of the lower copy can be deleted, just like that of the higher copy. As a consequence, the chain formed by the movement of this DP can be uniform at LF.

(39)
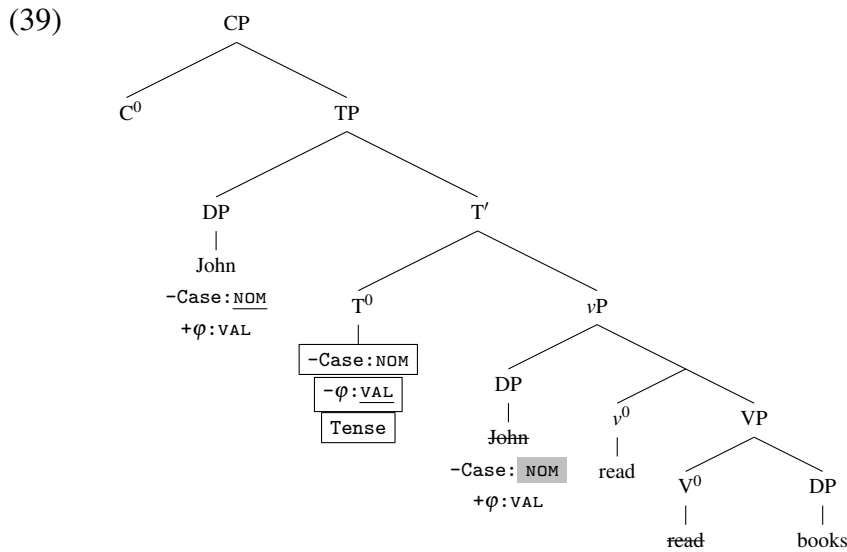
In this section, the basic workings of the feature valuation system assumed was illustrated. The same system underlies the derivation of all GC subtypes inspected in this dissertation. In the next section, further illustration is provided by existential constructions in BP.

2.2.11 Another example: the derivation of existential constructions

As previously mentioned (section 1.5.1.2, data in (57), p. 38), the verb in existential constructions can optionally agree with the associate.

(40) a. Tinha umas crianças no   estacionamento.
       had.SG some children in.the parking-lot
       'There were some children in the parking lot.'

       (lit.: 'There was some children in the parking lot.')

    b. Tinham umas crianças no   estacionamento.
       had.PL some children in.the parking-lot
       'There were some children in the parking lot.'

Having outlined the system of feature valuation I rely on in this dissertation, I can finally show the derivation of the sentences in (40). We will pay attention particularly to the optionality mentioned. The discussion will also help us see better how the system works.

We start with the existential construction where there is verb-associate agreement, (40-b).[20] The derivation begins by merging together *some children* and the existential predicate *have*. (English words are used for convenience.) As we will see in section 4.2, I assume Belletti (1988)'s analysis for definiteness effects in existential constructions, whereby they are a consequence of the existential predicate assigning partitive Case to the associate. Definiteness effects arise because partitive Case can only be taken up by indefinite nouns. I assume this analysis

---

[20]In the discussion to follow, I omit the representation of *no estacionamento* 'in the parking lot' for simplification purposes. A fuller discussion of existential constructions and the status of this PP falls outside the scope of this dissertation.

here and, in addition, that partitive (PRTV) Case, being and instance of inherent Case, does not have to hold up until the phase level in order to be assigned.[21]

(41)

```
                    VP
                 ╱      ╲
              V⁰          DP
              │         ╱    ╲
            have    some children
                    -Case: PRTV
                    +P:3; +N:PL
```
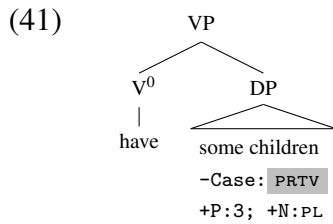
The derivation proceeds by forming TP and then CP. I assume, following Bošković (2007, 603), that *pro* is inserted right in the position that becomes [Spec, TP].[22] Recall that the features I propose for the existential expletive are [-P(erson):3; +N(umber):SG; -Case:_]. Because a phase level (CP) has been reached, syntactic operations are triggered at this point. The first of them is feature inheritance from C to T.

(42)

```
                            CP
                        ╱        ╲
                     C⁰             TP
                     │            ╱    ╲
                 -Case:NOM      pro        
                 -P:—; -N:—   -Case:_
                  Tense      -P:3; +N:SG
                                  ╱    ╲
                               T⁰          VP
                               │         ╱    ╲
                           -Case:NOM    V        DP
                           -P:_; -N:_   │      ╱    ╲
                             Tense    have  some children
                                          -Case:PRTV
                                          +P:3; +N:PL
```
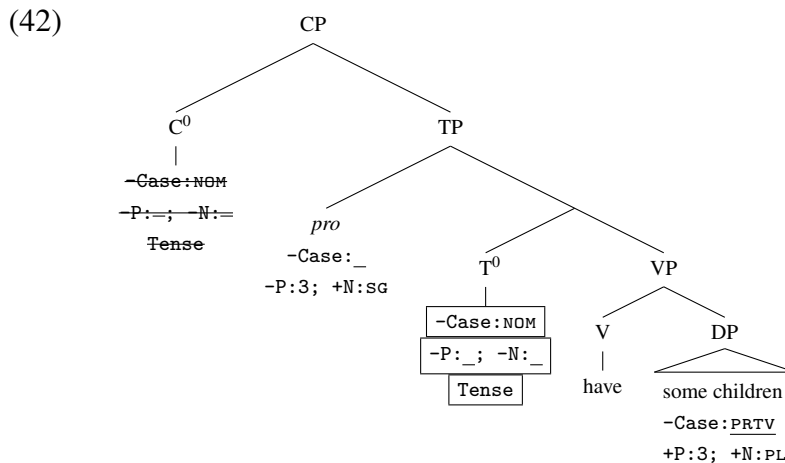
Suppose φ-features can probe the structure individually, rather than as a bundle.[23] The number feature in T probes T's c-command domain and finds the valued φ-features in the associate *some children* as a goal. [N:_] in T is then valued as *plural*.

---

[21]In the representations to follow, instead of bundling up the φ-features of a DP like *some children*, I represent [Person] and [Number] separately because this will be relevant for the computation at hand.

[22]Other possibilities (e.g., *pro* is based-generated in a lower position and only afterwards it moves to [Spec, TP], as in Hornstein (2000), for example) are not discussed.

[23]When the verb agrees with a single nominal, there is no difference, but, as far as I am aware, there does not seem to be a clear reason why φ-features cannot function separately.

(43)

```
                        CP
                 _____/ _____
               C⁰                TP
                          _____/  _____
                        pro                \
                      -Case:_          ____ \____
                     -P:3; +N:SG     T⁰          VP
                                            ____/  \____
                                ┌──────────┐ V          DP
                                │-Case:NOM │ |       __/  \__
                                ├────────┬─┤ have   some children
                                │-P:_; -N:│PL│       -Case:PRTV
                                └────────┴─┘         +P:3; +N:PL
                                 ┌──────┐
                                 │Tense │
                                 └──────┘
```
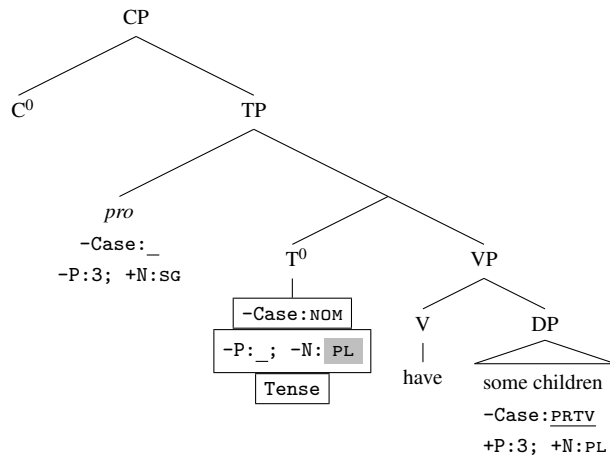
I also propose that the expletive has a Case feature to be valued. It probes its c-command domain and finds the nominative Case feature in T as a goal. This allows the Case in T, which is valued, but uninterpretable, to parasitically participate in an Agree relation and therefore delete.

(44)

```
                        CP
                 _____/ _____
               C⁰                TP
                          _____/  _____
                      pro                 \
               ┌──────────┐           ____ \____
               -Case:│ NOM │        T⁰          VP
               └──────────┘                ____/  \____
                -P:3; +N:SG    ┌──────────┐ V          DP
                               │-Case:NOM │ |       __/  \__
                               ├────────┬─┤ have   some children
                               │-P:_; -N:│PL│       -Case:PRTV
                               └────────┴─┘         +P:3; +N:PL
                                ┌──────┐
                                │Tense │
                                └──────┘
```
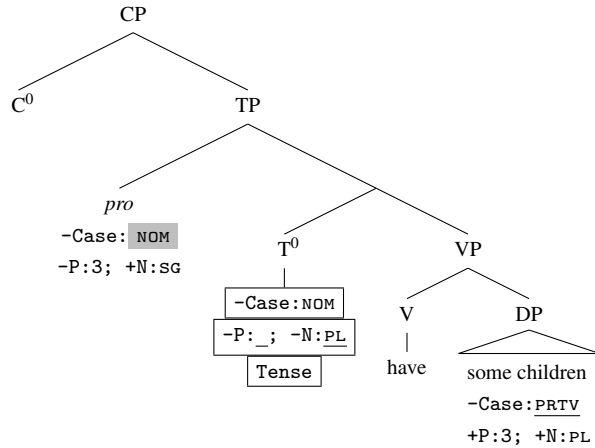
Recall that another way of construing an Agree like that between *pro* and T for Case is that *pro* does not asymmetrically c-command T, but rather *symmetrically*. This is so if we assume Bare Phrase Structure, according to which T′ contains all the features the head of the phrase "projected" does. Under this view, *pro* and T′ are in a mutual c-command relation, which allows the Case feature in *pro* to be valued all the same. Because this is mutual c-command, it also allows T's person feature to be valued by the corresponding feature in *pro*. As a consequence, the [-P:3] feature in *pro* can also parasitically participate in an Agree relation and then delete, as required by interface conditions.

(45)

```
                        CP
                   ┌─────┴──────┐
                  C⁰            TP
                          ┌──────┴───────┐
                         pro             ┌──────┴──────┐
                    -Case:NOM           T⁰            VP
                    -P:3; +N:SG      ┌────────┐    ┌───┴────┐
                                     -Case:NOM     V        DP
                                     -P: 3 ; -N:PL │
                                        Tense     have   some children
                                                       -Case:PRTV
                                                       +P:3; +N:PL
```
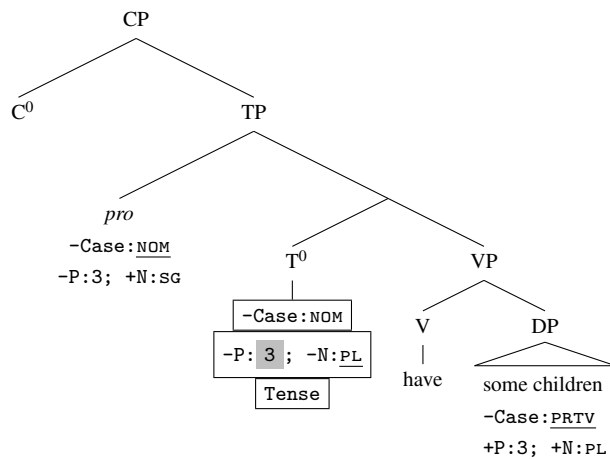
The derivation converges because all ineligible features were deleted. The verb surfaces in plural form – *tinham* 'had' (plural) – in (40-b) as a consequence of having had its number feature valued by the plural associate *some children*.

Two comments are in order. Firstly, in principle, the person feature in T could have been valued via T asymmetrically c-commanding the associate, just as its number feature was. However, if that had been the case, [-P:3] in *pro* could not parasitically participate in an Agree relation and hence would arrive undeleted at the interfaces, where it would cause the derivation to crash. Secondly, T could indifferently agree with *pro* or with the associate for its person feature to be valued. This would be so because none of the potential goals intervene between T and the other potential goal. Let us assume that intervention is calculated in terms of c-command:

(46)   *Intervention*
        β intervenes between α and γ if α c-commands β and β c-commands γ.

There is no such a c-command relation between *pro*, T and the associate, so that T agreeing with *pro* is not blocked by the associate and vice-versa and the two options are equally legitimate. Nevertheless, only one of them leads to convergence, namely, the option where the person feature in T is valued by the matching feature in *pro*. This is so because the person feature I propose the expletive to have is uninterpretable, even though it is valued. Under the assumptions made here, this means that it must partake in an Agree relation in order to be deleted before it reaches the interfaces. By economy, this can only be done parasitically, that is, by the unvalued person feature in T triggering that Agree relation. If T agrees with the associate to value its person feature (again, by itself, a legitimate option), the valued, but uninterpretable person feature in *pro* cannot be deleted. As a result, this derivational option, though legitimate *at the point* when it is to take place, does not ultimately lead to convergence, due to independent reasons.

But there is one other derivational path that does lead to convergence. At the end of the derivation just outlined, the existential predicate ends up pronounced as *tinham* 'had' (plural) because the number feature in T was valued by the plural associate. That is the derivation for the verb-associate agreeing sentence in (40-b). Let us now turn to the case where the verb-associate

mismatch, (40-a).

The derivation is pretty much the same, except that *pro* values not only the person feature in T, but also its number feature. I proposed that the expletive bears a `[+N:SG]` feature. If the number feature in T agrees with it, the result is that the existential predicate ends up pronounced as singular, *tinha* 'had' (singular). If T does not agree with the associate in number, there is no effect to the convergence of the derivation because all φ-features in a DP like *some children* are valued and interpretable. In other words, these are features of the `[+F:VAL]` type, which do not have to trigger Agree (because they already have a value) nor parasitically depend on an Agree relation triggered by some other probe, for they are interpretable. Hence, it is irrelevant to the φ-features in a DP to participate in an Agree relation. Consequently, if T in the existential construction under consideration does not agree with them, there is no effect to the convergence of the derivation. The same can be said of the number feature in *pro*, which is also an instance of a `[+F:VAL]` feature. In (40-a), T agrees with the expletive, yielding the mismatching pattern. However, in (40-b), there is no agreement between T and *pro* in number features. This does not have effects to convergence because `[+N:SG]` in the expletive is legible by itself, regardless of Agree.

In sum, the proposals made here, along with the feature valuation system devised, allow us to provide an account of quite an interesting property of existential constructions in BP, namely, the possibility of the existential verb agreeing or not agreeing with the associate (in number). The discussion also allowed us to get a better glimpse of how the feature valuation system assumed works.

2.3 A uniformly phase-based definition of syntactic domains

Besides feature inheritance and the feature valuation system outlined in the previous section, I will base the analysis of GCs on a uniformly phase-based definition of syntactic domains. As seen in the previous section, in the feature valuation system assumed here, phases play an important role, since I assume all syntactic operations to take place within a phasal domain. This is stated in (4), repeated below.

(47)   All syntactic operations take place at the phase level: a phase (*v*P or CP) is assembled by taking elements from the numeration and merging them together and only then are syntactic operations triggered.

I now move the phase-dependence of the computational system up one notch and propose that not only all syntactic operations, but also all syntactic relations are defined in terms of phases. In other words, I hypothesize that all domains relevant to syntax are phasal.

(48)   *Phase-based domain uniformity hypothesis*
         All syntactic domains are defined in terms of phases.

From a conceptual point of view, a potential advantage of defining all syntactic domains in terms of phases is that this could render the system more uniform and therefore simpler. (See, however, fn. 8, p. 51.)

Below, I discuss two types of domains that will be relevant for analyzing GCs, namely, the domain for binding and that for quantifier raising (QR). Recall from chapter 1 that, along with raising (or, more generally, Case-marking), these are some of the empirical hallmarks of the distinction between GC classes:

Class	Raising	Anaphor	Scope
1	*	*	*
2	✓	✓	✓
3	✓	✓	✓

Table 2.2: The clustering of GCs: phase-dependent properties

As the table shows, binding, QR and Case-marking divide GCs in two groups, one that includes *class 1* GCs only and another that includes both *class 2* and *class 3* GCs. If each of the GC classes has its own category (namely, CP, TP and AspP), why are they clustered the way they are? A uniformly phase-based analysis could account for this particular organization. GCs that are CPs are also phases, so that, according to the assumptions made here, they should also be domains for binding, QR and syntactic operations such as Case-valuation. GCs that are either TPs or AspPs are not phases (under the definition assumed here) and therefore, they should not count as domains for the properties mentioned. A contrast is therefore expected. In the remaining chapters, I show how they can be derived. First of all though, I make precise my assumptions about binding and QR domains. Case-marking falls under the condition on the timing of syntactic operations (47).

2.3.1 Binding domain

I assume the binding theory in Chomsky and Lasnik (1993) and, by (48), that *domain* in (49) is the smallest phase that contains the anaphor or pronoun:

(49)   a.   *Principle A*: if α is an anaphor, interpret it as correferential with a c-commanding phrase in its domain.

           b.   *Principle B*: if α is a pronoun, interpret it as disjoint from every c-commanding phrase in its domain.

           c.   *Principle C*: if α is an R-expression, interpret it as disjoint from every c-commanding phrase.

I also assume the null hypothesis that copies of a moved phrase bear exactly the same features of such a phrase (see Nunes 2004) and therefore a copy can count as an antecedent for an anaphor

or a pronoun.[24]

Let us see the basic workings of this phase-based binding theory for the binding of an anaphor – (50) – of a pronoun – (51). (I think Principle C is more straightforward, so it is not considered here.)

(50)   a. $John_i$ hurt $himself_{i/*j}$.

b.
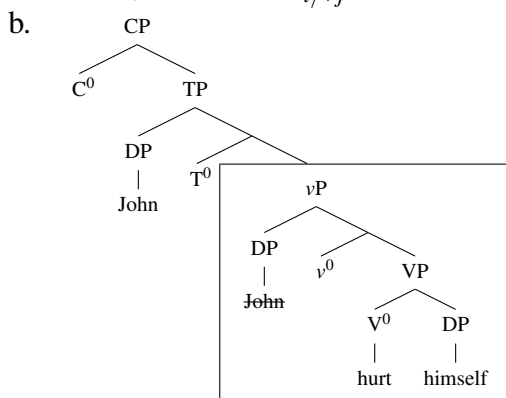
In (50), vP is the smallest phase that contains *himself* and therefore it is the binding domain of this anaphor. (Here, the binding domain is represented in a box.) According to (49-a), *himself* must be interpreted as correferential with a c-commanding phrase in this domain. The only candidate in (50) is a copy of *John*. Since, in accordance with the null hypothesis mentioned above, copies can count as antecedents, *himself* is interpreted as correferent with *John*.

(51)   a. $Paul_j$ said that $John_i$ hurt $him_{*i/j/k}$.

---

[24]Independent empirical evidence for this claim can perhaps be taken to be provided by Thompson (2001, 2005)'s analysis for the temporal interpretation of subject gerundive relatives (see sections 4.5 and 7.3). These constructions can be interpreted either as temporally independent (i.e., they are ordered with respect to the utterance time) – (ii-a) – or as dependent on the time of the event of the matrix clause – (ii-b).

(i)   A passenger waiting for flight 307 complained to the flight attendant.
          (Thompson, 2001, 291)

(ii)   a.   Event of gerund (waiting) is interpreted as occurring at time of matrix Event (complaining).
        b.   Event of gerund (waiting) is interpreted as occurring at time of Speech.
          (Adapted from Thompson 2001, 291)

Thompson (2001, 2005) argues that the independent reading is obtained if the subject gerundive relative is interpreted in the position where it is pronounced, [Spec, TP], and the dependent reading, if it is interpreted in its base position, [Spec, VP]. This seems to presuppose that copies of a moved element should all count as equivalent in temporal computation. This is the null hypothesis under the copy theory of movement.

b.

```
            CP
          /    \
        C⁰      TP
              /  |  \
            DP   T⁰   vP
            |        /   \
           Paul    DP    v⁰   VP
                   |          /  \
                  P̶a̶u̶l̶      V⁰    CP
                           |     /  \
                          said  C⁰   TP
                                |   /  \
                               that DP  T⁰  ...
                                    |
                                   John
```

(boxed)
```
            vP
          /    \
        DP     v⁰    VP
        |           /   \
       J̶o̶h̶n̶        V⁰    DP
                   |     |
                  hurt   him
```
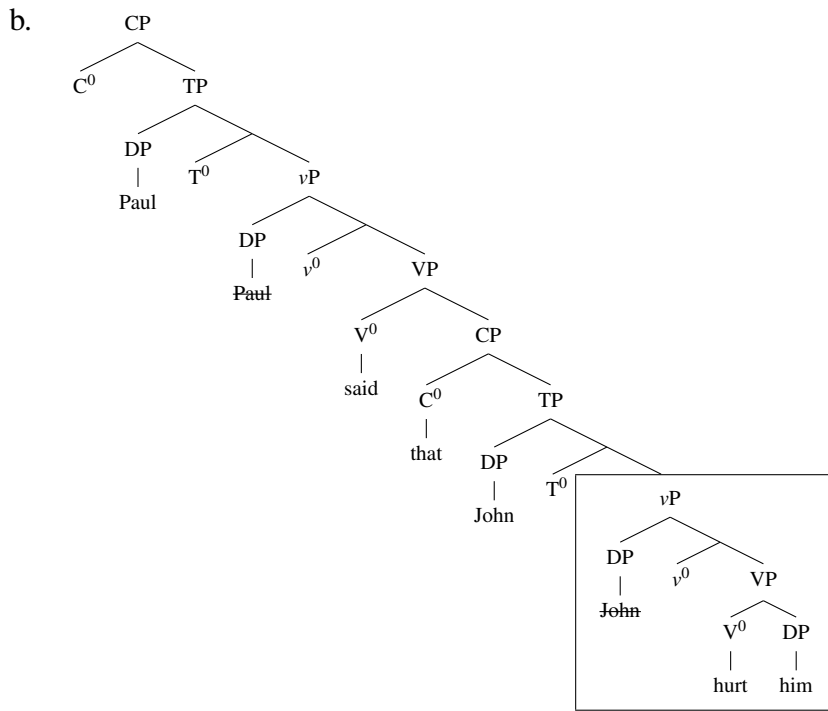
In (51), the smallest phase that contains *him* is the most embedded *v*P, which counts as the binding domain for this pronoun. According to (49-b), *him* has to be interpreted as disjoint from every c-commanding phrase in this domain. The only relevant c-commanding phrase in (51) is a copy of *John*. Hence, *him* cannot take *John* as its antecedent. This correctly captures the binding properties of the pronoun.

2.3.2 Quantifier raising domain

According to Wurmbrand (2013), QR is restricted both by semantic economy and by phases. That QR is restricted by semantic economy means that it is allowed only when it results in extending the scope of the quantificational phrase (QP). QR is also restricted to phase edges. Thus, when a QP moves, it must target a [Spec, PhP] position, PhP a phase. Schematically:

(52)   a. ✓
```
        PhP
      /     \
    QP      Ph⁰   (...)
                 /    \
              (...)   ... Q̶P̶...
               |
               OP
```
   b. *
```
        PhP
      /     \
    QP      Ph⁰   (...)
                 /    \
              (...)   ... Q̶P̶...
               |
              ⊘OP
```
   c. *
```
        XP
      /     \
    QP      X⁰   (...)
                /    \
             (...)   ... Q̶P̶...
```
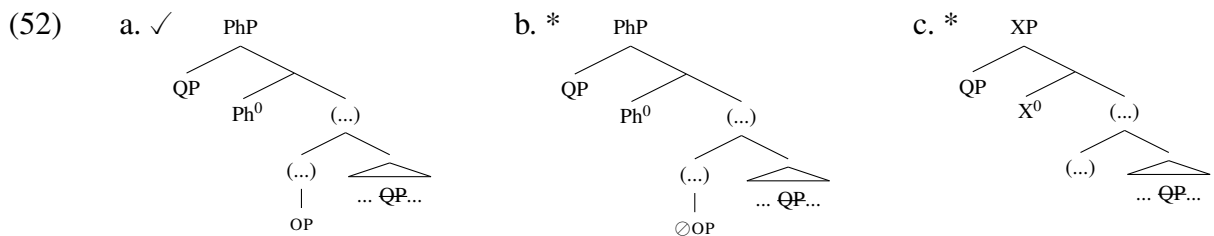
In (52)-a, the QP, in its initial position, does not take scope over the operator OP, as the former does not c-command the latter. QP then moves to the phase edge and, from this new position, it can take scope over OP. Thus, this instance of QR is semantically legitimate, since it results in extending QP's scope. In addition it is also phase-bound. In (52)-b, QP's movement is restricted to a phase too. However, between the position the QP departs from and the position it targets (the phase edge), there is no operator (annotated as '⊘OP'). Thus, this instance of QR

is excluded because it is semantically vacuous. In (52)-c, QP moves to a position that is not a phase edge (XP in (52)-c is not a phase). Since this movement is not phase-restricted, it is excluded, regardless of whether or not QP's scope is extended.

2.4   Conclusion

In this chapter, we took a look at our toolkit. The main focus of the chapter was the way I assume the computational system works. I tried to provide conceptual support for this system, based on minimalist hypotheses about the language faculty. This system, along with some idiosyncratic properties of certain lexical items, will be instrumental in accounting for the particular properties of each GC subtype inspected in this dissertation. Another tool was feature inheritance, which will be of particular relevance in the derivation of *class 1* GCs and in distinguishing it from the other two classes. The GCs belonging to this class are the only ones that project CP and therefore the only ones whose TP projection can inherit features. Finally, I hypothesized that all syntactic domains are uniformly phase-dependent. This conceptually elegant proposal will be important in the derivation of the contrasts between the GC classes regarding raising, binding and QR.

Chapter 3

Class 1 GCs

We now have adequate instruments to analyze each GC subtype in turn. We begin by *class 1* GCs. This class includes desiderative – (1-a) – and high adverbial – (1-b), (1-c) – GCs.

(1)   a.   O João quer/preferiu   os filhos não soltando nenhum pio durante o jantar.
           the João wants/preferred the sons NEG releasing no-one chirp during the dinner
           'João wants/preferred his children not to say a single word during dinner time.'

        b.   O João terminando o trabalho mais cedo, a   Maria vai ficar   contente.
           the João finishing   the job   more early the Maria goes to-get happy
           'If João finishes his job earlier, Maria will get happy.'

        c.   Terminando o   trabalho mais cedo, o   João ficou contente.
           finishing   the job   more early the João got   happy
           'Because he finished the job earlier, João got happy.'

In this chapter, a step-by-step derivation of desiderative GCs will be provided. I defer the derivation of high adverbial GCs until chapter 6 because I think it is more productive to compare the different subtypes of adverbial GCs and their control properties (or lack thereof). The particular behavior of each GC subtype in *class 1* will be shown to fall out from the derivation outlined, together with the proposals and assumptions in our toolkit (see chapter 2). The properties of the behavior of GCs that I try to explain in the next sections are the following:

GC subtype	ILP	Negation	Adverbial	Raising	Anaphor	Inverse Scope
Desiderative	✓	✓	✓	*	*	???
High adv	✓	✓	✓	–	*	–

Table 3.1: Behavior of *class 1* GCs

Before we get to the derivation proper, I show in the next section the consequences of proposing that *class 1* GCs are CPs and of assuming feature inheritance (see section 2.1). The result is an approach based on self-sufficiency for Case.

3.1 Self-sufficiency for Case

I proposed in chapter 1 that a way of accounting for the similarities and differences between GC subtypes is to group them in three different classes such that the difference is in category and size. Specifically, I proposed that *class 1* GCs are CPs, *class 2* GCs, CP-less TPs and *class 3* GCs, the bare minimum AspP I take to be necessary to build a GC. In addition, in chapter 2, I incorporated feature inheritance (Chomsky, 2004, 2008) into the toolkit. The conceptual motivation provided was that it renders the system more uniform and thereby possibly simpler. Feature inheritance brings the phase heads C and transitive *v* closer because they are uniformly proposed to be the heads that are lexically specified for [-Case:VAL] and [-φ:_] (C also bears [Tense]). It is only during the derivation that these features are transferred to the head of the non-phasal complement to C and *v*, respectively, T and V.

As a consequence of (i) the syntactic category-based, three-way classification of GCs and of (ii) the incorporation of feature inheritance to our system, only *class 1* GCs undergo feature inheritance: these are the only GCs that project both CP and TP. *Class 2* GCs project TP, but there is no C where features can be generated and then derivationally passed onto T. Finally, *class 3* do not even project TP, so that C-to-T feature inheritance is out of question. Consequently, only the T in a *class 1* GC can inherit [-Case:VAL], [-φ:_] and [Tense]. Recall though that we concluded in section 1.5 that T in a GC is defective (where it is present and where it is dominated by CP). More precisely, I made the following claim about the featural make-up of a T in a *class 1* CG:

(2) a. There is no EPP (GC or not).
     b. The T in a *class 1* GC does not inherit any φ-feature from C.
     c. The T of a *class 1* GC inherits from C [-Case:VAL] and [Tense] only.

According to the feature valuation system assumed here, the valued Case feature the T inherists from C in a *class 1* GC can act as a goal to [-Case:_] probes.

In addition, I proposed, in order to account for the distribution of prepositions in the complement of certain GC-taking predicates, that the gerund morpheme has a Case feature to be valued:

(3) The gerund morpheme {−*ndo*} bears a Case feature to be valued (i.e., a [-Case:_] feature), just like a DP does.

If the appropriate c-command relation obtains, the [-Case:VAL] feature T inherits could be a goal to the [-Case:_] in {−*ndo*}. The Case that the subject of the GC arguably bears could also take this feature as a goal, again, provided that the adequate configuration for feature valuation is attained. That is precisely what I claim to be the case: in a *class 1* GC, both a phasal CP and TP are projected. This C is lexically specified as bearing a [-Case:VAL] feature (along with [Tense]). This feature, during the derivation, is inherited by T. The presence of

this feature allows all instances of [-Case:_] inside a *class 1* GC to be valued within the GC structure itself. That is why I now dub *class 1* GCs **self-sufficient for Case**: they contain all the resources necessary to value their own Case features, so that they do not depend on any external Case-valuer. As a matter of fact, a *class 1* GC/a GC that is self-sufficient for Case, being a phase (CP), is impervious to external Case goals. Schematically:

(4)   *Feature inheritance and self-sufficiency for Case in* class 1 *GCs*
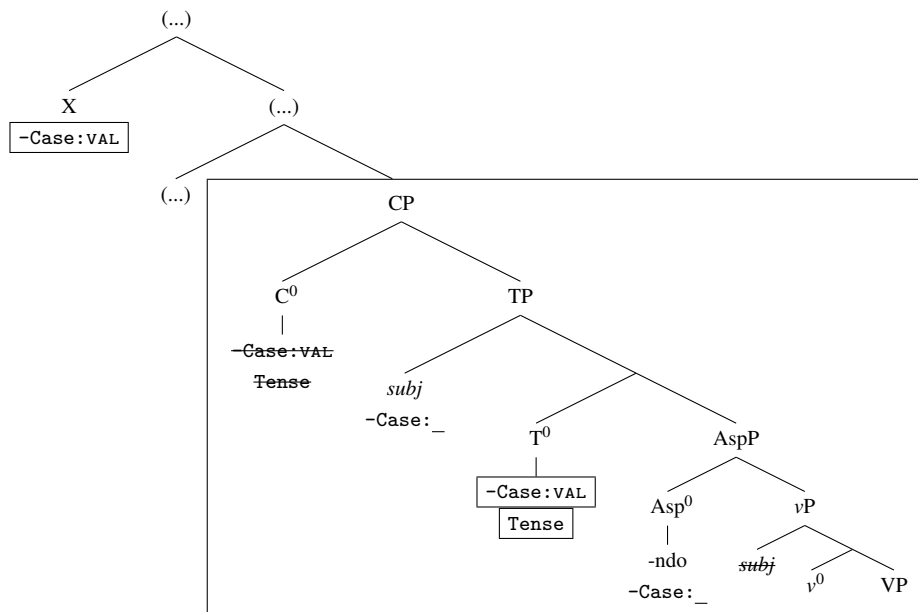
The GC in (4) is a CP. During the derivation, the [-Case:VAL] and [Tense] features base-generated as a lexical specification in C are inherited by T. My proposal is that the valued Case feature inherited is responsible for the Case-valuation of the gerund morpheme and of the GC subject. Due to the presence of this inherited feature, the GCs of this class do not have to depend, in fact, cannot depend on any external Case-valuer, hence the name 'GC self-sufficient for Case'.

In contrast, *class 2* and *class 3* are not phasal and do not project CP, so that there cannot be inheritance of a valued Case feature. As a consequence, all the [-Case:_] features inside these GCs depend on an external Case-valuer in order to be valued. Because of this dependence, I group *class 2* and *class 3* under the heading **GCs not-self-sufficient for Case**. On the one hand, this dependence is a general requirement of a legibility condition: Case features are uninterpretable and so they must be deleted before the derivation reaches the interfaces. In the feature valuation system assumed, this is done via Agree. This is why all the instances of [-Case:_] inside a GC must undergo Agree. For *class 2* and *class 3* GC, given the absence of CP and hence of feature inheritance, these features depend on an external goal (the valued Case feature in *X*). On the other hand, this dependence is a specific consequence of *class 2* and *class 3* GCs not being phases. As mentioned, *class 2* GCs project TP just like *class 1* GCs do. However, unlike them, *class 2* GCs do not contain CP and thus T fails to inherit [-Case:VAL] or [Tense].

(5) *Lack of feature inheritance and no self-sufficiency for Case in* class 2 *GCs*

```
              (...)
             /    \
            X      (...)
        ┌────────┐   /  \
        │-Case:VAL│ (...) ┌──────────────────────────────┐
        └────────┘        │            TP                │
                          │           /  \               │
                          │        subj    \             │
                          │      -Case:_  T⁰   AspP       │
                          │              │    /  \        │
                          │              ⊘  Asp⁰   vP     │
                          │                 │    /  \     │
                          │               -ndo subj  \    │
                          │              -Case:_  v⁰   VP │
                          └──────────────────────────────┘
```
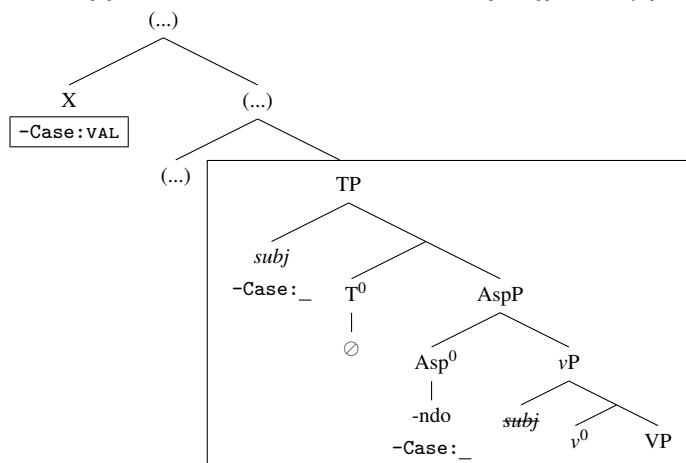
Similarly, *class 3* GC also lack CP. But, unlike both *class 1* and *class 2*, they also lack TP. Thus, the possibility of C-to-T feature inheritance does not even arise for this class.

(6) *Lack of feature inheritance and no self-sufficiency for Case in* class 3 *GCs*

```
              (...)
             /    \
            X      (...)
        ┌────────┐   /  \
        │-Case:VAL│ (...) ┌──────────────────────────┐
        └────────┘        │          AspP            │
                          │         /   \            │
                          │      subj     \          │
                          │    -Case:_  Asp⁰   vP     │
                          │             │    /  \    │
                          │           -ndo subj  \   │
                          │         -Case:_  v⁰    VP │
                          └──────────────────────────┘
```
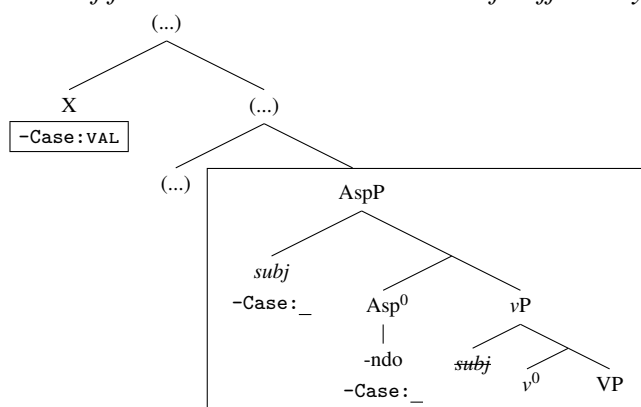
Having outlined the consequences of the structures proposed for the Case-marking possibilities in each GC, we turn to the derivation proper. We start by desiderative GCs.

3.2 Desiderative GCs

A sentence containing a GC self-sufficient for Case is the following:[1],[2]

(7) O   João quis   a   Maria chegando mais cedo.
     the João wanted the Maria arriving   more early
     'João wanted Maria to arrive earlier.'

The derivation starts by assembling the lexical projections of the embedded, GC predicate, *chegar* 'arrive'.

---

[1] Below, to simplify the representation, I omit the modifier *mais cedo* 'earlier'

[2] In all the trees to follow, English words are used for convenience.

(8)
```
            VP
           /  \
        V⁰      DP
        |       |
      arrive  a Maria
             -Case:_
             +φ:VAL
```
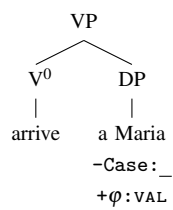
Then, the functional projections are assembled, first AspP, the head of which is $\{-ndo\}$, followed by TP and CP. Recall that I propose that the gerund morpheme bears a Case feature to be valued.

(9) a.
```
              AspP
             /    \
         Asp⁰       VP
          |        /  \
        -ndo     V⁰     DP
        -Case:_  |       |
               arrive  a Maria
                      -Case:_
                      +φ:VAL
```

b.
```
              TP
             /  \
         T⁰      AspP
                /    \
            Asp⁰       VP
             |        /  \
           -ndo     V⁰     DP
           -Case:_  |       |
                  arrive  a Maria
                         -Case:_
                         +φ:VAL
```

c.
```
                 CP
                /  \
            C⁰       TP
            |       /  \
        -Case:VAL  T⁰   AspP
         Tense         /    \
                   Asp⁰       VP
                    |        /  \
                  -ndo     V⁰     DP
                  -Case:_  |       |
                         arrive  a Maria
                                -Case:_
                                +φ:VAL
```
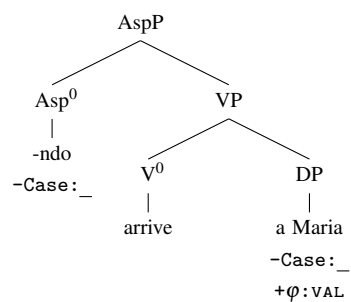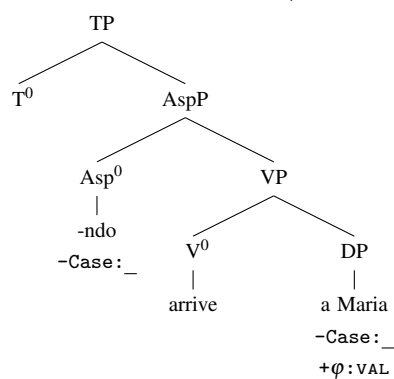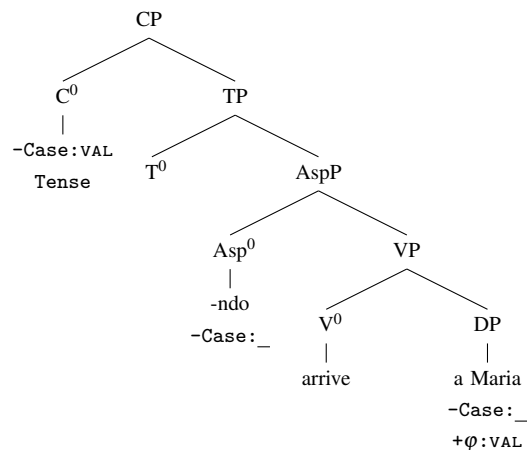
CP being assembled, a phase level has been reached in the derivation and syntactic operations are thus triggered. First, there occurs feature inheritance of Case and Tense from C to T.

(10)

```
                              CP
              ┌───────────────┴───────────────┐
             C⁰                                TP
              │                 ┌───────────────┴───────────────┐
          ̶-̶C̶a̶s̶e̶:̶V̶A̶L̶                  T⁰                              AspP
           ̶T̶e̶n̶s̶e̶          ┌──────┴──────┐          ┌───────────┴───────────┐
                    ┌─────────┐      Asp⁰                    VP
                    │-Case:VAL│        │          ┌──────────┴──────────┐
                    ├─────────┤       -ndo       V⁰                     DP
                    │  Tense  │     -Case:_       │                      │
                    └─────────┘                 arrive               a Maria
                                                                   -Case:_
                                                                   +φ:VAL
```
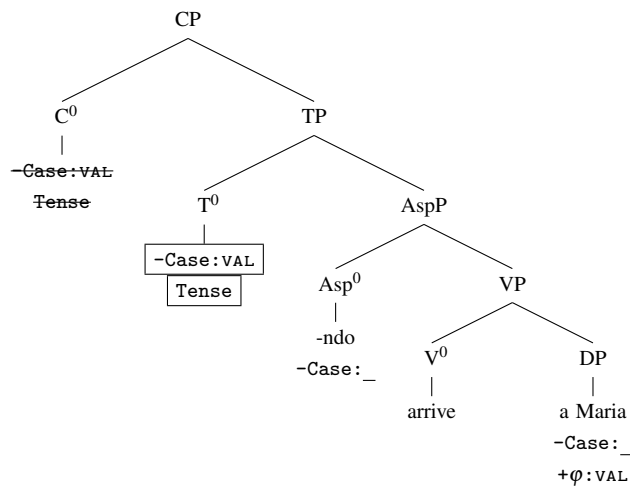
At this point of the derivation, there are two probes, according to the definition assumed in chapter 2 (i.e., a feature that must be valued): the Case feature of the gerund morpheme (Asp) and that of the DP *Maria*. AspP, the maximal projection of the gerund morpheme, is in a mutual c-command relation with T. After feature inheritance from C to T, Asp, via AspP, comes to be in a mutual c-command relation with a syntactic object that now bears a feature that can value its Case feature (i.e., a goal). Because of this Agree relation, the [-Case:_] feature in {−*ndo*} can be valued and deleted, for this is an unvalued and uninterpretable feature.

Let us assume that syntactic operations like probing can take place simultaneously. A potential conceptual advantage is that this may allow imperfections to be corrected as soon as possible in the derivation. At the same time when the Case feature in the gerund morpheme starts probing, that is, right after feature inheritance, so does the Case feature in the DP *Maria*. There is no possible Case goal in the initial c-command/probing domain of the DP. By Last Resort and the economy principle that falls out from it (both repeated below), the DP can move in order to extend its probing domain.

(11) *Last Resort* (Bošković, 2007, 610)
X undergoes movement iff without the movement, the structure will crash (with crash evaluated locally).

(12) *Probing domain extension*
If a syntactic object *X*, which bears a probe (i.e., a feature [±F:_] to be deleted), cannot find an appropriate goal in its initial c-command/probing domain, *X* can move to the first position where it can c-command such a goal. This movement is phase-bound.

This closest position is the Spec of the T that has just inherited a Case feature from C. From this position, the DP is in a (mutual) c-command relation with (a projection of) T, which now bears a valued Case feature. As a consequence, the Case feature in the DP can be valued as well, simultaneously with the valuation of the Case in the gerund morpheme.

(13)

```
                         CP
                        /  \
                      C⁰    TP
                           /  \
                         DP    \
                          |     \
                       a Maria   \
                       -Case: VAL  \
                       +φ:VAL    /  \
                               T⁰    AspP
                             -Case:VAL  /  \
                              Tense   Asp⁰   VP
                                       |    /  \
                                     -ndo  V⁰    DP
                                   -Case: VAL |    |
                                           arrive Maria
                                                -Case:_
                                                +φ:VAL
```
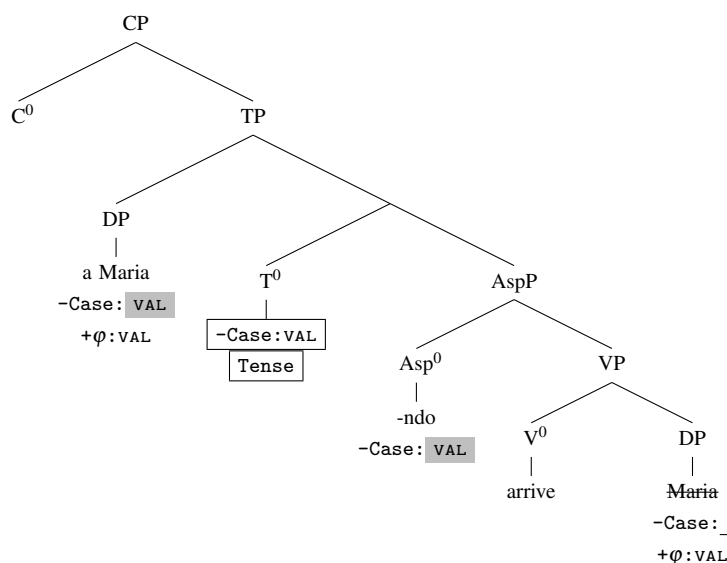
The [-Case:VAL] feature T inherits from C can also be deleted, via parasitic Agree: it partic-ipates in an Agree relation triggered by another feature, a probe, and can delete because it is, although valued, uninterpretable.

As a consequence of there being enough material in the numeration for a CP to be built, the GC that results from the derivation up to now is a CP. Because the head of this CP bears a valued Case feature, after this feature is transferred onto T via feature inheritance, the unvalued Case features inside the GC can be valued within the GC itself. It is in this sense that I call these GCs 'self-sufficient for Case', that is, they do not depend on any external element to satisfy their inner Case needs.

Because the DP *Maria* moved in order to have its Case feature valued, it left a copy in the position it departs from. The higher copy now probes the structure in order to value the unvalued Case feature of its lower copy, so that the derivation can comply with Full Interpretation.

(14)

```
                         CP
                        /  \
                      C⁰    TP
                           /  \
                         DP    \
                          |     \
                       a Maria   \
                       -Case:VAL   \
                       +φ:VAL    /  \
                               T⁰    AspP
                             -Case:VAL  /  \
                              Tense   Asp⁰   VP
                                       |    /  \
                                     -ndo  V⁰    DP
                                   -Case:VAL |    |
                                           arrive Maria
                                                -Case: VAL
                                                +φ:VAL
```
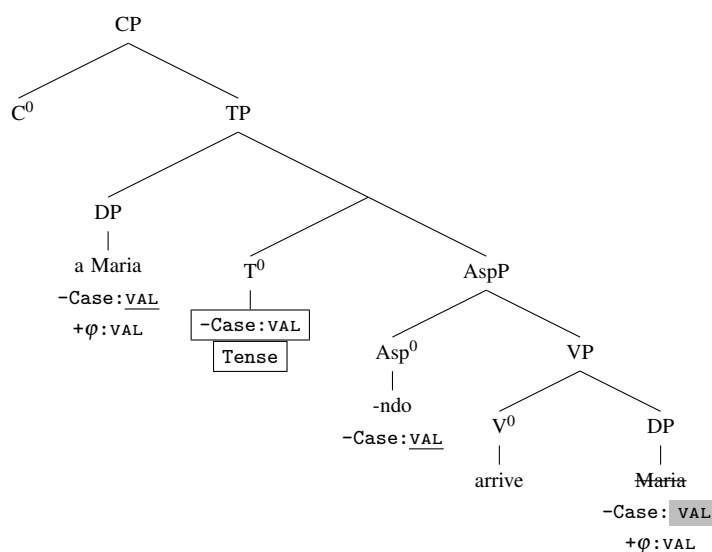
The derivation continues by merging the CP assembled so far with *querer* 'want'. Then, the matrix TP and the CP are formed. After the CP is assembled, CP being a phase, syntactic

operations take place. One of them is feature inheritance from C to T. The $[-\varphi:\_]$ that T inherits is a probe. It probes its c-command domain and finds the matching, but valued features in the DP *João*. $[-\varphi:\_]$ can then be valued. The DP also bears a feature that qualify as a probe, namely, the Case feature. Because in its c-command domain there is no goal to value this feature, the DP is allowed to move to the first position where it can find a goal. The DP then moves to the Spec position of the T that has just inherited a valued Case feature. As a result, the Case feature in the DP can be valued.

(15)
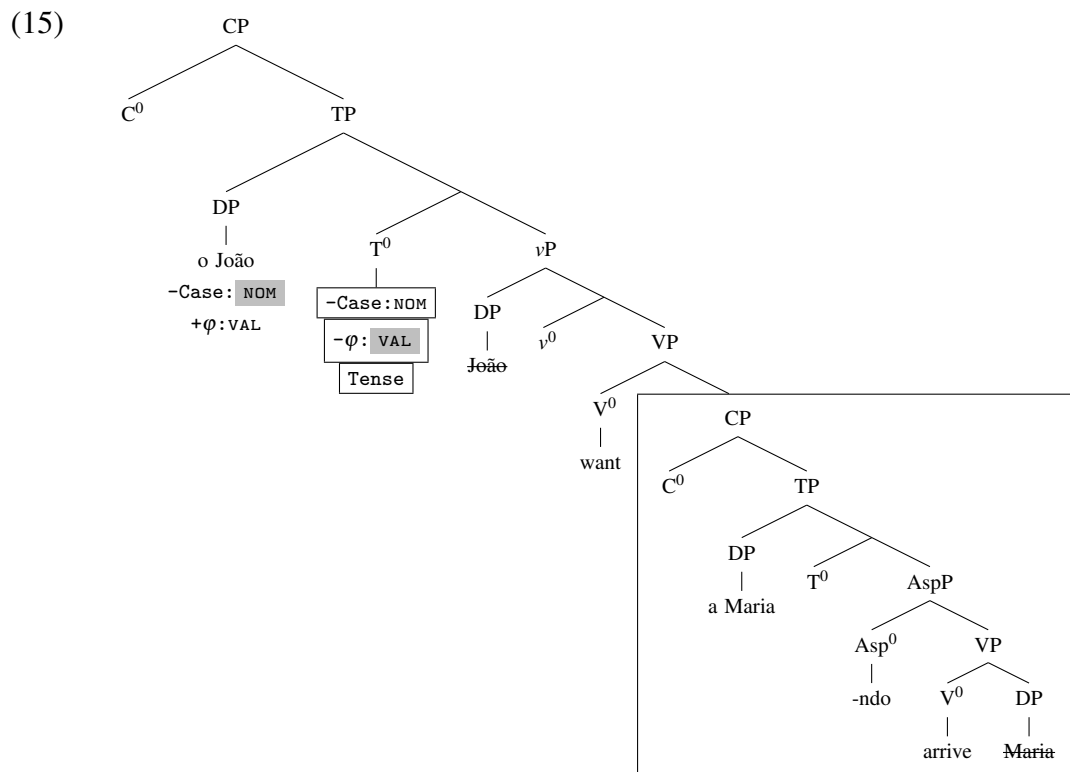
This is the derivation of a desiderative GC, according to the analysis advanced here.[3] Next, we consider how it can help us derive the properties of the behavior of this GC subtype. Desider-

---

[3] Marcello Modesto (p.c.) asks whether it is possible to analyze desiderative GCs as an instance of object control clause. In other words, can (i-a) be analyzed along the lines of (i-b), as (ii-a) is analyzed along the lines of (ii-b)?

(i)   a.   O   João prefere a   Maria cantando.
           the João prefers the Maria singing
           'João prefers Maria to sing.'
     b.   João [wants [Maria$_i$] [*PRO$_i$* singing]].

(ii)   a.   O   João convenceu a   Maria a   cantar.
           the João convinved the Maria at to-sing
           'João convinced Maria to sing.'
     b.   João [convinced [Maria$_i$] [*PRO$_i$* to sing]].

I think not. Desiderative GCs and object control clauses display mirroring behavior regarding substitution by a proform – (iii) –, passivization – (iv) – and entailment – (v).

(iii)   a.   O   João prefere isso.
            the João prefers this
            'João prefers this.'

ative GCs allow for sentential negation – (16-a) and for a sentential adverbial – (16-b).

(16)   a.   O João quis/preferiu   a   Maria não mexendo um dedo.
                 the João wanted/preferred the Maria NEG moving   a   finger
                 'João wanted/preferred Maria not to do anything at all.'

            b.   O João não quer a   aeronave provavelmente sofrendo uma pane   na
                 the João NEG wants the airplane probably   suffering a   breakdown in.the
                 volta.
                 return
                 'João does not want the airplane to probably break down on its way back.'

As we saw in section 1.3, I assume that the licensing of sentential negation and of sentential adverbials presuppose the projection of TP. Under this assumption, the grammaticality of (16-a) and of (16-b) come as no surprise.

Another property of desiderative GCs is that they do not allow for their subject to be raised to the matrix subject position when the matrix, desiderative verb is in passive form – (17).

(17)   *A Maria foi preferida *t* cantando na   peça.
         the Maria was preferred *t* singing   in.the play

Desiderative GCs are a particular instance of GCs self-sufficient for Case. They are thus CPs, where there occurs inheritance of a Case feature from C to T. This Case feature can be the goal to the corresponding feature in the gerund morpheme and the one in the GC subject. As a consequence, all unvalued Case features inside the GC can be valued within the GC itself. Hence, the GC subject of a desiderative GC becomes inactive in the derivation even before any matrix element is introduced into the derivation, as its Case feature has already been valued.

---

         b.   *O João convenceu isso.
              the João convinced this

(iv)   a.   *A Maria é preferida cantando.
             the Maria is prefered singing
         b.   A Maria foi convencida a cantar.
             the Maria was convinced at to-sing
             'Maria was convinced to sing.'

(v)   a.   #O João prefere a Maria dormindo mais cedo. → O João prefere a Maria.
             the João prefers the Maria sleeping more early   the João prefers the Maria
             'João prefers Maria to sleep earlier.'
         b.   O João convenceu a Maria a dormir mais cedo. → O João convenceu a Maria.
             the João convinced the Maria at to-sleep more earlier   the João convinced the Maria
             'João convinced Maria to sleep earlier.'

But there indeed seem to be object control GCs. See section 4.3 below.

(18)

```
                              TP
                         ╱         ╲
                    T⁰              VP
                    │          ╱         ╲
                   was       V⁰             CP
              ┌──────────┐    │        ╱         ╲
              │-Case:NOM │ preferred C⁰           TP
              ├──────────┤                   ╱         ╲
              │-φ:_      │                  DP            TP
              ├──────────┤                  │        ╱         ╲
              │ Tense    │               a Maria     T⁰         AspP
              └──────────┘              -Case:VAL  ┌─────────┐  ╱    ╲
                                         +φ : VAL  │-Case:VAL│ Asp⁰   VP
                                                   ├─────────┤  │    ╱  ╲
                                                   │ Tense   │ -ndo  V⁰  DP
                                                   └─────────┘ -Case:VAL │
                                                                        ~~Maria~~
```
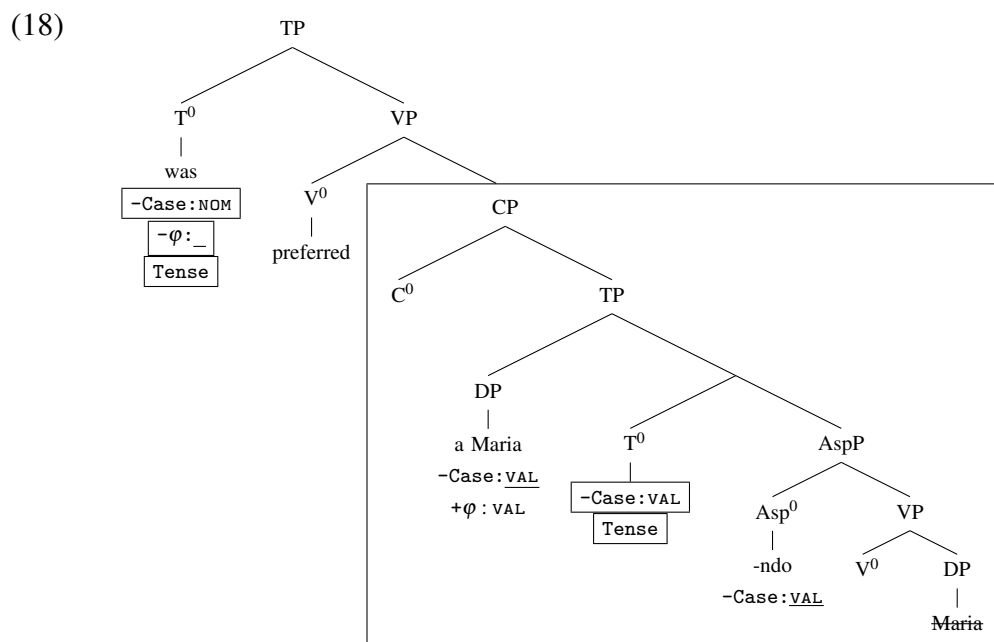
If the matrix clause is passivized, when the matrix T starts probing the structure for a goal that can value its φ-features, it does not find any. The derivation crashes because uninterpretable unvalued features (i.e., the φ-features in T) end up reaching the interfaces. In addition, recall that I assume that probing is limited to the domain of a phase. Since the subject of a GC self-sufficient for Case and the matrix T belong to different phases, the latter could not reach the former anyway. Hence, the explanation that falls out from the analysis proposed here is that (17) is ungrammatical due to a violation of the legibility conditions imposed by the interfaces.

Yet another property of desiderative GCs is that they do not allow their subject to be an anaphor correferent with the matrix subject.

(19) *O João$_i$ se$_i$ quis/preferiu   cantando na   peça.
      the João SE wanted/preferred singing   in.the play

In section 2.3.1, we saw that I incorporate Chomsky and Lasnik (1993)'s binding theory, assuming, in addition, that binding domains are equivalent to phases. The relevant principle for us now is Principle A:

(20)   If α is an anaphor, interpret it as correferential with a c-commanding phrase in its domain.

Bearing this in mind, let us see the schematic structure of a sentence like (19):

(21) *

```
                    vP
                 /     \
              DP       v⁰   VP
              |           /    \
            o João     V⁰      ┌──────────────────────────┐
                       |       │         CP               │
                    wanted     │      /      \            │
                               │    C⁰        TP          │
                               │          /      \        │
                               │        DP    T⁰    AspP   │
                               │        |        /    \    │
                               │        SE    Asp⁰    vP   │
                               │              |      /  \  │
                               │            -ndo   DP v⁰ VP│
                               │                   |       │
                               │                   S̶E̶      │
                               └──────────────────────────┘
```
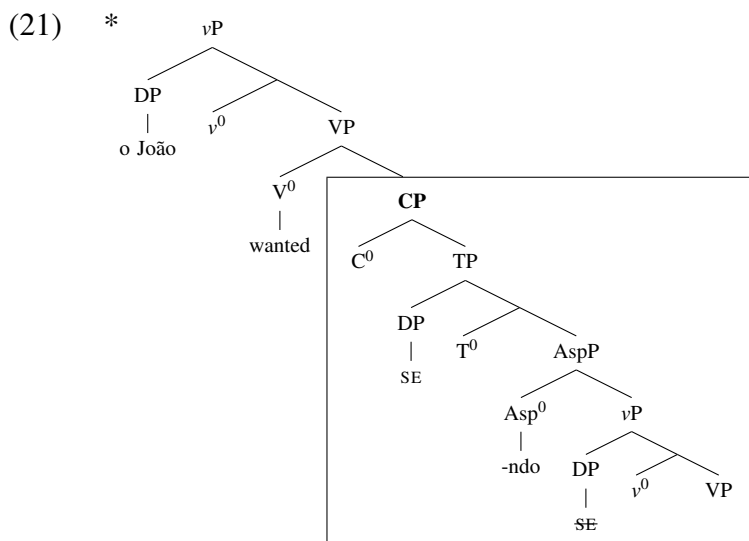
Because this GC is a CP and hence a phase, it also counts as a binding domain (represented in **bold**) for the anaphor SE in [Spec, TP] because this is the smallest phase that contains the anaphor. According to (20), SE should be interpreted as correferential with a c-commanding phrase inside the phase CP. However, in (21), there is no such a c-commanding phrase because the anaphor itself is the highest nominal phrase in the CP/phase/binding domain. (19)'s ungrammaticality is thus accounted for: this is a Principle A violation.

Desiderative GCs also do not seem to allow for interaction between a quantifier inside it and a quantifier in the matrix clause. The schematic representation of (22-a), for example, is (23).

(22) a. Algum professor quis/preferiu   todo aluno cantando.
          some   professor wanted/preferred every student singing
          'Some teacher wanted/preferred every student singing.'

          ???*For every* x, x *is a student and some teacher or other wanted/preferred* x *to sing.*

      b. Três professores queriam/preferiram duas alunas   cantando.
          three professors   wanted/preferred   two students singing
          'Three teachers wanted/preferred two students to sing.'

          ???*There are two specific students such that three teachers wanted/preferred them to sing.*

      c. O João geralmente quer três alunos   cantando.
          the João generally   wants three students singing
          'João generally wants three students to sing.'

          ???*There are three specific students such that João usually wants them to sing.*

(23)   *

vP

QP v^0 VP

 | V^0 **CP**

∃ | QP C^0 TP

want | QP   ... ∀ ...

∀ |

∀

For QR, I also assume a phase-based analysis, that in Wurmbrand (2013) (see section 2.3.2). Under this theory, a QP has to move phase edge-by-phase edge and each movement has to be meaningful, that is, it has to extend the QP's scope. In (23), the QP inside the GC (in the case at hand, the universal quantifier, ∀), has to move to [Spec, CP] in order to comply with the phasal constraint on QR. This is so because I propose desiderative GCs to be CPs and hence phases. However, this movement does not result in the extension of the QP's scope: there is no other operator between the position it moves from ([Spec, TP]) and the position where it lands ([Spec, CP]). As a consequence, the QP inside a desiderative GC cannot even reach the matrix clause, where there is another QP (the existential quantifier, ∃), let alone take scope over it. The movement of the QP base-generated inside the GC would have to pass through [Spec, CP], according to the assumptions made, and this movement is ruled out because it is not semantically economic. Thus, the analysis proposed captures the impossibility of a sentence like (22-a) displaying an inverse scope reading.

In order to lend further empirical support for the analysis, I discuss another type of desiderative GC in the next section.

3.2.1   An argument in favor of the analysis based on self-sufficiency for Case

Besides verbs like *querer* 'want' and *preferir* 'prefer', GCs can also be subcategorized for by adjectives such as *preferível* 'preferable'.

(24)   É preferível o   João chegando mais cedo.
         is preferable the João arriving   more early
         'It is preferable that João arrive earlier.'

This GC can also be classified as a desiderative GC. This is suggested by the fact that the subcategorizing adjective is formed from the same root as that in the verb *preferir* 'prefer', which, as we saw above, subcategorizes for a desiderative GC, just as *querer* 'want' does. Besides, the GC complement to *preferível* 'preferable' admits and ILP – (25-a); sentential negation seems to be licenseable – (25-b) and so is sentential adverbial licensing – (25-c); it does not allow for its subject to be raised – (25-d); full CP coordination also seems to be possible – (25-e). Binding

and inverse scope cannot be tested because *preferível* is a one-place predicate and the matrix subject is an expletive.

(25) a. É preferível as crianças sabendo matemática (*várias vezes) antes   de
          is preferable the children knowing mathematics several   times   before of
          entrarem na   escola.
          to-enter   in.the school
          'It is preferable that children know mathematics before entering school.'
      b. É preferível a   Maria não esquecendo a   lição.
          is preferable the Maria NEG forgetting   the lesson
          'It is preferable that Maria do not forget her homework.'
      c. É preferível a   Maria provavelmente não sendo culpada.
          is preferable the Maria probably   NEG being guilty
          'It is preferable if Maria probably were not guilty.'
      d. *Os alunos   são preferíveis *t* chegando no   horário.
          the students are preferable *t* arriving   in.the time
      e. É preferível o   João chegando mais cedo e   que ele trabalhe com afinco.
          is preferable the João arriving   more early and that he work   with earnestness
          'It is preferable that João arrive earlier and that he work more earnestly.'

What is interesting to notice regarding this GC is that it is the complement to an adjective, a category that cannot assign Case. Alternatively said, this is a category that does not bear a valued Case feature and therefore cannot act as a goal to value a corresponding unvalued feature in a c-commanding phrase. Even so, the Case features inside the GC can be valued, as inferred from (24)'s well-formedness. Even disregarding the proposal made here that the gerund morpheme bears a Case feature to be valued, the DP *o João* arguably does. How could this feature be valued? The only element that clearly bears a valued Case in a sentence like (24) is the matrix T. However, the matrix T does not seem to be taking part in an Agree relation with the GC subject. As we can see in (25-d), the GC subject cannot be moved to the matrix subject position. Besides, even if it remains in situ, the matrix verb does not agree with it. In (25-a), the GC subject is plural, while the matrix verb, singular, suggesting that there is no agreement between them. Importantly, this is not a case of "optional" agreement. Even for the speakers whose *VS* sentences display agreement (cf. Britto 2000) – (26-b) –, (27) is not well-formed.

(26) a. As cartas chegaram.
          the letters arrived
          'The letters arrived.'
      b. Chegaram as cartas.
          arrived   the letters
          'The letters arrived.'

(27) ???São preferíveis as crianças chegando mais cedo.
        are preferable the children arriving   more early

In the absence of something to Case-value the GC subject, the prediction is that the sentences in (24) and (25) should all be ungrammatical. This prediction is not borne out by facts. But the analysis proposed here can make the right prediction, since it entails self-sufficiency for Case. The GC subcategorized for by *preferível* 'preferable' is analyzed as a CP. From the head of this CP, T can inherit a Case feature, [-Case:VAL]. This feature can value the matching, but unvalued feature in the subject GC (and the one in the gerund morpheme as well). In other words, that the analysis can explain the possibility of an adjective like *preferível* to subcategorize for a GC and of the Case needs inside this complement to be satisfied lends empirical support to it.

3.2.2   A potential problem: accusative clitic subject

Although the analysis proposed seems to be able to successfully account for desiderative GCs that are complement to adjectives, it does face problems when accusative clitics are considered.[4] The subject of the desiderative GC cannot be an anaphor correferent with the matrix subject, as we saw in (19). However, it can be a pronoun:

(28)   O   João me quer   cantando na   peça.
        the João me wants singing   in.the play
        'João wants me to sing in the play.'

This kind of data challenges the analysis because the GC subject, *me* 'me', seems to have moved into the matrix clause. Besides, it is an accusative form, which might suggest that it is Case-marked by the matrix, desiderative verb. In the analysis I propose, movement of a desiderative GC subject into the matrix clause is unexpected. This, in turn, is construed by the analysis as a consequence of this subject having had its Case feature valued inside the GC itself. Because the subject can have its Case feature valued within the GC, further movement should be ruled out by economy.

I do not have an explanation for (28). In the best case scenario (for the analysis I propose), there is some extra factor at play, so that the analysis can still stand. The extra factor may have to do with the subject being a clitic: maybe it moves after it is Case-marked inside the GC, but this movement has nothing to do with Case and thus voids economy conditions. This idea seems to be tenable because clitics do have a different morphophonological status. On the other hand, its accusative form is not readily explainable in my analysis. As a matter of fact, the actual Case the subject of a GC belonging to *class 1*/the class of GCs self-sufficient for Case is not clear in my proposal. Notice that I conveniently use 'VAL' to designate the value of the Case T inherits from C. To use a well-worn metaphor, the accusative clitic in sentences like (28) may be just the tip of the iceberg of what can be a bigger problem. I leave it for future investigation.

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[4]I would like to thank Renato Lacerda (p.c.) for having pointed out this issue to me.

3.3 High adverbial GCs

Now we turn to another GC subtype that belongs to *class 1* GCs/the class of GCs self-sufficient for Case, namely, high adverbials. High adverbials can have either a causal – (29-a), (30-a) – or a conditional – (29-b), (30-b) – reading. In addition, a very interesting property they display is the possibility that their subject be either an overt DP (*o João*) – (29-a), (29-b) – or null – (30-a), (30-b). As far as I can tell, no other GC subtype displays the same possibility.

(29) a. O João chegando mais cedo, a firma   conseguiu terminar o trabalho.
the João arriving   more early the company managed to-finish the job
'Because João arrived earlier, the company managed to finish the job.'

b. O João chegando mais cedo, a firma   vai conseguir terminar o
the João arriving   more early the company goes to-manage to-finish the
trabalho.
job
'If João arrives earlier, the company will manage to finish the job.'

(30) a. *ec* Chegando mais cedo, o   João conseguiu terminar o trabalho.
ec arriving   more early the João managed to-finish the job
'Because he arrived earlier, João managed to finish the job.'

b. *ec* Chegando mais cedo, o   João vai conseguir terminar o trabalho.
ec arriving   more early the João goes to-manage to-finish the job
'If he arrives earlier, João will manage to finish the job.'

As a matter of fact, the realization of the subject of the three subtypes of adverbial GC considered here pose an intriguing challenge to analyses dealing with GCs and with subject realization at large. The subject of low adverbials (sections 4.4 and 6.4) must be necessarily null:

(31) a. O João caminha *ec* ouvindo música.
the João walks   *ec* listening music
'João walks listening to music.'

b. *O   João caminha o irmão ouvindo música.
the João walks   the brother listening music

Conversely, the subject of prepositional adverbials (sections 5.3 and 6.5) must be necessarily overt:

(32) a. *Os irmãos   conseguiram estudar com *ec* gritando.
the brothers managed   to-study with *ec* shouting

b. O João conseguiu estudar com os irmãos   gritando.
the João managed   to-study with the brothers shouting
'João managed to study with his brothers shouting.'

In chapter 6, I present a step-by-step derivation of each adverbial GC and try to provide an explanation for their subject realization possibilities and restrictions. For now (and in sections 4.4 and 5.3, where I discuss low and prepositional adverbials, respectively), it suffices to show

the representation of the overall sentence containing the adverbial GC and to show how its behavior regarding the properties enlisted in chapter 1 can be captured by the analysis advanced here.

In order to do this, first we have to pinpoint the position of high adverbials. Let us look at data involving relations that can or cannot be established between the high adverbial and the matrix clause. First of all, the data in (33) show that post-nominal *algum* 'some', which I take to be an NPI, cannot be licensed by an instance of sentential negation located inside the matrix clause.

(33)   *Licensing of a high adverbial NPI by matrix sentential negation*

    a. *O João terminando trabalho algum, a   empresa não fica satisfeita.
        the João finishing   job   some   the company NEG gets satisfied

    b. *O João terminando trabalho algum, a   empresa não ficou satisfeita.
        the João finishing   job   some   the company NEG got   satisfied

    c. *Terminando trabalho algum, o   João não fica satisfeito.
        finishing   job   some   the João NEG gets satisfied

    d. *Terminando trabalho algum, o   João não ficou satisfeito.
        finishing   job   some   the João NEG got   satisfied

This can be accounted for if a high adverbial is adjoined to a portion of the matrix clause that is too high to be c-commanded by sentential negation in the matrix clause. A conclusion along these lines can also be drawn from (34), which indicates that the high adverbial must be pronounced before a matrix Wh-word (*quem* 'who').

(34)   *Ordering between high adverbial and a matrix Wh-phrase*

    a. O João tirando boas notas, quem vai   ficar   contente?
        the João taking good grades who   goes to-get happy
        'If João gets good grades, who will get happy?'

    b. O João tirando boas notas, quem ficou contente?
        the João taking good grades who   got   happy
        'Because João got good grades, who got happy?'

    c. Tirando boas notas, quem vai   ficar   contente?
        taking good grades who   goes to-get happy
        'If he gets good grades, who will get happy?'

    d. Tirando boas notas, quem ficou contente?
        taking good grades who   got   happy
        'Because he got good grades, who got happy?'

This ordering can be accounted for if the high adverbial is located above the matrix CP, where the interrogative phrase moves to. Notice also that if the subject of the high adverbial is an R-expression, it can be correferent with the matrix subject without inducing a Principle C violation.

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(35)   *Correference between the high adverbial subject and a matrix pronominal subject*

    a.   O João$_i$ conseguindo chegar   mais cedo, ele$_i$ vai ficar orgulhoso.
         the João managing   to-arrive more early he goes to-get proud
         'If João manages to arrive earlier, he will feel proud.'

    b.   O João$_i$ conseguindo chegar   mais cedo, ele$_i$ ficou orgulhoso.
         the João managing   to-arrive more early he got   proud
         'Bcause João managed to arrive earlier, he felt proud.'

This possibility can be accounted for if the high adverbial sits in a position that is too high to be c-commanded by the matrix subject.

In sum, the data in (33), (34) and (35) suggest that the high adverbial is too high in the overall sentence (hence the label I ascribed to it) to interact with the matrix subject. However, other properties of the behavior of this GC subtype point to the opposite conclusion. In (36), we see that a pronominal inside the subject of the high adverbial can be bound by the quantified subject of the matrix clause.

(36)   *Licensing of a high adverbial open variable by a matrix quantifier*

    a.   O filho dele$_i$ tirando boas notas, todo pai$_i$ fica contente.
         the son of.he taking good grades every father gets happy
         'If his son gets good grades, every father gets happy.'

    b.   O filho dele$_i$ tirando boas notas, todo pai$_i$ ficou contente.
         the son of.he taking good grades every father gets happy
         'Because his son got good grades, every father got happy.'

Assuming that variable binding implies c-command, the conclusion is that the matrix subject can indeed c-command into the high adverbial, contrary to what we concluded from the lack of Principle C effects in (35).

The NPI licensing data in (37) point to the same conclusion. Although (33) showed that matrix sentential negation cannot license an NPI contained in the high adverbial, if the matrix subject is negative, the result is considerably better:

(37)   *Licensing of a high adverbial NPI by a matrix negative subject*

    a.   ?Aluno algum tirando boa nota, nenhum professor vai ficar contente.
         student some taking good grade no   professor goes to-get happy
         'If no student at all gets good grades, no teacher will be happy.'

    b.   Aluno algum tirando boa nota, nenhum professor ficou contente.
         student some taking good grade no   professor goes to-get happy
         'Because no student at all got good grades, no teacher got happy.'

That a negative subject can license post-nominal *algum* can be seen in (38), which shows the usual NPI licensing properties, namely, the obligatory presence of a negative licenser – (38-b) –, the c-command – (38-c) – and locality – (38-d) – requirements.

(38)   a.   Nenhum professor ajudou aluno   algum.
            no   professor helped student some
            'No teacher helped any student at all.'

       b.   *O professor ajudou aluno   algum.
            the professor helped student some

       c.   *O pai   de nenhum professor ajudou aluno   algum.
            the father of no   professor helped student some

       d.   *Nenhum professor disse que a   Maria ajudou aluno   algum.
            no   professor said that the Maria helped student some

Yet another evidence that the matrix subject does c-command into the high adverbial is provided by the *each... the other* data in (39).

(39)   *Licensing of high adverbial 'the other' by matrix 'each'*

       a.   O   outro cooperando, cada membro do   par vai   conseguir terminar a
            the other cooperating each member of.the pair goes to-manage to-finish the
            tarefa.
            task
            'If the other helps, each member of the pair will manage to finish the task.'

       b.   O   outro cooperando, cada membro do   par conseguiu terminar a   tarefa.
            the other cooperating each member of.the pair managed to-finish the task
            'Because the other helped, each member of the pair managed to finish the task.'

In (39), *the other* sits in the subject position of the high adverbial, while *each* is part of the matrix subject. Under the assumption that *each* must c-command *the other*, we conclude that there indeed is a c-command relation between the subject of the matrix clause and that of the high adverbial.

How can we account for the contradictory c-command properties of (35) (no c-command), on the one hand, and of (36), (37), (39) (yes c-command), on the other? At the same time, how can we account for the relative high positioning of the high adverbial, as suggested by (33) (impossibility of NPI licensing by matrix sentential negation) and (34) (ordering with respect to matrix Wh-phrase)?[5]

In order to provide a way out from this conflict, I follow Thompson (2005, 39) in assuming that clause-initial adverbs are not base-generated at this position, but rather moved there, and propose that high adverbials are base-generated in a position that is high enough for them not be c-commanded by the matrix sentential negation, but low enough for them to be c-commanded by the matrix subject. Later on in the derivation, they are moved to a higher position so that they are pronounced at the left end of the overall sentence. Naturally, from this higher position, high adverbials still void c-command by matrix sentential negation. If the moved position is

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higher than the matrix CP, it would also capture the fact that the high adverbial precedes a moved matrix Wh-phrase – (34). Additionally, from this high position, a pronominal matrix subject could not c-command an R-expression subject in the high adverbial, capturing the lack of Principle C effects in (35).

Specifically, I propose that high adverbials are base-generated under a projection *X*, which is lower than AspP, but higher than the position of sentential negation, which I take to be between AspP and *v*P. For now, more important than the precise identity of *X* is the relative position of *X* in the structure.[6]

(40)   *Base-generation position of the high adverbial*
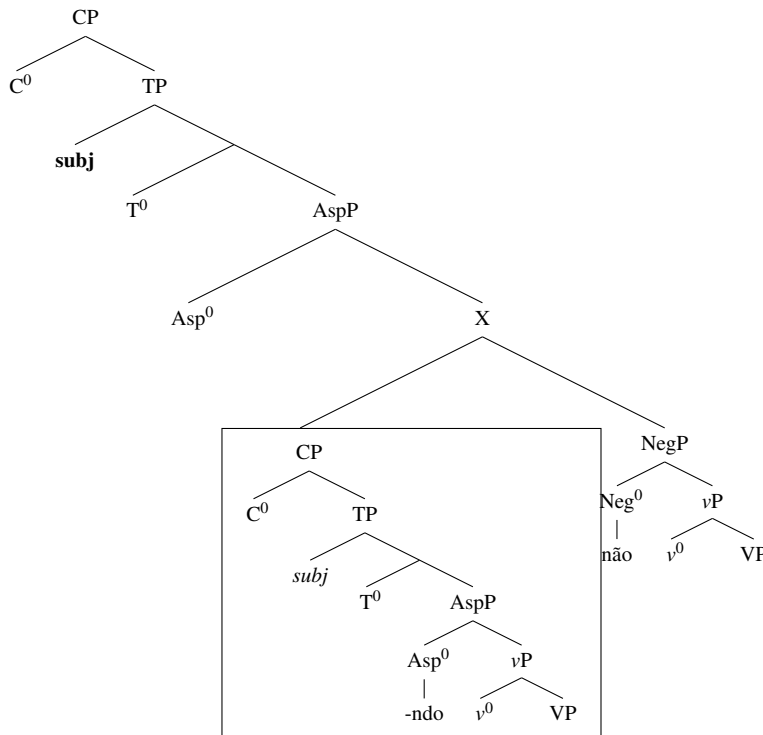
The proposed base-generation position of a high adverbial in (40) can account for why an NPI inside the high adverbial cannot be licensed by matrix sentential negation: sentential negation is below the *X* where the high adverbial is generated, so that it cannot c-command into the GC. This accounts for the facts in (33). In contrast, a high adverbial NPI subject (*subj* in (40)) is c-commanded by a negative matrix subject (**subj** in (40)). This accounts for the facts in (37). This c-command relation between **subj** and *subj* can also capture the possibility of variable binding as seen in (36) and *each... the other* licensing in (39).

The remaining properties of the behavior of high adverbials are accounted for by the proposal that high adverbials are generated in one position – (40) –, but pronounced in another – (41). Specifically, I propose that high adverbials are moved to a position inside a *Y* projection, which is above CP.

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[6]The position in (40) is further motivated by temporal interpretation properties of high adverbials. See section 7.4.1 below.

(41)   *Position where a high adverbial is pronounced*

```
                            Y
              ┌─────────────┴─────────────┐
             CP                           CP
         ┌────┴────┐                  ┌────┴────┐
        C⁰        TP                 C⁰        TP
              ┌────┴────┐         (subj)    ┌────┴────┐
            subj       AspP                subj      AspP
                    ┌───┴───┐                     ┌────┴────┐
                  Asp⁰      vP                   CP        AspP
                    │     ┌──┴──┐             (strike)  ┌────┴────┐
                  -ndo   v⁰    VP                     Asp⁰      NegP
                                                           ┌────┴────┐
                                                         Neg⁰        vP
                                                           │       ┌──┴──┐
                                                          não     v⁰    VP
```
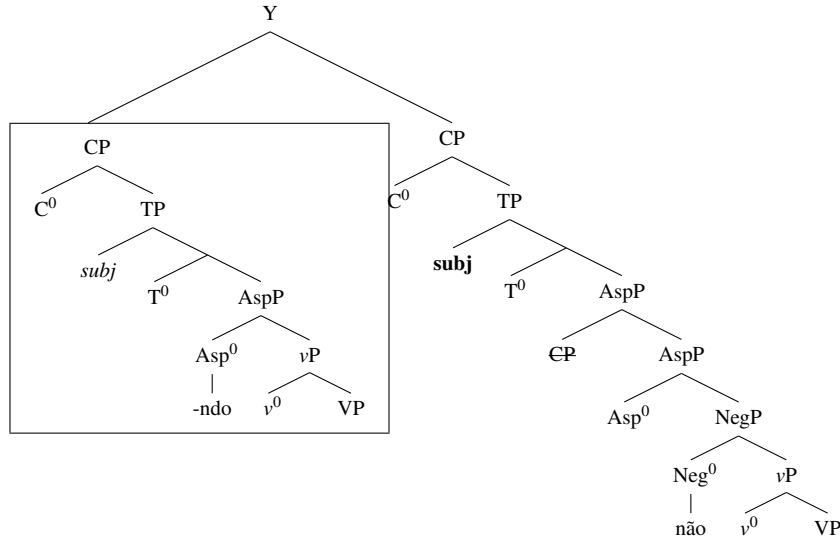
This proposal captures a basic fact about high adverbials, namely, that they are pronounced in a position preceding the matrix clause.[7] High adverbials thus contrast with low and with prepositional adverbials, which are both preceded by the matrix clause, as we see in (31-a) and in (32-b), repeated below.

(42)   O   João caminha [ouvindo música].
        the João walks   listening music
        'João walks listening to music.'

(43)   O   João conseguiu estudar [com os irmãos   gritando].
        the João managed   to-study with the brothers shouting
        'João managed to study with his brothers shouting.'

It also captures the fact that the high adverbial precedes a matrix moved Wh-phrase, as we saw in (34). The Wh-phrase moves to the Spec position of the matrix CP, which is dominated by the Y projection. In addition, the moved position in (41) is consistent with the lack of Principle C effects witnessed in (35): the high adverbial subject (*subj*) is the highest DP in (41), so that no other DP c-commands it, in compliance with Principle C. As is the null hypothesis under the copy theory of movement (see Nunes 2004), I assume that any copy of a moved element (or a part of a moved constituent) is available for interpretation. Thus the highest copy of *subj* in (41) should be available for interpretation as well, so that there is at least one point in the derivation where *subj* does not c-command the **subj** of the matrix clause. If the latter is a pronoun and the former, an R-expression, given the structure in (41), Principle C is complied with.[8]

To summarize: the proposal that high adverbials are base-generated in one position, but pronounced in a higher position can reconcile the apparently contradictory properties of this

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[7]As far as I can tell, this fact was first noticed by Lobo (2001).

[8]In the step of the derivation depicted in (40), **subj** does c-command *subj* causing a Principle C violation. But there is another step in the derivation – (41) –, involving another copy of *subj*, where no Principle C effect is induced.

GC subtype surveyed above.

Having clarified the position of high adverbials, we can look at other properties of the behavior of these GCs. First of all, sentential negation can be licensed inside a high adverbial, regardless of reading (conditional: (44-a), (45-a); causal: (44-b), (45-b)) and of subject realization (overt DP: (44-a), (44-b); null: (45-a), (45-b)).

(44)   a.   O   João não mexendo um dedo, não dá   para passar no   vestibular.
             the João NEG moving a   finger NEG gives for   to-pass in.the vestibular
             'If João does not do anything at all, it is not possible to pass the university admission exam.'

       b.   A   Maria não mexendo um dedo, a   firma   levou anos para terminar o
             the Maria NEG moving a   finger the company took years for   to-finish the
             trabalho.
             job
             'Because Maria did not do anything at all, her company took ages to finish the job.'

(45)   a.   Não mexendo um dedo, a   Maria não passa no   vestibular.
             NEG moving a   finger the Maria NEG passes in.the vestibular
             'If she does not do anything at all, Maria will not pass the university admission exam.'

       b.   Não mexendo um dedo, a   Maria levou anos para terminar o   trabalho.
             NEG moving a   finger the Maria took years for   to-finish the job
             'Because she did not do anything at all, Maria took ages to finish the job.'

The sentential adverb *provavelmente* 'probably' can also be licensed within high adverbials.[9]

(46)   a.   A   aeronave provavelmente tendo sofrido uma pane   na   volta, o
             the airplane probably   having suffered a   breakdown in.the return the
             piloto contactou a   torre de controle.
             pilot contacted the tower of control
             'Because the airplane was probably breaking down on its way back, the pilot got in contact with the control tower.'

       b.   Provavelmente tendo sofrido um colapso nervoso, o   enfermeiro recebeu
             probably   having suffered a collapse nervous the nurse   received
             uma licença no   trabalho.
             a   leave   in.the work

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[9]In (46), I considered only causal high adverbials because it seems to be the case that conditional high adverbials cannot contain an adverb like *provavelmente* 'probably'. This is likely to be an independent issue, for other conditional sentences containing this adverb are also ill-formed:

(i)   ???Se o   enfermeiro provavelmente sofrer   um colapso nervoso, o   hospital vai   dar   uma licença
          if the nurse   probably   to-suffer a collapse nervous the hospital goes to-give a   leave
          para ele.
          for   he
          'If the nurse (???probably) suffers a nervous breakdown, the hospital will grant him leave of absence.'

In any case, it suffices that *provavelmente* be licensed in causal high adverbials, as we see in (46).

'Probably having had a nervous breakdown, the nurse was granted leave of absence.'

According to the assumptions made here, sentential negation and sentential adverbial licensing presuppose TP. This projection is indeed included in a *class 1* GC like a high adverbial, hence the grammaticality of the sentences in (44)–(45) and (46).

In contrast, raising, binding and inverse scope are expected not to be possible in high adverbials because, under my assumptions and proposals, these are phase-dependent properties. High adverbials were analyzed as CPs and hence, a phase. As a consequence, an anaphoric subject will always have to be bound within the GC itself and thus there can be no interaction between the high adverbial and the matrix clause for binding purposes. This expectation corresponds to facts:[10]

(47)   a.   *Se$_i$ cantando, o   João$_i$ foi   às   lágrimas.
           self singing   the João   went to.the tears

        b.   *Se$_i$ cantando, o   João$_i$ vai   às   lágrimas.
           self singing   the João   goes to.the tears

Also expected is the impossibility of an inverse scope reading.

(48)   a.   Todo aluno   cantando, algum professor ficou contente.
           every student singing   some   teacher   got   happy
           'Because all students sang, some teacher got happy.'

           ???*For every* x, x *is a student and some teacher or other got happy because* x *sang.*

        b.   Todo aluno   cantando, algum professor vai   ficar   contente.
           all   student singing   some   teacher   goes to-get happy
           'If every student sings, some teacher will get happy.'

           ???*For every* x, x *is a student and some teacher or other will get happy if* x *sings.*

(49)   Dois alunos   cantando, três   professores vão ficar   felizes.
        two   students singing   three professors   go   to-get happy
        'If two students sing, two teachers will get happy.'

        ???*There are two specific students such that some three teachers or other will get happy if they sing.*

(50)   Dois alunos   cantando, o   João geralmente fica feliz.
        three students singing   the João generally   gets happy
        'If three students sing, João generally gets happy.

        ???*There are three specific students such that João usually gets happy if they sing.*

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[10]In the proposed base-generation position of high adverbials – (40) –, the matrix subject c-commands the high adverbial subject. Nonetheless, this c-command relation is outside the GC, which, being a CP, should be the binding domain of an anaphor in the subject position of the GC.

The schematic representation of (48) is below. Even if the high adverbial is interpreted in the high position where it is pronounced,[11] a quantifier inside the GC can only QR to the edge of the phase CP that is the topmost category of this GC. From this position, it cannot reach a matrix quantifier, so that this movement is ruled out because it is semantically vacuous.

(51)
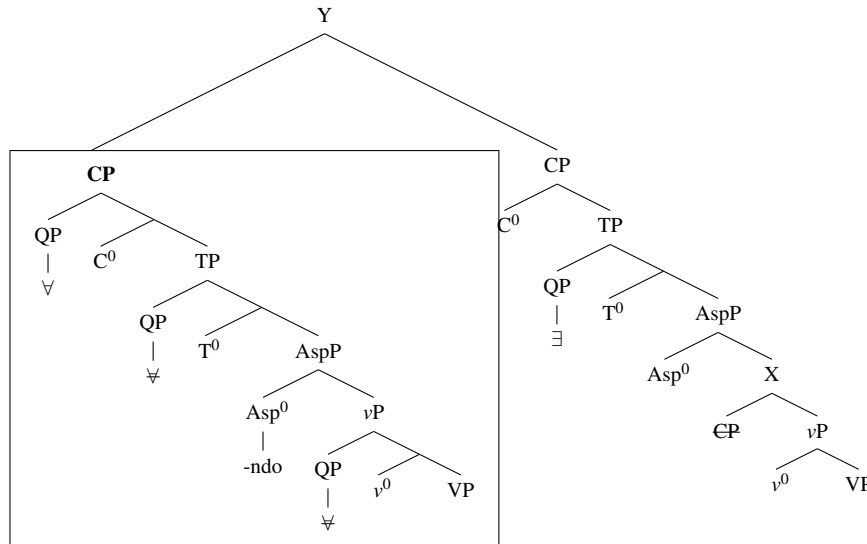
However, contrary to expectation, it seems to be possible that the GC subject be the subject of a passivized matrix clause – (52):

(52) a. Tendo batido o   recorde de velocidade, a   Maria foi recebida com aplausos
    having beaten the record of velocity the Maria was received with applause
    pela   torcida.
    by.the fans
    'Having broken the speed record, Maria was welcomed by the fans with a round
    of applause.'

  b. Batendo o   recorde de velocidade, a   Maria vai ser   recebida com aplausos
    beating the record of velocity the Maria goes to-be received with applause
    pela   torcida.
    by.the fans
    'If she breaks the speed record, Maria will be welcomed by the fans with a round
    of applause.'

Does this possibility represent an empirical counterargument to the analysis? Not really, As we will see in chapter 6, assuming the movement theory of control (Hornstein, 1999, 2003; Boeckx et al., 2010) and sideward movement (Nunes, 2004), there is a moment in the derivation of sentences containing high adverbials where the high adverbial subject can move into the matrix clause. This movement takes place at a point where the high adverbial subject has not yet been Case-marked, so that there is no violation of the Activation Condition. Furthermore, that the subject moves away from the GC does not cause the derivation to crash later on in the derivation. In view of these possibilities (see details in section 6.6), the possibility of raising the subject of

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[11]In the lower position where the high adverbial is base-generated, there is no c-command whatsoever.

the high adverbial is actually predictable; this is a possibility that results from extra factors at play in the derivation of a particular GC subtype.

3.4   Conclusion

In this chapter, we considered desiderative and high adverbial GCs. These are the GCs that belong to *class 1*, the GCs proposed to project the most complex structure, CP. Assuming feature inheritance, the result is that these GCs are self-sufficient for Case: a valued Case feature is inherited by T from C. This feature allows all the Case features in search of a value (a probe, in my terms) inside the GC to be valued inside the GC itself. This accounts for the impossibility of raising the subject of desiderative GCs, one of the signature properties of this GC subtype and which distinguishes it from other complement GCs (see section 1.2). This was shown in the step-by-step derivation of desiderative GCs provided in section 3.2 and which follows the system outlined in chapter 2. In the same section, I tried to explain not only the raising impossibility, but also the other properties I used to describe and classify GCs. They were derived either from the way the computation of desiderative GCs proceeds or from the projections that make up this kind of construction, in particular, their CP, phasal projection. In section 3.3, we looked at high adverbials. We paid special attention to the position of these structures. I proposed that high adverbials are base-generated in one position, but moved to a higher position, where they are pronounced. This accounted for the apparently contradictory properties of the interaction between the high adverbial and the matrix clause.

Chapter 4

Class 3 GCs

After considering *class 1* GCs, we go to the other end of the groups proposed, that is, to *class 3* GCs. While *class 1* GCs have the "richest" structure, *class 3* GCs project only the bare minimum AspP. Just like I did in the previous chapter, I will try to derive the properties of the GC subtypes belonging to this class from this structure, together with the assumptions made concerning GCs in general and the way the computation works. In addition, recall from section 3.1 that *class 3* are, together with *class 2* GCs, instances of GCs that are not self-sufficient for Case. For *class 3* GCs, this is a consequence of the GC projecting only AspP, so that there is no possibility of inheritance of a valued Case feature. Consequently, all Case probes inside a *class 3* GC have to be valued by an external goal.

   Class 3 GCs include perceptual – (1-a) –, existential – (1-b) –, object control – (1-c) –, low adverbial – (1-d) – and adnominal GCs – (1-e).

(1)   a.   O monitor   flagrou o aluno colando na   prova.
                the teaching-assistant caught the student glueing in.the test
                'The teaching assistant caught the student cheating during the exam.'

         b.   Tem umas crianças gritando no   apartamento ao   lado.
                has some children shouting in.the apartment   at.the side
                'There are children shouting in the apartment next door.'

         c.   O médico manteve os pacientes esperando por várias horas.
                the doctor kept   the patients   waiting   for several hours
                'The doctor made the patients keep waiting for several hours.'

         d.   A Paula sempre faz a   caminhada dela   ouvindo mp3.
                the Paula always does the walking   of.she listening mp3
                'Paula always goes for a walk listening to her mp3 player.'

         e.   Esses meninos jogando bola na   rua   são filhos do   vizinho.
                these boys   playing ball in.the street are sons of.the neighbor
                'These boys playing soccer on the street are the neighbor's children.'

Their behavior along the properties considered here is summarized in the table below:

GC subtype	ILP	Negation	Adverbial	Raising	Anaphor	Inverse Scope
Perceptual	*	???	*	✓	✓	?
Existential	*	???	*	*	*	–
Object control	*	*	*	✓	✓	?
Low adverbial	*	*/???	*	–	–	–
Adnominal	*	*	*	–	*	–

Table 4.1: Behavior of *class 3* GCs

In this chapter, we see the step-by-step derivation of the GC subtypes listed above and a more detailed explanation of their behavior. I will pay special attention to cases where the behavior of the GC is divergent with respect to the other *class 3* GCs and I will try to identify the extra factors that determine this "deviance".

4.1 Perceptual GCs

The derivation of a sentence like (2), where the complement is a perceptual GC, starts by building the lexical projections of the embedded predicate. Then the gerund morpheme, the head of AspP, is merged with the VP formed.

(2)　　O　João ouviu a　Maria chegando.
　　　　the João heard the Maria arriving
　　　　'João heard Maria arriving.'

(3)
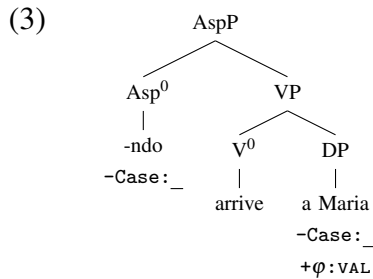
If this were a *class 1* GC/a GC self-sufficient for Case, the derivation would proceed by building TP on top of AspP and then CP. But this is a *class 3* GC, which consists of the bare minimum necessary for a GC to be built at all.

AspP is not a phase, so the derivation continues by taking material from the numeration and extending the structure, even though there are two probes in the structure derived so far (the two instances of [-Case:_], one in {−*ndo*}, the other in the DP *Maria*). The perceptual verb is taken from the numeration and merged with the AspP thus formed. Then *v* enters the derivation and a phase is finally derived. As a consequence of a phase level having been reached, *v*-to-V feature inheritance is triggered.

(4)

```
                          vP
                 ┌────────┴────────┐
                v⁰                 VP
                │         ┌─────────┴─────────┐
           -Case:ACC     V⁰               AspP
            -φ:=         │         ┌────────┴────────┐
                        hear      Asp⁰              VP
                     ┌────────┐    │         ┌───────┴───────┐
                     -Case:ACC   -ndo        V⁰            DP
                     ┌────────┐  -Case:_     │             │
                     -φ:_                   arrive       a Maria
                                                         -Case:_
                                                         +φ:VAL
```
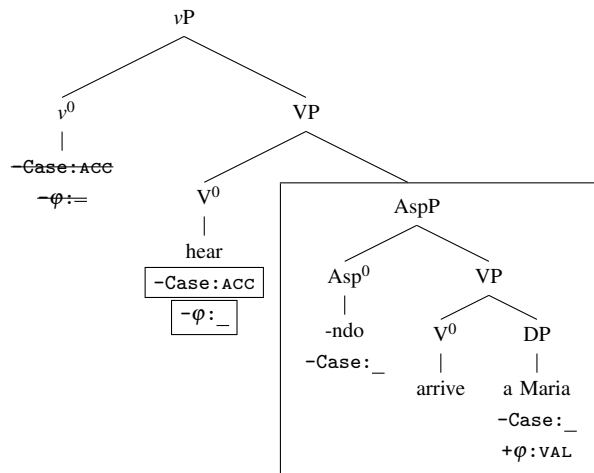
At the point of the derivation right after feature inheritance, V is the first Case goal available to the Case probes in the gerund morpheme and in *Maria*. The gerund morpheme or, more precisely, AspP, its maximal projection, is in a mutual c-command relation with the V that has just inherited features from *v*. This suffices to value the [-Case:_] feature in the gerund morpheme (①). Simultaneously, the DP *Maria* can move (①) in order to extend its probing domain because, in situ, it does not c-command any Case goal. The first position it can move to where it can c-command a goal for its Case probe is [Spec, VP] in the matrix clause. From that new position, the DP c-commands V, so that its Case feature can also be valued (②).

(5)

```
                          vP
                 ┌────────┴────────┐
                v⁰                 VP
                          ┌─────────┴─────────┐
                         DP                    
                         │          ┌──────────┴──────────┐
                      a Maria       V⁰                  AspP
                    -Case: ACC      │          ┌──────────┴──────────┐
                    +φ:VAL         hear       Asp⁰                  VP
                      ②          ┌────────┐    │           ┌─────────┴─────────┐
                                 -Case:ACC    -ndo         V⁰                DP
                                 ┌────────┐  -Case: ACC    │                 │
                                 -φ:VAL       ①          arrive            Maria
                                                                          -Case:_
                                                                          +φ:VAL
                                                                            ①
```
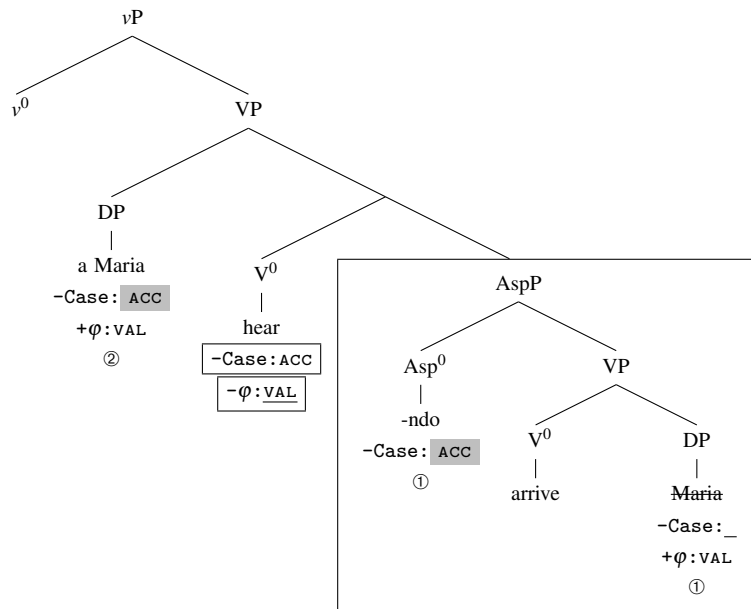
The higher copy of the GC subject probes the structure in order to value and delete the Case feature of its lower copy.

(6)

```
                    vP
                 /      \
               v⁰        VP
                      /      \
                    DP          \
                    |            V⁰
                 a Maria         |
                -Case:ACC      hear
                +φ:VAL      ┌─────────┐
                            │-Case:ACC│
                            ├─────────┤
                            │ -φ:VAL  │
                            └─────────┘
```

```
        ┌──────────────────────────────────────────┐
        │                 AspP                       │
        │              /        \                    │
        │          Asp⁰           VP                 │
        │           |          /      \              │
        │         -ndo        V⁰        DP           │
        │       -Case:ACC     |         |            │
        │                   arrive    Maria          │
        │                            -Case: ACC      │
        │                            +φ:VAL          │
        └──────────────────────────────────────────┘
```
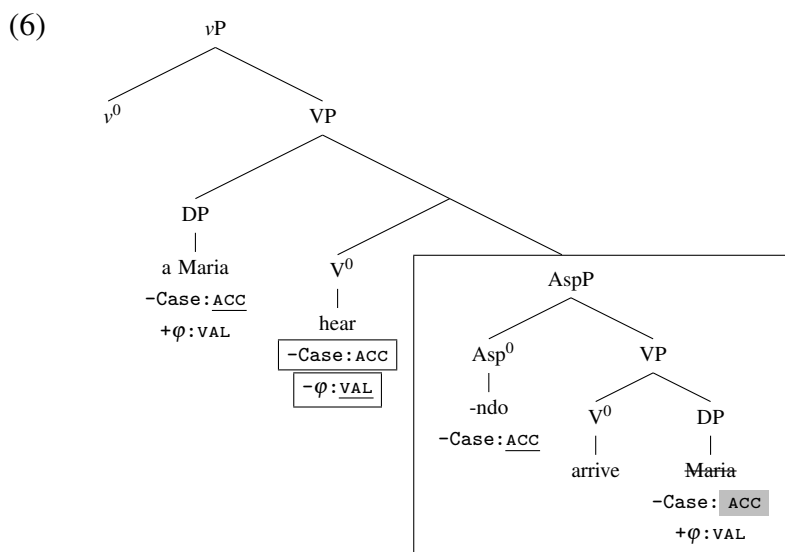
After all the operations inside the lower phase *v*P are effected, Spell-out of VP, the c-command domain of the phase head *v*, takes place. Recall that I assume that Spell-out takes place immediately at the end of a phase; it is not delayed (cf. (13), p. 56).

The derivation proceeds by merging in the subject of the perceptual verb. Recall also that I assume that if a given head triggers two types of operations, the ordering between them is determined by economy (cf. (14), p. 56). If one of them may result in the deletion of uninterpretable features and the other, in the introduction of further imperfections, the former is preferred over the latter. *v* triggers both feature inheritance and the introduction of an external argument. The former may result in deletion of features, while the latter introduces further uninterpretable features in the workspace. This is why I take the introduction of *v*'s external argument to follow rather than precede feature inheritance.

From there, the derivation continues by the formation of TP, then CP, feature inheritance and the usual feature valuation mechanisms.

(7)

```
                          C
                         / \
                       C⁰   TP
                           /  \
                         DP     \
                         |       \
                      o João    T⁰      vP
                    -Case: NOM       /    \
                     +φ:VAL        DP       \
                   ┌──────────┐    |    v⁰    VP
                   │-Case:NOM │  João̶        /  \
                   ├──────────┤ -Case: NOM  DP    V⁰   ┌─────────────────────┐
                   │-φ:  VAL  │  +φ:VAL      |    |    │         AspP        │
                   └──────────┘           a Maria hear │        /    \       │
                      │Tense│                          │    Asp⁰      VP     │
                      └─────┘                          │     |       /  \    │
                                                       │   -ndo    V⁰    DP  │
                                                       │           |     |   │
                                                       │         arrive Maria̶│
                                                       └─────────────────────┘
```
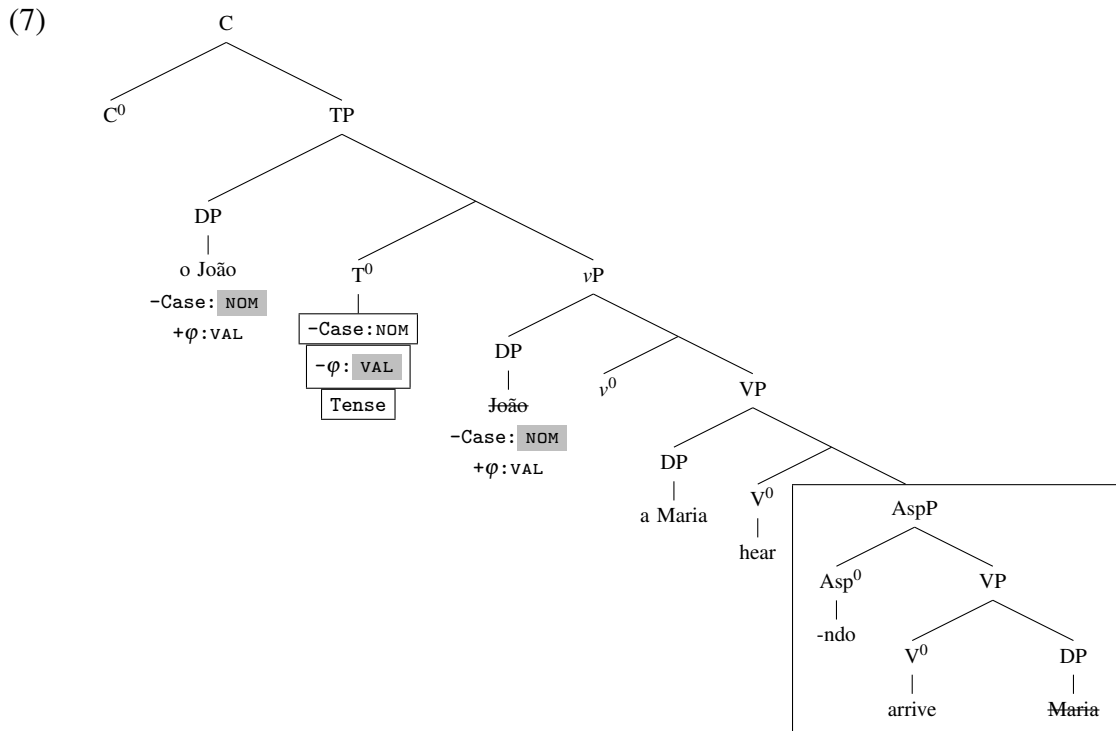
Having presented the derivation of a sentence containing a perceptual GC, we can turn to the explanation of its behavior. Perceptual GCs do not license sentential negation – (8) – nor a sentential adverbial – (9).

(8) ???O monitor   flagrou os alunos   não mexendo um dedo.
    the teaching-assistant caught the students not moving   a   finger

(9) *O João flagrou a   aeronave provavelmente sofrendo uma pane   na   volta.
     the João caught the airplane probably   suffering a breakdown in.the return

These facts can be straightforwardly captured under the assumption that sentential negation and a sentential adverbial are elements that require a TP to be licensed. This projection is not present in *class 3* GC like the perceptual subtype.

In addition to not projecting TP, perceptual GCs are not phases either. This in turn explains their behavior regarding binding, QR and raising. First I discuss binding and QR. Section 4.1.1 is dedicated to raising because there is no consensus in the literature on whether or not perceptual GCs allow for their subject to be passivized.

The subject of a perceptual GC can be an anaphor correferent with the matrix subject:

(10)   O João$_i$ se$_i$ flagrou cantando no   chuveiro.
        the João SE caught singing   in.the shower
        'João caught himself singing in the shower.'

A schematic representation of this sentence is as follows:

(11)
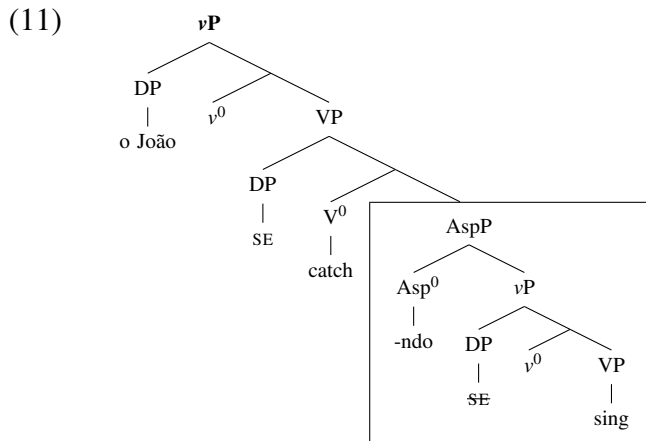
This binding possibility is due to *class 3* GCs being AspPs. As a consequence, they are not phases nor binding domains to the anaphor. The closest phase is the matrix *v*P, where the matrix subject is base-generated. According to Principle A, an anaphor has to be interpreted as correferential with a c-commanding phrase inside its domain. The domain being the matrix *v*P, the anaphoric subject of the perceptual GC can be c-commanded by the matrix subject, allowing the anaphor to be correctly licensed.

Something along these lines can also be said of the possibility of perceptual GCs to display an inverse scope reading.

(12)   a.   Algum professor assistiu/ouviu todo aluno   cantando.
              some   professor watched/heard all   student singing
              'Some teacher watched/heard all student singing.'

              ?*For every* x, x *is a student and some teacher or other watched/heard* x *sing.*

        b.   Três professores ouviram dois alunos   cantando.
              three professors   heard   two students singing
              'Three teachers heard two students singing.'

              ?*There are two specific students such that three teachers heard them sing.*

        c.   O João geralmente assiste   três alunos   cantando.
              the João generally   watches three students singing
              'João generally watches three students singing.'

              ?*There are three specific students such that João usually watches them sing.*

The schematic representation of (12-a), for example, is the following:

(13)
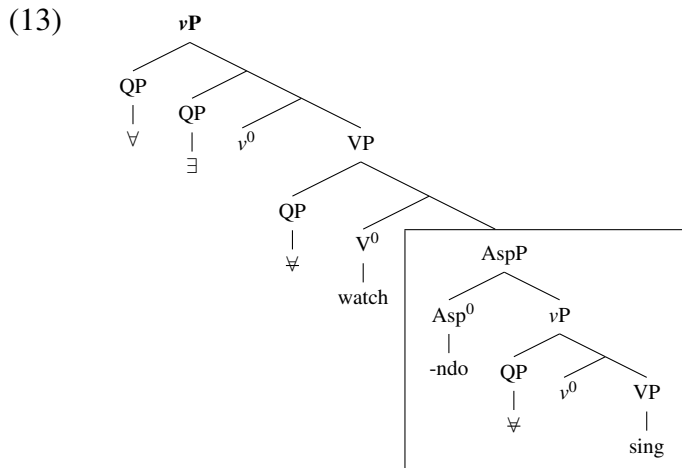
Class 3 GCs like the perceptual one project only the bare minimum AspP, a projection not regarded to be phasal. As a consequence, these GCs are not domains for QR. The smallest phase that contains the embedded universal quantifier is the matrix *v*P. Thus, if the embedded universal quantifier were to raise, following Wurmbrand (2013)'s theory of QR, it should move to the edge of the matrix *v*P. From this new position, it c-commands the existential quantifier, the matrix subject, in its base position. Thus, this instance of QR is legitimate from a semantic economy point of view, for the scope of the raising quantifier is extended. This would be why (12-a) is ambiguous.

4.1.1 Passivization in perceptual GCs

Perceptual GCs seem to allow their subject to be raised into the matrix subject position when the matrix, perceptual verb is passivized.

(14)   O   morro pôde ser   ouvido *t* desabando a quilômetros de distância.
       the hill   could to-be heard   *t* collapsing at kilometers   of distance
       'The hill could be heard collapsing from kilometers away.'

It is necessary to take a careful look at passivization from perceptual GCs. Linear strings *DP2 + perceptual verb + DP1 + verb_{ndo}* as in (15) are multiply ambiguous:

(15)   O   João viu a   menina andando de ônibus.
       the João saw the girl   walking of bus
       'João saw the girl riding a bus.'

Three of the possible readings are in (16)–(18). The structure corresponding to each of them is indicated in brackets and through constituency tests based on Wh-movement in the (b) example of each pair.

(16)   a.   O   João viu [a   menina andando de ônibus].
            the João saw [the girl   riding   a bus]

       b.   [O-que] o   João viu?
            [what]   the João saw

(17) a. O João viu [a   menina$_i$] [ec_i andando de ônibus]
          the João saw [the girl]   [ec riding   a bus]

      b. [Quem] o João viu [andando de ônibus]?
          [who]   the João saw [riding   a bus]

(18) a. O João viu [[a   menina] [ec andando de ônibus]]
          the João saw [[the girl]   [ec riding   a bus]]

      b. [Quem] o João viu?
          [who]   the João saw

In (16), the complement to the perceptual verb is a GC, that is, the linear string *DP1 + verb$_{ndo}$* corresponds to a single constituent, which can be asked by *o que* 'what' – (16-b). In (17), the complement to the perceptual verb is a DP and the verb in gerund form is part of an adverbial clause.[1] Thus, the string *DP1 + verb$_{ndo}$* does not form a single constituent, but rather two. This can be seen in (17-b), where *DP1* can be asked independently of *verb$_{ndo}$*. In (18), *DP1* and the verb in gerund form end up forming a single constituent, but for reasons different from those in (16). In (18), *DP1* (*a menina* 'the girl') is the complement to the perceptual verb, as in (17), but the gerund verb is part not of an adverbial adjunct, but rather of an adnominal adjunct. This would be the reason why the string *DP1 + verb$_{ndo}$* can also be asked as a whole. However, the interrogative phrase is *quem* 'who', rather than *o que* 'what', as in (16). (Adnominal GCs are looked at in section 4.5 below.)

Thus, as far as a passive construction like (19-a) is concerned, it is not immediately clear that it is the result of passivization departing from a GC (i.e., raising of the GC subject to the matrix subject position – see schema in (19-b)). In the remainder of this section, I discuss whether or not it is possible to determine if the string *DP1 + verb$_{ndo}$*, when it is contained in a perceptual passive construction, can correspond to a GC. The conclusion will be that it is indeed possible for passivization to take place from a perceptual GC.

(19) a. A menina foi vista andando de ônibus.
          the girl   was seen walking of bus
          'The girl was seen riding a bus.'

      b. A menina foi vista [~~a menina~~ andando de ônibus].
          the girl   was seen [the-girl   riding   a bus]

There are three empirical arguments supporting the claim that it is possible for a perceptual GC to undergo passivization: (i) comparison between the behavior of a perceptual GC and that of an adverbial GC when both are part of the same sentence; (ii) selection restrictions of *ouvir* 'hear'; (iii) selection restrictions of *assistir* 'watch'.

Let us look at a sentence like (20-a). There, there are two *DP1 + verb$_{ndo}$* strings, namely, *a Maria cantando 'Clocks'* 'Maria singing *Clocks*' and *estalando os dedos* 'snapping her fingers'. (20-b)'s ungrammaticality suggests that it is not possible for the two strings to be adverbial, as

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[1]More precisely, this is a low adverbial. See sections 4.4 and 6.4.

are *cantando* 'singing' and *estalando os dedos* 'snapping her fingers'. Furthermore, it cannot be the case either that the two strings in (20-a) be complements, as *ouvir* 'hear' is not a ditransitive predicate. We can conclude thus that, of the two *DP1 + verb_{ndo}* strings in (20-a), one of them must be a complement and the other one must be adverbial. In turn, (20-c) (uttered with flat intonation) shows that it is not possible for an adverbial to stand between a matrix verb (*comer* 'to eat') and its object (*uva* 'grapes'). Hence, the conclusion is that the order between the GCs in (20-a) is: first the complement (i.e., a perceptual GC) and then an adverbial GC.

(20)   a.   O João ouviu a   Maria cantando 'Clocks' estalando os dedos.
             the João heard the Maria singing   'Clocks' snapping the fingers
             'João heard Maria singing *Clocks* snapping her fingers.'

        b. *O   João chegou cantando 'Clocks' estalando os dedos.
             the João arrived singing   'Clocks' snapping the fingers

        c. *O   João comeu estalando os dedos uva.
             the João ate   snapping the fingers grape

This conclusion is confirmed by contrasts regarding extraction possibilities. As is well-known, while it is possible to extract from complements, adjuncts do not allow for extraction. The complement inside the first GC in the strings *DP1 + verb_{ndo}* in (20-a) (a perceptual GC, as we concluded previously) can be extracted – (21-a) –, but that of the second string (an adverbial GC), cannot – (21-b).

(21)   a.   O-que o   João ouviu a   Maria cantando *t* estalando os dedos?
             what the João heard the Maria singing   *t* snapping the fingers
             'What did João hear Maria singing snapping her fingers?'

        b. *O-que o   João ouviu a   Maria cantando 'Clocks' estalando *t*?
             what the João heard the Maria singing   'Clocks' snapping *t*

We can, in the same structure, move the *DP1* in the first string *DP1 + verb_{ndo}* to the matrix subject position and extract its object – (22-a). We had previously concluded that this is a perceptual GC in complement position. Extraction from the second *DP1 + verb_{ndo}* string, an adverbial, remains barred – (22-b).

(22)   a.   O-que a   Maria foi ouvida cantando *t* estalando os dedos?
             what the Maria was heard singing   *t* snapping the fingers
             'What was Maria heard singing snapping her fingers?'

        b. *O-que a   Maria foi ouvida cantando 'Clocks' estalando *t*?
             what the Maria was heard singing   'Clocks' snapping *t*

We can conclude that it is possible to tease apart a perceptual GC from the other structures underlying a multiply ambiguous string like (15) and, in addition, that it is possible that the subject of the perceptual GC be raised into the matrix subject position.

    The semantic restrictions that the perceptual verbs *ouvir* 'hear' and *assistir* 'watch' impose on their complements can also be helpful for verifying whether or not passivization from per-

ceptual GCs is possible. Informally speaking, *ouvir* 'hear' requires that the denotation of its complement be an entity that produces some kind of sound. This would be the reason why (23) is ill-formed: *hill*, whose denotation is not even an animate entity, does not fulfill this semantic requirement.

(23) *O   João ouviu o   morro.
      the João heard the hill

However, if *ouvir* is followed by a $DP1 + verb_{ndo}$ string, *o morro* 'the hill' can be part of it, as we see in (24-a). As was seen in (16)–(18), there are in principle three possibilities of structure: (i) the string $DP1 + verb_{ndo}$ is a single constituent, a perceptual GC; (ii) this string does not form a single constituent, *DP1* is a non-clausal complement of *ouvir* and $verb_{ndo}$ is part of an adverbial GC; (iii) the string is equivalent to a single constituent, but the complement to *ouvir* is non-clausal; it is a DP to which $verb_{ndo}$ is adjoined, as a part of an adnominal adjunct. Since *DP1* is *o morro* 'the hill', options (ii) and (iii) are excluded, for, in these two cases, the complement to *ouvir* is a DP. If this DP is *o morro*, *ouvir*'s semantic requirement cannot be fulfilled. Thus the string $DP1 + verb_{ndo}$ in (24-a) must be a perceptual GC, option (i).

As a consequence, the DP *o morro* in the pre-verbal position in (24-b) can only have moved from the subject position of a perceptual GC, that is, (24-b) is an unmistakable instance of passivization from a perceptual GC.

(24) a. A   população ouviu o   morro desabando a quilômetros de distância.
          the population heard the hill   collapsing at kilometers   of distance
          'The population heard the hill collapsing from kilometers away.'
      b. O   morro foi ouvido desabando a quilômetros de distância.
          the hill   was heard   collapsing at kilometers   of distance
          'The hill was heard collapsing from kilometers away.'

A similar argument is provided by the verb *assistir* 'watch', which requires that the entity denoted by its complement be [–HUMAN]. A violation of this requirement could explain the ill-formedness in (25-a). According to this reasoning, the string $DP1 + verb_{ndo}$ in (25-b) can only be a perceptual GC – it is not possible that *a Maria* be a non-clausal complement of *assistir* 'watch'. Thus, the pre-verbal DP in the passive construction (25-c) can only have been generated inside a perceptual GC. In other words, (25-c) is also an unmistakable instance of passivization from a perceptual GC.[2,3]

---

[2]Juanito Avelar (p.c.) points out to me that (25-a) can be a well-formed string. And indeed it can, but I think it has an "extra layer" of meaning. I think (25-a), in a well-formed version, can mean that João is staring at Maria in a very intent way or that he is stalking her. Significantly, I think such extra meaning layer does not have to be present in a passive construction like (25-c).

[3]Juanito Avelar (p.c.) also mentions that a construction like (i-a), where a single DP is the complement to *assistir* 'watch' is well-formed. I think this is a case of metonymy. (i-a) probably means that the speaker is going to watch a TV program hosted by Roberto Carlos.

(i)   a. Ontem,   eu assisti o   Roberto Carlos.
          yesterday I   watched the Roberto Carlos

(25) a. #O   João assistiu a   Maria.
          the João watched the Maria
          'João watched Maria.'

      b. O   João assistiu a   Maria cantando.
          the João watched the Maria singing
          'João watched Maria singing.'

      c. A   Maria foi   assistida cantando.
          the Maria was watched singing
          'Maria was watched singing.'

Three empirical arguments were presented in support of the claim that passivization from a perceptual GC is possible. This issue is important to settle due to the multiple ambiguity of *DP2 + perceptual verb + DP1 + verb$_{ndo}$* strings and because it is one of the main properties along *class 1*, on the one hand, and *class 2* and *3* GCs, on the other, differ.

This said, we can go back to (14), repeated below, which we can now say is a non-ambiguous case of passivization from a perceptual GC. Its schematic representation is in (27). (I abstract away from representing the passive participle and represent the copular under T. I think these details are not relevant to the point being made.)

(26) O   morro pôde ser   ouvido desabando a quilômetros de distância.
      the hill   could to-be heard collapsing at kilometers   of distance
      'The hill could be heard collapsing from kilometers away.'

(27)
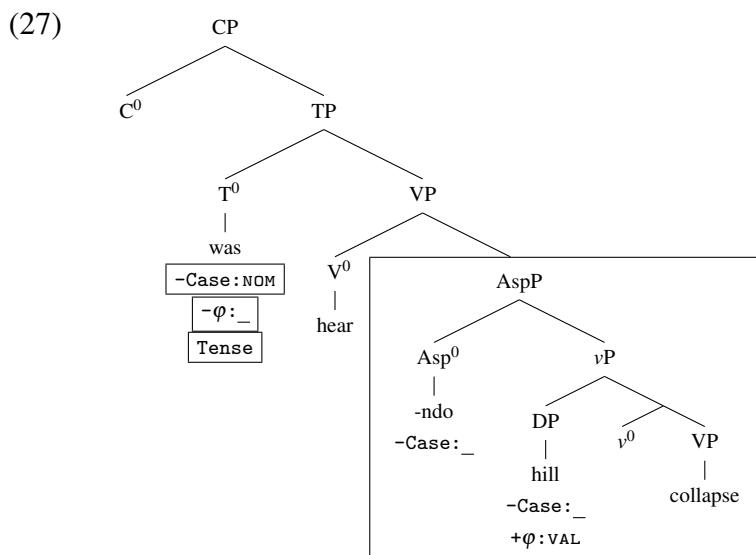
'Yesterday, I watched Roberto Carlos (on TV)/Roberto Carlos' show.'

      b. Você vai   na   Evani amanhã?
          you   goes in.the Evani tomorrow
          'Are you going to Evani('s class) tomorrow?'

This is quite similar to what happens in the non-perceptual sentence (i-b), where *Evani* is used to refer, by metonymy, to the class taught by the individual named by this proper name (or more precisely, to the classroom where the course is held). Thus, (i-a) falls under the selection pattern of *assistir* mentioned above (its complement must be [−HUMAN]).

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Because a *class 3* GC is also an instance of GC that is not self-sufficient for Case, all the Case probes inside the GC end up depending on an external Case goal to be valued. In an active sentence, what values the Case feature of the perceptual GC subject is the matrix V (after feature inheritance from *v* to V). The GC subject moves to [Spec, VP] in order to extend its probing domain and thus c-command the accusative feature V inherits (see (5) above). Correspondingly, in a passive sentence, the first position the GC subject could move to to extend its probing domain is the matrix [Spec, TP]. Thus, *hill* in (27) moves to [Spec, TP] for its Case to be valued.

(28)
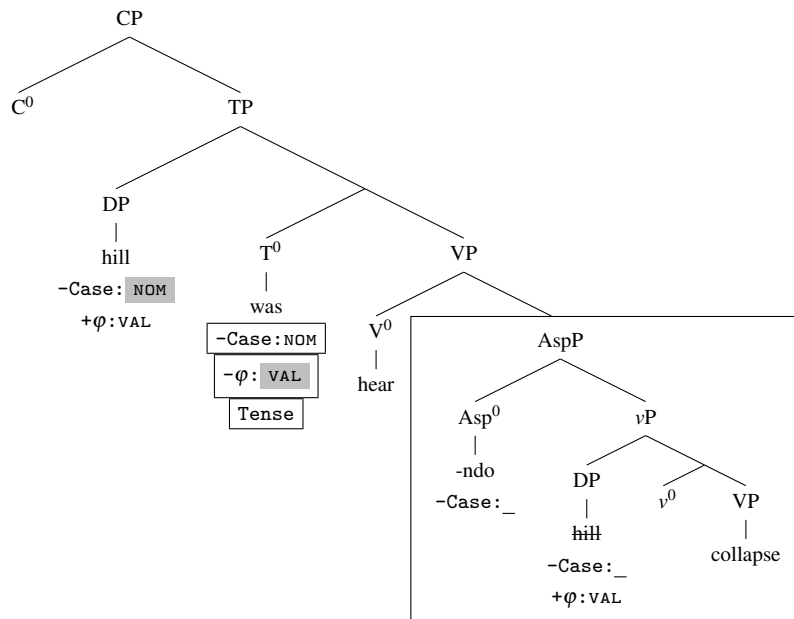
Later on in the derivation, the higher copy of the subject probes the structure in order to value the Case feature of the lower copy.

(29)
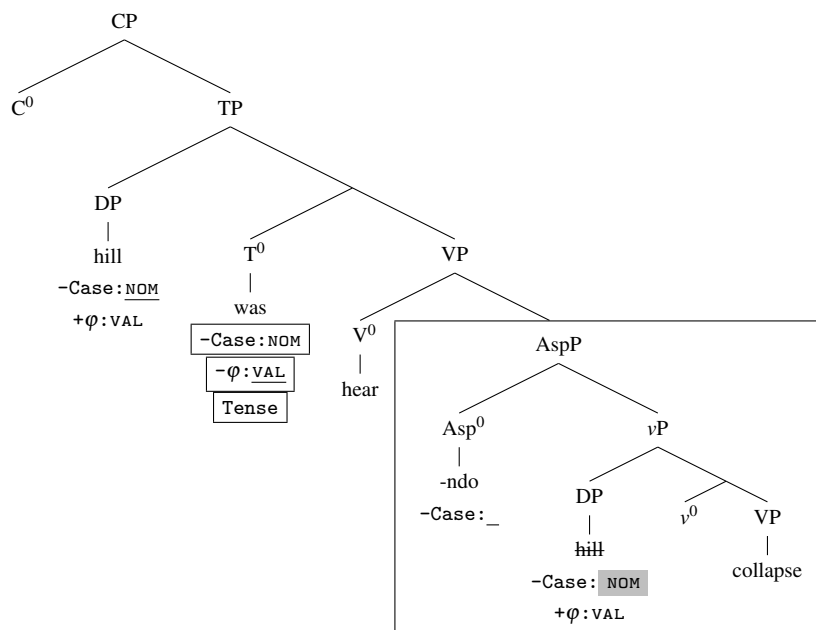
At this point of the derivation, the gerund morpheme can finally c-command a valued Case feature, so that its own Case feature can also be valued and deleted. It is still accessible in the derivation both because of the Activation Condition and because all these syntactic operations are effected in the same phase, the matrix CP.

(30)
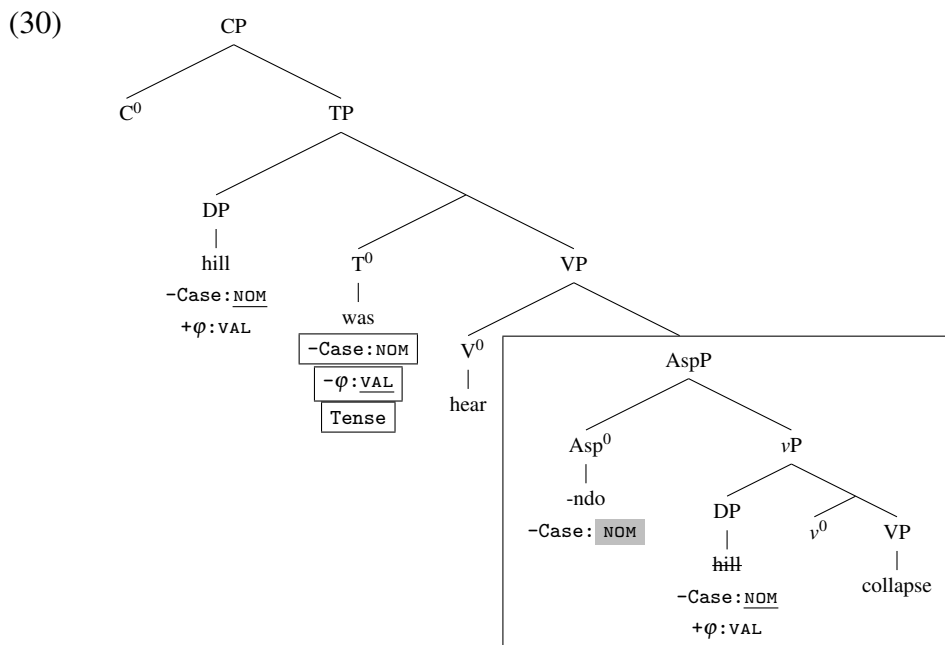
In sum, the analysis proposed is able to capture the possibility of raising in perceptual GCs, one of the central empirical bases of the analysis proposed.

4.1.2 Perceptual GCs in subject position

Related to passivization in perceptual GCs is the possibility of raising not only the GC subject, but the GC as a whole to the matrix subject position:[4]

(31) a. Os alunos saindo mais cedo da aula foi flagrado pelos professores.
the students leaving more early of.the class was caught by.the professors
'The students leaving earlier from the class was caught by the teachers.'

b. A Dilma discursando sobre a Petrobrás foi assistido por pouca gente.
the Dilma making-a-speech about the Petrobrás was watched by few people
'Dilma making a speech about Petrobrás was watched by few people.'

In order to derive (31-a), the GC is built and it merges with the matrix perceptual verb.

---

[4]It is not possible to analyze the GCs in (31-a) and (31-b) as instances of adnominal GCs (see section 4.5 below). In other words, it is not the case that *os alunos* 'the students' and *Dilma* are the subject of the matrix clause and *saindo mais cedo* 'leaving earlier' and *discursando sobre a Petrobrás* 'making a speech about Petrobrás' is adjoined to them. In (31-a), although *the students* is plural, the matrix verb (*foi* 'was') is in singular form, as generally is the case with verbs the subject of which is a clause. In (31-b), although *Dilma* is a feminine proper name, the perceptual verb is in masculine form (*assistido* 'watched'). This verb is in participial form, which, in BP, bears gender morphology.

(32)

```
                    VP
           ┌─────────┴──────────────────┐
          V⁰         ┌─────────AspP──────────┐
           |        Asp⁰              VP
         catch       |         ┌──────┴──────┐
                   -ndo        V⁰           DP
                  -Case:_       |            |
                              leave       students
                                          -Case:_
                                          +φ:VAL
```
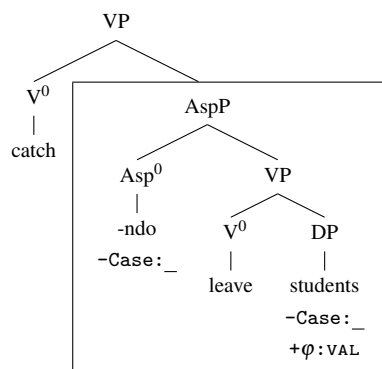
Because the matrix clause is in passivized form, only the VP layer is formed. Then the matrix TP and CP are assembled and T inherits features from C.

(33)

```
                         CP
                ┌────────┴────────┐
               C⁰               TP
                        ┌────────┴────────┐
                       T⁰                VP
                        |         ┌───────┴───────────────────┐
                       be        V⁰      ┌────────AspP──────────┐
                  ┌─────────┐     |     Asp⁰             VP
                  │-Case:NOM│   catch    |        ┌──────┴──────┐
                  └─────────┘          -ndo       V⁰          DP
                   ┌────┐             -Case:_      |           |
                   │-φ:_│                        leave      students
                   └────┘                                   -Case:_
                                                            +φ:VAL
```
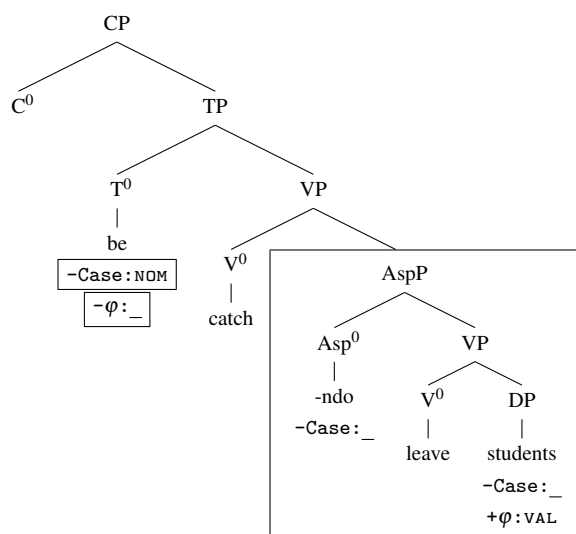
In the system I assume, there is nothing that prevents the gerund morpheme from moving to extend its probing domain. However, there are likely to be morphological constraints against the movement of a verbal morpheme by itself. Presumably, if the gerund morpheme moves, it triggers the movement of the whole AspP that contains it. AspP moves to [Spec, TP], the first position where it can move to in order to c-command a Case goal (i.e., a valued Case feature). In this position, it can have its Case feature valued.

(34)

```
                          CP
            ┌──────────────┴──────────────┐
           C⁰                             TP
                        ┌──────────────────┴────────┐
                      AspP                           │
          ┌────────────┴────────────┐         ┌──────┴──────┐
        Asp⁰                        VP        T⁰            VP
          │                  ┌───────┴───┐     │       ┌─────┴─────┐
        -ndo                V⁰          DP    be      V⁰         AspP
     -Case: NOM             │            │  ┌────────┐ │
                          leave      students -Case:NOM catch
                                     -Case:_  ┌──────┐
                                     +φ:VAL   -φ:_
```
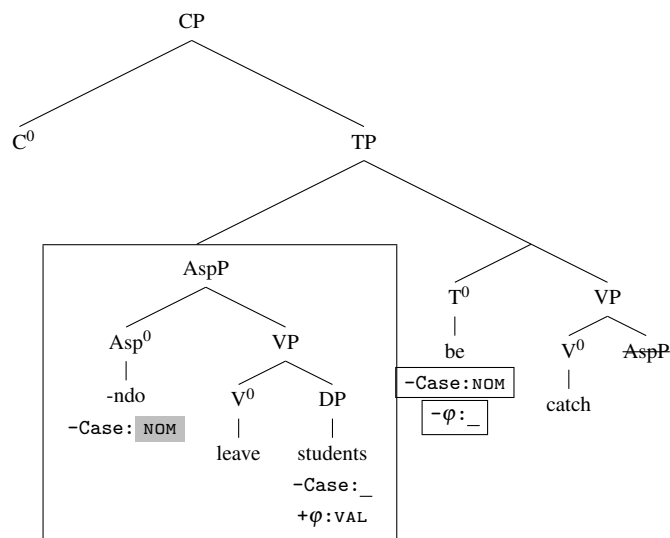
The GC subject (the DP *students*) also has a Case feature to be valued. The first position it can move to in order to be Case-marked is [Spec, AspP], since the gerund morpheme has just had its own Case feature valued.

(35)

```
                          CP
            ┌──────────────┴──────────────┐
           C⁰                             TP
                    ┌───────────────────────┴────────┐
                  AspP                                │
         ┌──────────┴──────────┐               ┌──────┴──────┐
        DP                     │              T⁰            VP
         │              ┌───────┴──────┐       │       ┌─────┴─────┐
      students        Asp⁰            VP      be      V⁰         AspP
    -Case: NOM         │         ┌─────┴───┐ -Case:NOM catch
     +φ:VAL          -ndo       V⁰        DP  -φ:_
                  -Case:NOM      │          │
                              leave      students
                                         -Case:_
                                         +φ:VAL
```
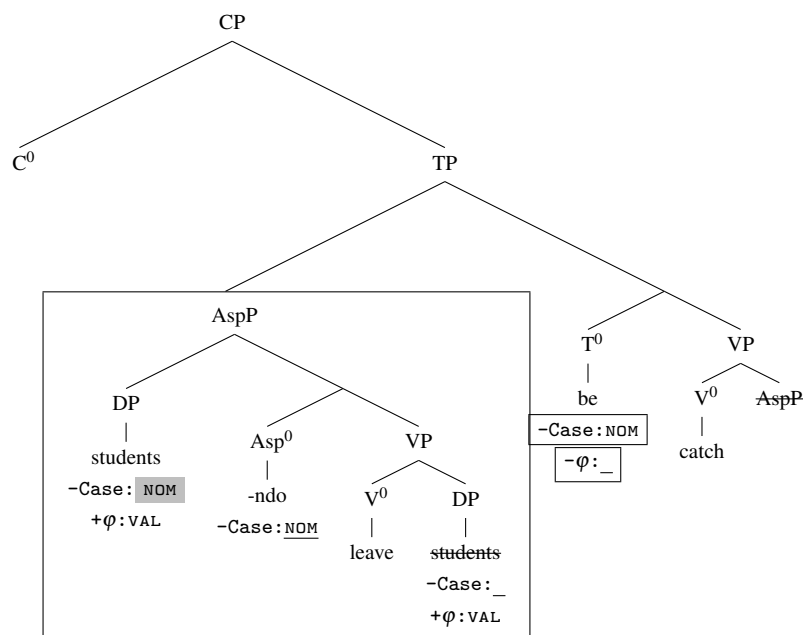
Finally, the moved DP probes the structure to value and delete the Case feature of its lower copy.

(36)
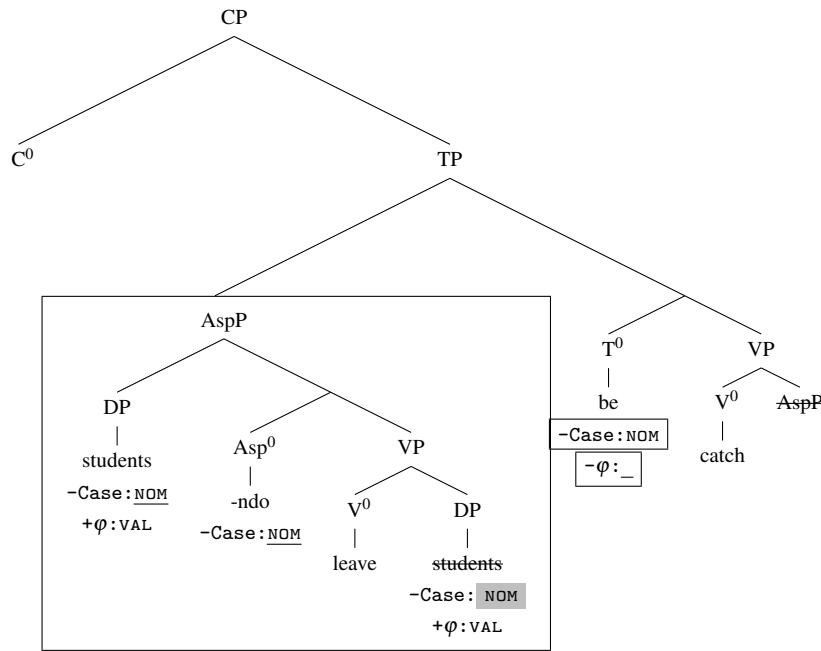
In sum, the analysis seems to be flexible enough to account for the possibility of the perceptual GC as a whole to move to the matrix subject position.

4.2 Existential GCs

Another subtype of *class 3* GC is the one subcategorized for by the existential predicate *ter* 'have'.

(37) Tem crianças correndo no   estacionamento.
      has children running in.the parking-lot
      'There are children running in the parking lot.'

Before we get to the derivation of this type of construction, we first take a look at their definiteness effects (Belletti, 1988).

4.2.1 Definiteness effects

The DP that follows the existential verb, the subject of the GC, can only be an indefinite DP – (38); it cannot be a definite one – (39).

(38) a. Tem *algumas crianças* correndo no   estacionamento.
          has some   children running in.the parking-lot
          'There are some children running in the parking lot'

      b. Não tem *nenhuma criança* correndo no   estacionamento.
          NEG has no   child   running in.the parking-lot
          'There is no child running in the parking lot.'

      c. Tem *uma criança* correndo no   estacionamento.
          has a   child   running in.the parking-lot

116

'There is a child running in the parking lot.'

(39) a. *Tem *o João* correndo no   estacionamento.
          has   the João running   in.the parking-lot

     b. *Tem *todas as crianças do   condomínio* correndo no   estacionamento.
          has   all   the children of.the condominium running   in.the parking-lot

     c. *Tem *o menino que passou no   ITA* correndo no   estacionamento.
          has   the boy   that passed in.the ITA running   in.the parking-lot

     d. *Tem *a maioria das   crianças do   condomínio* correndo no
          has   the majority of.the children of.the condominium running   in.the
          estacionamento.
          parking-lot

In Belletti (1988), definiteness effects are taken to be a consequence of unaccusative verbs, among which we could classify the existential predicate, assigning partitive Case to their complement. As a result of its semantic requirements, the partitive Case can only be assigned to indefinite nouns. This could explain contrasts such as the following:

(40) a. There is *a man* in the garden.   (Belletti 1988, 3, (3b))

     b. *There is *the man* in the garden.   (adapted from Belletti 1988, 3, (4b))

A man/*the man* is assigned partitive Case by *be*. This Case can be borne by the indefinite *a man*, but not by the definite *the man*.

Partitive Case, according to Belletti (1988), is an instance of inherent Case, a Case that a predicate *P* assigns to its argument *a*, together with a thematic role. As a consequence, there cannot be exceptional inherent Case marking, that is, it cannot be the case that *P* assigns inherent Case to an argument α of its argument *a*, since *a*, but not α, receives a thematic role from *P*.

However, this analysis of definiteness effects raises the question as to why the existential GC subject seem to display them – (38) vs. (39). The problem is that the subject of the existential GC is an argument (α) of an argument (*a*) of the existential predicate (*P*). The analysis provided for GCs, bearing in mind the proposal that the gerund morpheme has a Case feature to be valued, together with the feature valuation system assumed, may allow us to capture these effects without incurring in exceptional inherent Case marking.

Before we move on to the derivation proper, we should notice that it is indeed possible for a proper name to be the subject of an existential GC ((41)-a and (41)-b are part of the same dialogue).

(41) a. Pára de reclamar;   não tem nada   te   incomodando.
          stop of to-complain NEG has nothing you annoying
          'Stop complaining; there is nothing annoying you.'

     b. Bom, tem *o João* me enchendo o   saco aqui.
          well   has the João me filling   the bag here
          'Well, there is João annoying me here.'

However, existential GCs with a proper name as the subject do not seem to be usable in exactly the same contexts as indefinite subject existential GCs are, as indicated by the contrasting pairs (42) vs. (43), on the one hand, and (44) vs.(45), on the other.

(42)   Olha: tem uma pessoa andando na   rua   a essa hora da madrugada.
          look has a   person walking in.the street at this hour of night
          'Look: there is a person walking on the street this late at night.'

(43)   #Olha: tem o   João andando na   rua   a essa hora da madrugada.
          look has the João walking in.the street at this hour of night
          'Look: there is João walking on the street this late at night.'

(44)   a.   O-que que tá acontecendo?
              what   that is happening
              'What is going on?'

        b.   Tem criança correndo no   estacionamento.
              has child   running in.the parking-lot
              'There are children running in the parking lot.'

(45)   a.   O-que que tá acontecendo?
              what   that is happening
               'What is going on?'

        b. #Tem o   João me enchendo o   saco aqui.
              has the João me filling   the bag here
              'There is João annoying me here.'

Needless to say, the possibility of an existential GC to have a proper name in the subject position, as in (41), needs to be looked into thoroughly, but for now I leave this issue aside, only noticing that there might be more (independent) restricting factors in licensing this instance of existential GC.

4.2.2 Derivation

The derivation of (46) starts by the assembling of the existential GC. This is a *class 3* GC, that is, a GC that projects only the bare minimum necessary to build a GC.

(46)   Tem crianças correndo no   estacionamento.
          has children running in.the parking-lot
          'There are children running in the parking lot.'

(47)
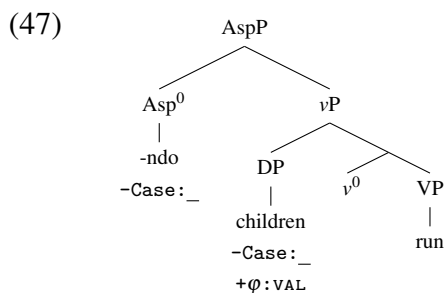
The GC merges with the existential predicate, *ter* 'have'. I assume that this predicate is able to assign partitive (PRTV) Case to its complement. Since this Case assignment is dependent on θ-role assignment, a plausible assumptions is that it does not have to wait for the phase level to take place. The argument to *have* is AspP, so that PRTV is assigned to it, along with a θ-role. Assuming Bare Phrase Structure, this inherent Case also ends up assigned to the head of AspP. Because the gerund morpheme is the head of AspP and it has a Case feature to be valued, this feature can be valued as PRTV.

(48)

```
                    VP
              _____|_____
             |             |
            V⁰            AspP
            |         _____|_____
          have      |           |
                   Asp⁰         vP
                   |        _____|_____
                  -ndo     |      |    |
              -Case: PRTV  DP    v⁰   VP
                           |           |
                        children      run
                        -Case:_
                        +φ:VAL
```

The derivation proceeds by assembling TP and CP on top of the existential verb. As mentioned (see section 2.2.11), I assume that the existential expletive, *pro* in BP, is base-generated in [Spec, TP]. Recall also (from sections 1.5.1.2 and 2.2.11) that I propose that the BP existential expletive bears the following features: [-Person:VAL;+Number:SG;-Case:_].
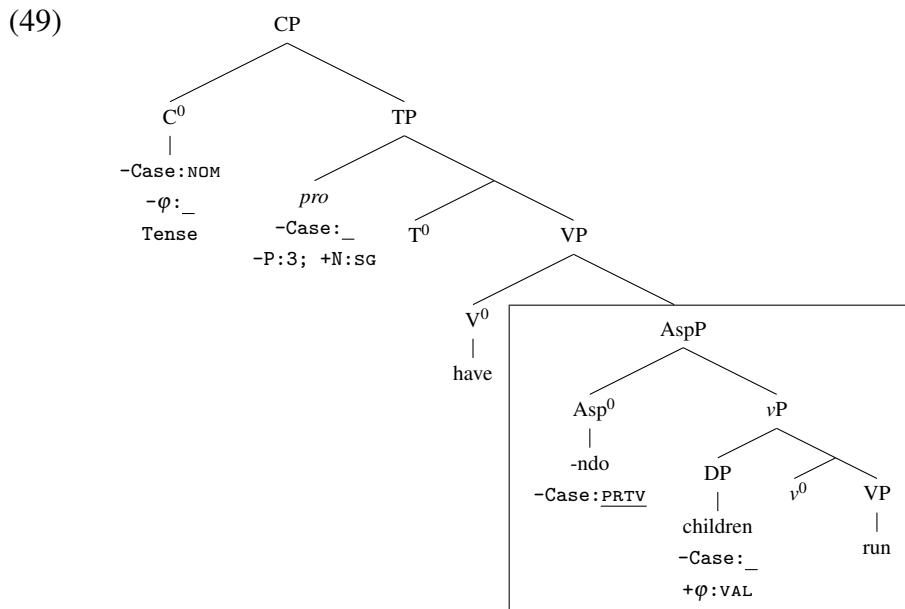
(49)

```
                         CP
                   _____|_____
                  |             |
                 C⁰             TP
                  |        _____|_____
             -Case:NOM    |             |
               -φ:_      pro           VP
              Tense    -Case:_    _____|_____
                       -P:3; +N:SG  T⁰         |
                                              VP
                                         _____|_____
                                        |          |
                                       V⁰        AspP
                                        |     _____|_____
                                      have   |          |
                                           Asp⁰         vP
                                            |       _____|_____
                                          -ndo     |     |     |
                                      -Case:PRTV   DP    v⁰    VP
                                                   |           |
                                                children      run
                                                -Case:_
                                                +φ:VAL
```
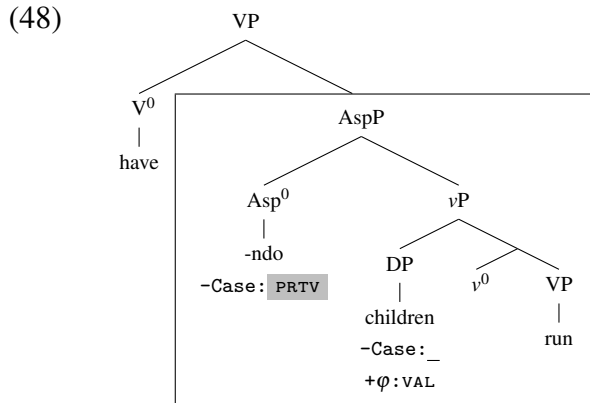
A phase level having been reached, syntactic operations like feature inheritance, probing and Agree are triggered. The DP *children* has a Case feature to be valued. In an existential construction, as analyzed here, the first position where it can move in order to extend its probing domain is [Spec, AspP]. The gerund morpheme, head of AspP, also has a Case feature to be valued. This had been done in a previous step in the derivation – (48) –, via inherent Case-marking. As

a consequence, the existential associate *children* is also valued as partitive. Other operations like valuation of the Case feature of the expletive and of T's φ-features (see section 2.2.11) also take place at this point.
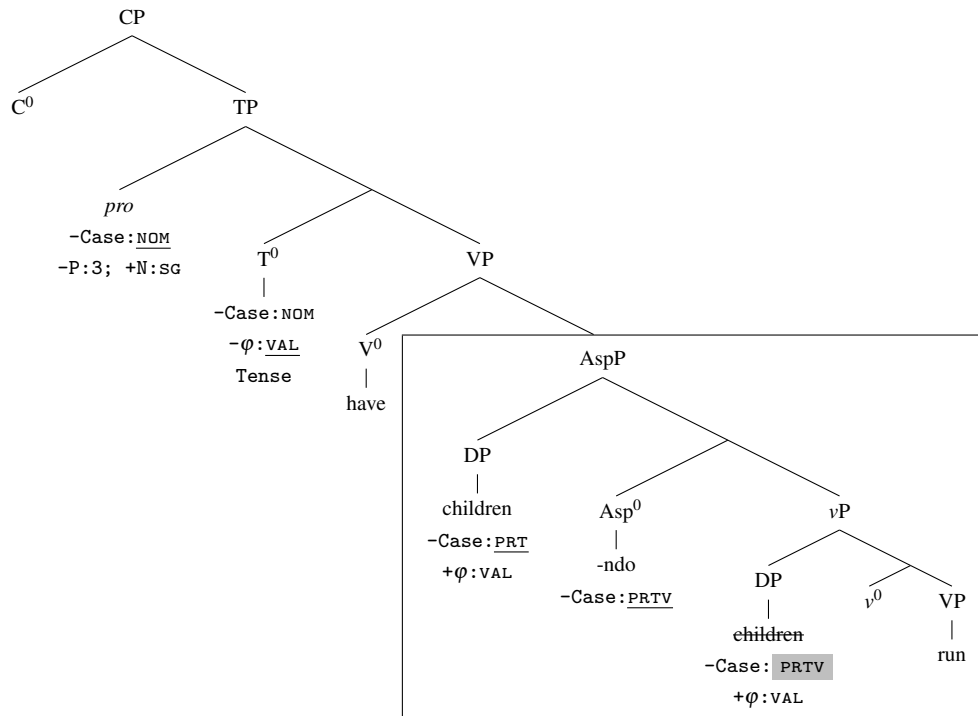
(50)

```
                          CP
                      ___/  \___
                    C⁰         TP
                          ____/  \____
                        pro            \
                    -Case:NOM           \
                    -P:3; +N:SG    T⁰        VP
                                   |      __/  \__
                              -Case:NOM  V⁰        \
                               -φ:VAL    |          AspP
                                Tense   have    __/    \__
                                              DP         \
                                              |           \
                                           children   Asp⁰      vP
                                          -Case:PRTV   |     __/  \__
                                           +φ:VAL    -ndo   DP    \
                                                -Case:PRTV |   v⁰   VP
                                                        children       |
                                                        -Case:_       run
                                                         +φ:VAL
```
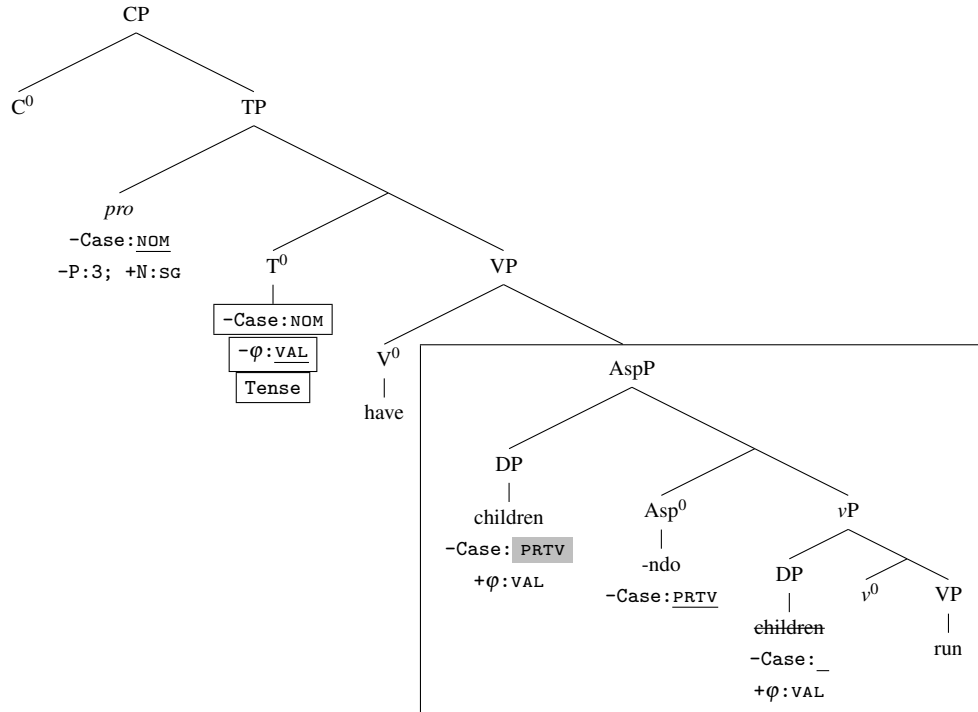
Finally, the higher copy of *children* probes the structure in order for its lower copy also to have its Case feature valued and deleted.

(51)

```
                          CP
                      ___/  \___
                    C⁰         TP
                          ____/  \____
                        pro            \
                    -Case:NOM           \
                    -P:3; +N:SG    T⁰        VP
                                   |      __/  \__
                              -Case:NOM  V⁰        \
                               -φ:VAL    |          AspP
                                Tense   have    __/    \__
                                              DP         \
                                              |           \
                                           children   Asp⁰      vP
                                          -Case:PRT    |     __/  \__
                                           +φ:VAL    -ndo   DP    \
                                                -Case:PRTV |   v⁰   VP
                                                        children       |
                                                        -Case:PRTV    run
                                                         +φ:VAL
```

The Case-valuation of the existential GC subject is different from what happens in perceptual GCs. In perceptual GCs (section 4.1 above), the subject stands by until a phase level is

reached (the matrix vP). Then, the GC subject moves to the Spec position of V, which had just inherited features from v. This is so because this is the first position where it can c-command a Case goal and this is the earliest point in the derivation where this is possible. In contrast, in existential GCs, there is an extra factor, namely, the existential verb, which I claim to be able to assign inherent Case. This Case, being inherent, does not have to stand by to be assigned until a phase level is reached because it depends on θ-role assignment. Thus, it can be immediately assigned to the gerund morpheme (Asp). Later on, when a phase level is indeed reached, the first position where the GC subject can move to in order to c-command a Case goal is [Spec, AspP], rather than some higher position in the matrix clause, as in perceptual GCs.

4.2.3 Consequences of the analysis

Having shown how the derivation of an existential GC proceeds, as entailed by the assumptions and proposals made regarding GCs, feature valuation and existential constructions, we can turn to some of the consequences this analysis may have. First, we consider how the analysis provided can derive the definiteness effects an existential GC displays without having to resort to exceptional inherent Case-marking. Then we turn to the behavior of existential constructions along the properties the analysis is based on.

As mentioned above, an intriguing property of existential GCs is that their subject seems to display definiteness effects, even though it is not an argument of the existential verb. In the analysis proposed, the GC subject has its Case valued as partitive after the gerund morpheme had had its own Case feature valued by the existential verb, via inherent Case assignment. This is the order of the derivation because, when syntactic operations are triggered at the phase level (matrix CP), the Case feature of the gerund morpheme, valued by partitive Case, assigned previously along to a θ-role to AspP, is the first goal the GC subject can c-command. Although it does not receive partitive Case from the existential verb, the GC subject ends up receiving this Case specification *indirectly*, via the corresponding feature in the gerund morpheme. There is no exceptional inherent Case marking, as desired. Nevertheless, the subject of the existential GC is still specified as partitive and thus it has to comply with the requirements of this Case, one of which is being indefinite.

This is how the analysis captures the contrasts in (38) vs. (39): only indefinite subjects are compatible with the partitive Case the existential GC subject ends up indirectly valued with. Notice how the Case feature I propose the gerund morpheme to have plays a crucial role in capturing these indefiniteness effects.

As for TP-dependent properties, like other members of *class 3* GCs, existential GCs cannot license sentential negation – (52) – nor a sentential adverbial – (53).

(52) ???Tem várias crianças não mexendo um dedo na   sala 234.
       has   several children NEG moving   a   finger in.the room 234

(53) ???Tem crianças provavelmente correndo no   estacionamento.
       has   children probably   running   in.the parking-lot

These properties of the behavior of existential GCs can be captured by the assumption that sentential negation and clausal adverbials are elements that presuppose TP, in conjunction with the proposal that *class 3* GCs like the existential subtype do not contain this projection.

However, unlike other GC subtypes that belong to *class 3* GCs, existential GCs do not allow for the raising of the subject base-generated inside the GC into the matrix clause. As a matter of fact, this is the behavior displayed by *class 1* GCs, the GCs that are self-sufficient for Case.

(54)   *Crianças tem/têm correndo no   estacionamento.
      children has/have running   in.the parking-lot

This contrast does not undermine the analysis because there may be an independent factor at play. Now that we have seen the derivation of existential GCs, we can pinpoint this independent factor: it is the partitive Case I assume the existential verb assigns, along with a θ-role, to its complement. This Case is also, indirectly, responsible for valuing the Case of the GC subject and, as a byproduct, for its definiteness effects. As a consequence, the subject is frozen inside the GC and cannot raise into the matrix clause.

In the feature valuation system assumed, a syntactic object moves either to extend its probing domain or to escape Spell-out. In a sentence containing an existential GC, a phase is only reached when the matrix CP is derived and this is after partitive Case-valuation, so the GC subject is no longer active to move to the phase edge. In fact, after its Case is valued, it cannot move anywhere in the structure because there is no reason for it to move. This would be why (54) is ungrammatical: that linear order, where the DP *crianças* 'children' is in pre-verbal position, cannot be derived. This would require that the DP move away from the existential GC, but this is not possible because there is nothing to trigger such movement. Alternatively said, (54) is ungrammatical because it violates the economy condition against vacuous syntactic operations.

We could say that existential GCs are *indirectly* self-sufficient for Case, hence the raising similarity with *class 1* GCs. This self-sufficiency for Case is of a very different nature. In *class 1* GCs, it is a consequence of the structural make-up of the GC: on top of the bare minimum AspP, there is also TP and CP. Besides, a Case feature is inherited by T from C. This Case freezes the subject of a *class 1* GC in place. In existential GCs, only the bare minimum AspP is projected, but the matrix, existential predicate is able to assign Case to its complement. This Case is taken up by the GC subject later on in the derivation, also freezing it in place.

Yet another property that existential GCs do not share with its fellow *class 3* GCs is that its subject cannot be an anaphor and neither does it allow for inverse scope. The explanation is that there is no room in a sentence containing an existential GC for an antecedent or for a second quantifier. Hence, the ungrammaticality of (55) is a straightforward Principle A violation.

(55)   *Tem se correndo no   estacionamento.
         has SE running in.the parking-lot

The domain for the anaphor has to be the matrix CP because this is the closest phase that contains the anaphor. There is no appropriate c-commanding phrase to act as the anaphor's antecedent. The only c-commanding phrase is *pro*, which, being an expletive, cannot be an antecedent. Thus, once again, there are independent factors that explain the behavior of a GC that does not behave exactly the other members of its class. Something along these lines can also be said of inverse scope.

4.3 Object control GCs

Another instance of *class 3* GC is the object control GC:[5]

(56)   a.   O médico manteve os pacientes esperando por várias horas.
              the doctor kept   the patients   waiting   for several hours
              'The doctor made the patients keep waiting for several hours.'

        b.   O João deixou os filhos brincando no   quintal.
              the João let   the sons playing   in.the backyard
              'João left his children playing in the backyard.'

What are the reasons to consider these GCs instances of object control? Notice that the sequence *DP1 + verb$_{ndo}$* following *manter* 'keep' – (57) – or *deixar* – (58) – 'let' cannot be substituted with a pro-form such as *isso* 'this'.

(57)   a.   O médico manteve os pacientes esperando por horas.
              the doctor kept   the patients   waiting   for hours
              'The doctor made the patients keep waiting for hours.'

        b.   *O médico manteve isso.
              the doctor kept   this

(58)   a.   O João deixou os filhos brincando no   quintal.
              the João let   the sons playing   in.the backyard
              'João left his children playing in the backyard.'

        b.   *O João deixou isso.
              the João let   this

---

[5]The meaning of *deixar* 'let' in (56-b) is different from the meaning of this verb when it subcategorizes for a full CP:

(i)   O João deixou que os filhos   brincassem no   quintal.
        the João let   that the children played   in.the backyard
        'João allowed his children to play in the backyard.'

As we can see in the gloss, when its complement is a CP, *deixar* is synonymous with *allow*. When its complement is a GC, as in (56-b), it means 'leave', 'put something somewhere' etc. Notice that there is also an entailment difference. (56-b) entails that the children played in the backyard, but (i) does not.
    I would like to thank Juanito Avelar (p.c.) for raising this issue.

For contrast, notice that desiderative – (59) – and perceptual GCs – (60) –, for example, can:

(59)   a.   O João quis   os filhos saindo da   escola mais cedo.
               the João wanted the sons leaving of.the school more early
               'João wanted his children to leave school earlier.'

        b.   O João quis   isso.
               the João wanted this
               'João wanted this.'

(60)   a.   O João flagrou os filhos saindo da   escola mais cedo.
               the João caught the sons leaving of.the school more early
               'João caught his children leaving school earlier.'

        b.   O João flagrou isso.
               the João caught this
               'João caught this.'

In contrast, it is possible to substitute *verb_ndo* by *assim* 'this way/like this', leaving out *DP1*.

(61)   O médico manteve [os pacientes] [assim].
         the doctor kept   the patients   like-this
         'The doctor kept the patients like this.'

(62)   O João deixou [os filhos] [assim] e   foi   preparar o jantar.
         the João let   the sons   like-this and went to-prepare the dinner
         'João let his children like this and went off to make dinner.'

It is also possible to move *verb_ndo*, leaving *DP1* behind. Moving the whole string *DP1 − verb_ndo* is considerably degraded.

(63)   a.   ?É esperando por horas que o médico manteve os pacientes.
               is waiting   for hours that the doctor kept   the patients
               'It is waiting for hours what the doctor made the patients keep doing.'

        b.   *É os pacientes esperando por horas que o médico manteve.
               is the patients   waiting   for hours that the doctor kept

(64)   a.   ?É brincando no   quintal   que o João deixou os filhos.
               is playing   in.the backyard that the João let   the sons
               'It is playing in the backyard what João left his children doing.'

        b.   *É os filhos brincando no   quintal   que o João deixou.
               is the sons playing   in.the backyard that the João let

To account for these contrasts, I propose that *manter* 'keep' and *deixar* 'let' select two internal arguments, the *DP1* and a GC. Since *DP1* and the GC are separate arguments, they cannot be conjointly substituted by a single pro-form like *isso* 'this' – (57), (58) –, but the GC can be substituted by *assim* 'this way', separately from the *DP1* argument – (61), (62). In addition, this analysis captures the possibility of moving the GC, independently of *DP1* – (63-a), (64-a).

I also propose that the subject of the GC is null. Positing an empty category for its subject position is necessary for θ-theoretic requirements: if this were not done, the derivation would crash because the predicate inside the GC could not have its thematic requirements fulfilled. Furthermore, the reference of this null subject must necessarily be the same as that of the *DP1* internal argument of *manter* and *deixar*:

(65)   a.   O médico$_j$ manteve os pacientes$_i$ $ec_{i,*j,*k}$ esperando por várias horas.
            the doctor kept   the patients   *ec*   waiting   for several hours
            'The doctor made the patients keep waiting for several hours.'

         b.   O João$_j$ deixou os filhos$_i$ $ec_{i,*j,*k}$ brincando no   quintal   e   foi
            the João let   the sons   *ec*   playing   in.the backyard and went
            preparar   o   jantar.
            to-prepare the dinner
            'João left his children playing in the backyard and went off to cook dinner.'

I take this necessary correference relation to be a case of control. Since *DP1* is an internal argument of *manter/deixar*, that is, an object, I dub the GC complement of these verbs 'object control GCs'.

Further empirical support for the claim that these GCs are object control clauses is provided by the traditional diagnostics of control. (66) shows that an antecedent is obligatory. (65) above shows that the antecedent must be local. (67) shows that the antecedent must c-command the null subject. (68) shows that it is not possible that this null subject have split antecedents. (69) shows that the null subject gets a *de se* reading. Finally, (70) shows that the null subject is interpreted as a null variable if its antecedent is an *only* DP.

(66)   a.   *Foi mantido esperando por horas.
           was kept   waiting   for hours

         b.   *Foi deixando brincando por horas.
           was let   playing   for hours

(67)   a.   O médico manteve [o filho [da   Maria]$_j$]$_i$ $ec_{i,*j}$ esperando por horas.
           the doctor kept   the son of.the Maria   *ec*   waiting   for hours
           'The doctor made Maria's son keep waiting for hours.'

         b.   O João deixou [o filho [da   Maria]$_j$]$_i$ $ec_{i,*j}$ brincando no   quintal.
           the João let   the son of.the Maria   *ec*   playing   in.the backyard
           'João left Maria's son playing in the backyard.'

(68)   a.   *O João$_i$ manteve os pacientes$_j$ ec_{i+j} esperando por horas.
           the João kept   the patients   *ec*   waiting   for hours
           'João made the patients keep waiting for hours.'

         b.   *O João$_i$ deixou of filhos$_j$ ec_{i+j} brincando no   quintal.
           the João let   the sons   *ec*   playing   in.the backyard
           'João left the children playing in the backyard.'

(69)   a.   O médico manteve o   infeliz   esperando por horas.
                the doctor kept   the unfortunate waiting   for hours
                'The doctor made the unfortunate keep waiting for hours.'

           b.   O João deixou o infeliz   brincando no   quintal.
                the João let   the unhappy playing   in.the backyard
                'João left the unhappy playing in the backyard.'

(70)   a.   O médico manteve somente a   Maria esperando por horas.
                the doctor kept   only   the Maria waiting   for hours
                'The doctor made only Mara keep waiting for hours.'

           b.   O João deixou somente o   filho brincando no   quintal.
                the João let   only   the son playing   in.the backyard
                'João left only his son playing in the backyard.'

In sum, sentences like (56-a), (56-b) above seem to be cases of object control structures.[6]

    Finally, notice that, even if it is the case that *manter* and *keep* have a second internal argument that is a DP, it is not the case that both of them can be non-null DPs.

(71)   a.   *O João manteve [o médico] [os pacientes esperando por horas].
                the João kept   the doctor   the patients   waiting   for hours

           b.   *O João deixou [os filhos] [as filhas   brincando no   quintal] e   foi
                the João let   the sons   the daughter playing   in.the backyard and went
                preparar   o   jantar.
                to-prepare the dinner

---

[6]A seventh diagnostic is missing, namely, the reading that results from ellipsis.

(i)   a.   O médico manteve os pacientes   esperando e   as pacientes   também.
               the doctor kept   the patients.MASC waiting   and the patients.FEM too
               'The doctor made the male patients keep waiting and the female patients too.'
       b.   O João deixou os filhos brincando no   quintal e   as filhas   também.
               the João let   the sons playing   in.the backyard and the daughters too
               'João left the sons playing in the backyard and the daughters too.'

It is generally the case that control clauses display a sloppy reading under ellipsis. However, the most straightforward reading in (i) is a strict one.

   It does not have to be the case that (i) is a counterargument to the claim this is a control structure. It could be the case, for example, that what is conjoined in (i) is the matrix VP, where the GC subject moves to in order to be Case-marked (an instance of ECM with overt movement, as we saw in section 4.1), so that there is enough room in the structure for both embedded subjects. What undergoes ellipsis is the AspP of the GC. Schematically:

(ii)   The doctor kept [&P [VP the male patients [AspP waiting for hours]] [&' and [VP the female patients [AspP ~~waiting for hours~~]]]] too

Notice that clearer cases of object control display the same reading:

(iii)   O João convenceu a Maria a esperar e   o Paulo também.
           the João convinced the Maria at to-wait and the Paulo too
           'João convinced Maria to wait and Paulo too.'
           (Possible reading: João convinced both Maria and Paulo to wait.)

In other words, the GC subtype we are inquiring into now is an instance of control structure that does not allow for a *PRO*–overt DP alternation.[7] In order to account for this impossibility and, more generally, for the behavior of object control GCs, I assume the movement theory of control.

4.3.1 The Movement Theory of Control

In the movement theory of control (MTC) (Hornstein, 1999, 2003; Boeckx et al., 2010), control is considered to be an *effect* of movement that passes through more than one thematic position. One of the conceptual advantages of this proposal is that it allows for a syntactic module dedicated exclusively to control to be eliminated. Rather, control is reduced to the effects of conditions that have to restrict movement anyway. One such restriction is the activation condition, that is, the requirement that, for a syntactic object to move, it must have a feature to be valued, rendering it visible to the computational system.

The MTC implies that the same syntactic object can receive more than one thematic role (see Bošković 1994) and that thematic role assignment can trigger movement. Control obtains when the same syntactic object passes through more than one thematic position via movement. Crucially, this syntactic object can only move to a further thematic position when it still is active in the derivation. Yet another presupposition of the MTC is that the numeration can contain less material that it is necessary for all the thematic requirements to be satisfied via external merge. In this scenario, internal merge, that is, movement, of a syntactic object previously introduced in the derivation is called for.
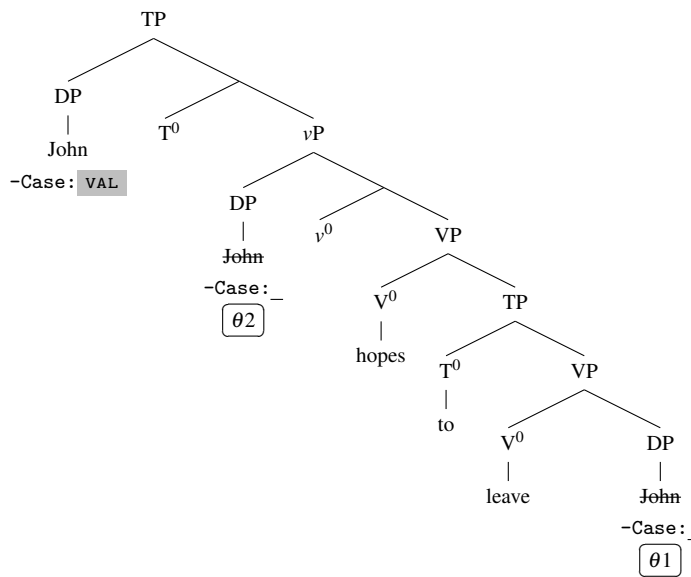
According to the MTC, a sentence like (72) would be derived from the movement of *John* to the external argument position in the matrix predicate *hope*. This DP had previously entered the derivation as the argument of the embedded predicate *leave*, from which it receives one theta-role, $\boxed{\theta 1}$. The movement of *John* from this position and into the external argument position results in this DP receiving a further theta-role, $\boxed{\theta 2}$. This movement takes place when *John* is still active in the derivation. This DP is base-generated in an infinitive clause, where it cannot be Case-marked. Its Case feature is still unvalued at the point of the derivation where the matrix external argument position must be filled, allowing it to be a valid candidate to fill this position. *John* is only Case-valued when it moves to the matrix subject position, [Spec, TP].

(72)   John hopes to leave.

Schematically:

---

[7]The object control GCs of this section are grouped together with low adverbials and they both contrast with prepositional adverbials, the subject of which is necessarily an overt DP. In contrast to object control, low adverbial and prepositional adverbial GCs, high adverbials are the GCs that allow for a *PRO*–overt DP alternation. See chapter 6.

(73)

```
                    TP
          ┌──────────┼──────────┐
         DP         T⁰          vP
          │              ┌───────┼───────┐
        John           DP      v⁰        VP
    -Case: [VAL]        │          ┌──────┼──────┐
                      John        V⁰            TP
                    -Case: _       │      ┌──────┼──────┐
                       [θ2]      hopes   T⁰            VP
                                          │      ┌──────┼──────┐
                                          to    V⁰            DP
                                                 │             │
                                               leave         John
                                                          -Case: _
                                                             [θ1]
```

In order to analyze object control GCs, I assume the MTC. As we will see in chapter 6, besides the conceptual motivations mentioned above, an empirical reason to adopt the MTC is that control in adverbial GCs seem to be correlated with whether or not the GC subject is active to move into a thematic position inside the matrix clause after it had received a thematic role in the GC where it is base-generated.[8]

4.3.2 Derivation

Having considered how I analyze the GC complement to verbs like *manter* 'keep' and *deixar* 'let' (it is one of the two internal arguments these verbs select) and the control theory I assume (MTC), we can look at the derivation of a sentence like (74).
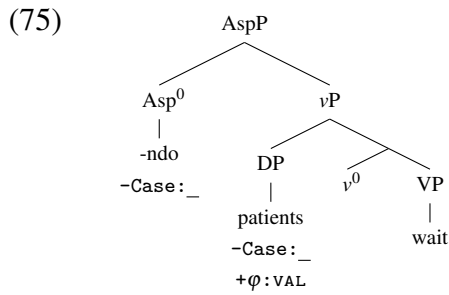
(74)   O médico manteve os pacientes *PRO* esperando por horas.
        the doctor kept   the patients *PRO* waiting   for hours
        'The doctor made the patients keep waiting for hours.'

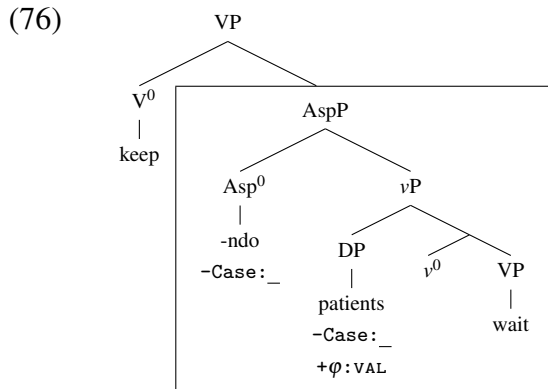First of all, the GC is formed. Since this is a *class 3* GC, only AspP is projected.

---

[8]There are least two other potential cases of control in GCs, which I am yet to provide a description and explanation of:

(i)   a.   O avião   caiu, causando a   morte de todos os passageiros.
            the airplane fell   causing   the death of all   the passengers
            'The airplane crashed, causing the death of all passengers.'
    b.   Uma maneira do   trânsito ser   diminuído é andando mais de bicicleta.
            a   manner of.the traffic   to-be diminished is walking more of bicycle
            'A way of reducing traffic is (for people) to ride bicycles more.'

The subject of *causar* 'to cause' in (i-a) is probably the whole event of the airplane falling, while the subject of *andar de bicicleta* 'to ride a bicycle' is probably arbitrary. As Landau (2001, 2004, 2006) notes, cases like these cannot readily be accounted for by MTC (they may even be outright counterexamples to it). For now, I leave them aside. I thank Marcello Modesto for having pointed out to me data like (i-a).

(75)

```
                    AspP
                  /      \
              Asp⁰        vP
               |         /  \
             -ndo      DP    v⁰   VP
           -Case:_     |           |
                    patients      wait
                    -Case:_
                    +φ:VAL
```

The GC thus formed merges with *manter* 'keep'.

(76)

```
              VP
            /    \
         V⁰      ┌─────────────────────────┐
          |      │         AspP            │
        keep     │       /      \          │
                 │   Asp⁰        vP        │
                 │    |         /  \       │
                 │  -ndo      DP   v⁰  VP  │
                 │ -Case:_    |        |   │
                 │         patients   wait │
                 │         -Case:_        │
                 │         +φ:VAL         │
                 └─────────────────────────┘
```

As proposed above, this verb has two internal arguments, a DP and a GC. For the second internal argument position of *manter* to be filled, there are two options: (i) there is not enough material in the numeration for all θ-requirements to be fulfilled by external merge, so that internal merge/move of *patients*, still active in the derivation, is triggered and (ii) there is enough material in the numeration, so that *doctor*, available in the numeration, is merged into the structure. Let us consider each possibility in turn.

Option (i) Under possibility (i), *patients* move. This is a possibility because, assuming MTC, arguments can receive more than one thematic role and thematic requirements can trigger movement, as long as the moving element is still active in the derivation. *Patients* can move because its Case feature is yet to be valued. As a consequence of this movement, this DP ends up receiving a further thematic role, $\boxed{\theta 2}$, on top of the one it receives in its base-generation position in the GC, $\boxed{\theta 1}$.
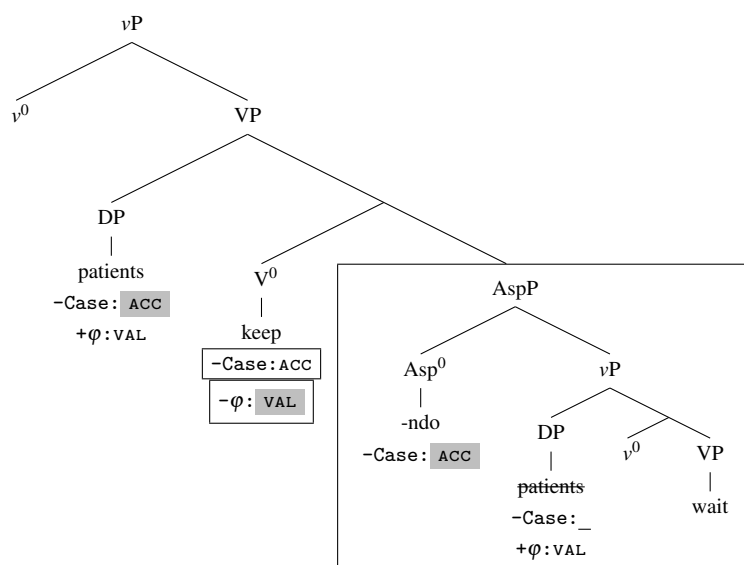
(77)
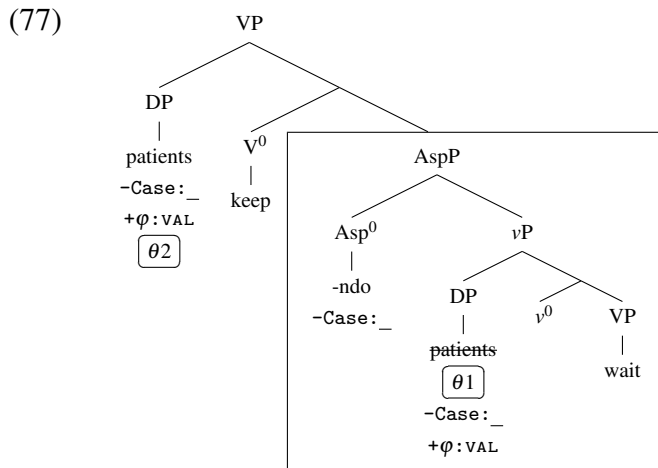
The derivation continues by merging the VP with *v*. Then, there is feature inheritance from *v* to V.
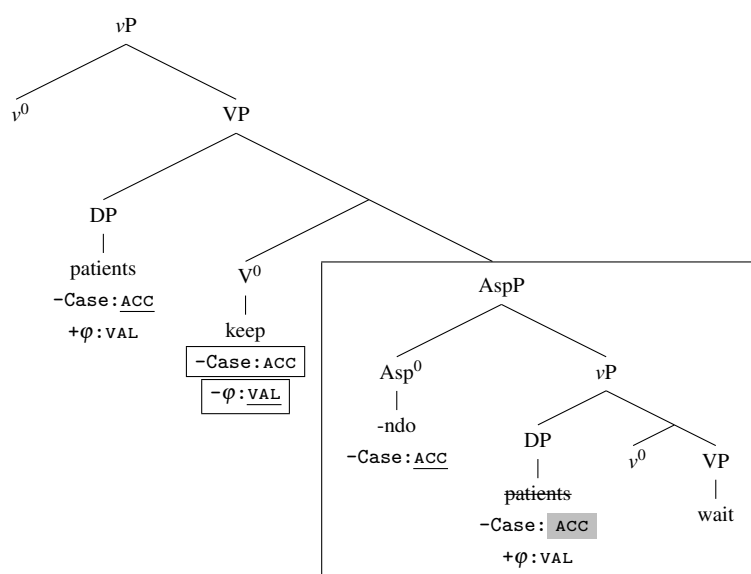
(78)
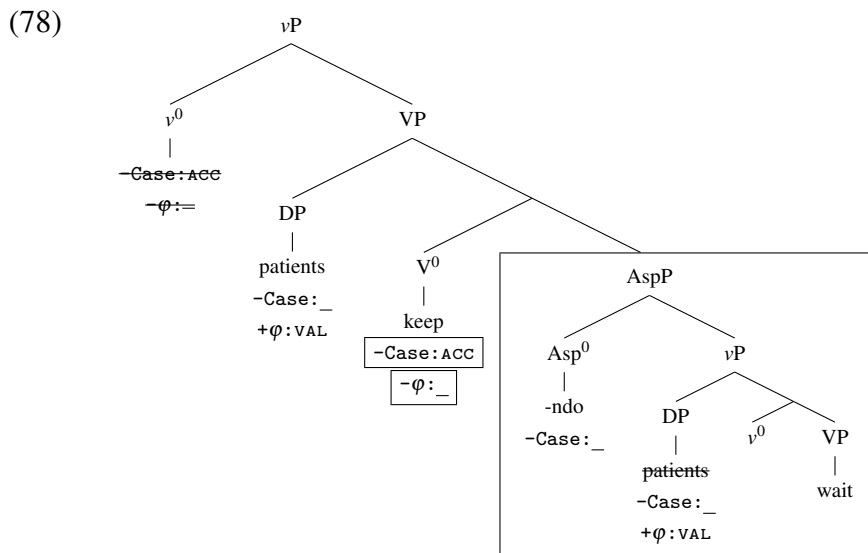
AspP and V, which has just inherited an accusative Case feature from *v*, are in a mutual c-command relation. By Bare Phrase Structure, this suffices to value the Case feature in $\{-ndo\}$, the head of AspP. The DP *patients* also has a Case feature to be valued. From the position it had previously moved to, a thematic [Spec, VP] inside the matrix clause, it can c-command V, so that its Case feature can also be valued as accusative. The φ-features in V can be valued my mutual c-command between V′ and the DP *patients* in [Spec, VP].

(79)

```
              vP
         ┌────┴────┐
        v⁰         VP
              ┌─────┴─────┐
             DP          ┌─┴──────────────┐
              │         V⁰            ┌───────── AspP ─────────┐
           patients     │        ┌────┴────┐
         -Case: [ACC]  keep    Asp⁰        vP
          +φ:VAL      ┌──────┐   │      ┌───┴───┐
                      -Case:ACC -ndo   DP      ┌─┴──┐
                      ┌──────┐ -Case: [ACC]  v⁰   VP
                      -φ: [VAL]          │          │
                                      patients     wait
                                   -Case:_
                                   +φ:VAL
```
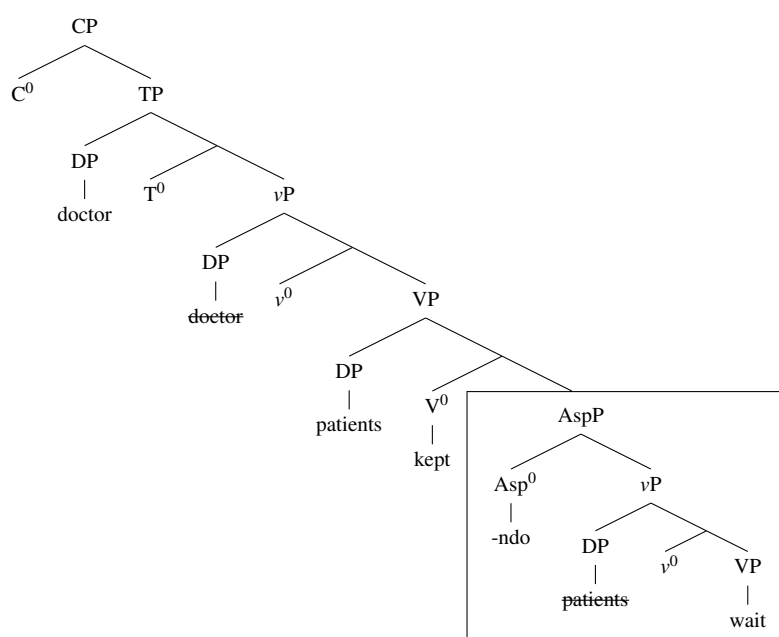
The higher copy of *patients* then probes the structure in order to value and delete the uninterpretable Case feature of its lower copy.

(80)

```
              vP
         ┌────┴────┐
        v⁰         VP
              ┌─────┴─────┐
             DP          ┌─┴──────────────┐
              │         V⁰            ┌───────── AspP ─────────┐
           patients     │        ┌────┴────┐
         -Case:ACC     keep    Asp⁰        vP
          +φ:VAL      ┌──────┐   │      ┌───┴───┐
                      -Case:ACC -ndo   DP      ┌─┴──┐
                      ┌──────┐ -Case:ACC     v⁰   VP
                      -φ:VAL             │          │
                                      patients     wait
                                   -Case: [ACC]
                                   +φ:VAL
```

The derivation proceeds with the introduction of *doctor* in the external argument position of *keep*. Finally, the matrix TP and CP are assembled, C features are inherited by T (not pictured below) and (74) can be derived.
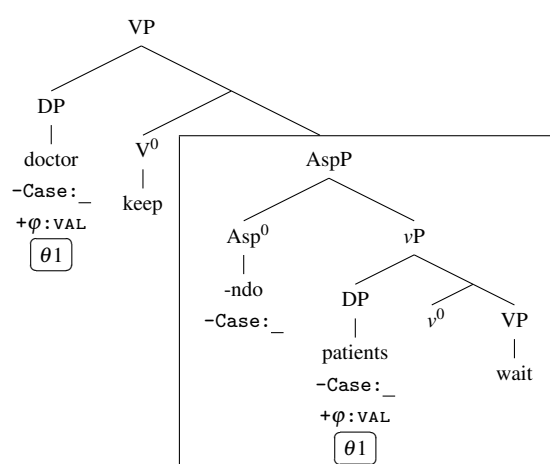
(81)

```
              CP
         ┌────┴────┐
        C⁰         TP
               ┌────┴────┐
              DP         
               |    ┌────┴────┐
            doctor T⁰        vP
                         ┌────┴────┐
                        DP         
                         |    ┌────┴────┐
                       doctor v⁰        VP
                                   ┌────┴────┐
                                  DP         
                                   |    ┌────┴────┐
                                patients V⁰        AspP
                                         |    ┌────┴────┐
                                        kept Asp⁰       vP
                                              |    ┌────┴────┐
                                             -ndo  DP       
                                                    |   ┌───┴───┐
                                                 patients v⁰    VP
                                                               |
                                                              wait
```

This derivation accounts for the structural properties of this GC subtype (those illustrated in (57)–(64-a)): in (81), the GC and the DP *patients* are separate constituents, each an internal argument of the object control verb *manter* 'keep'. In addition, this GC subtype displays control properties (see (65)–(70)) because the subject of the GC moves into the matrix clause through a thematic door.

Option (ii) However, this is not the only way for the derivation to proceed from (76). The other option is that the second internal argument position of *keep* be filled not via movement of *patients*, but by external merge of *doctor*. In this derivation, each of these DPs receive a single θ-role, $\boxed{\theta 1}$.

(82)

```
              VP
         ┌────┴────┐
        DP         
         |    ┌────┴────┐
      doctor V⁰        AspP
    -Case:_   |    ┌────┴────┐
    +φ:VAL  keep  Asp⁰       vP
    $\boxed{\theta 1}$         |    ┌────┴────┐
                  -ndo  DP        
                 -Case:_  |   ┌───┴───┐
                       patients v⁰    VP
                       -Case:_        |
                       +φ:VAL        wait
                       $\boxed{\theta 1}$
```

After this external merge, the derivation continues with the formation of *v*P. A phase having been formed, syntactic operations are triggered. The first of them is *v*-to-V feature inheritance. The DP *doctor* and the V′ of the V that has just inherited a valued Case feature are in a mutual c-command relation. As a consequence, the Case feature of the DP can be valued (①). Simultaneously, because AspP and V are also in a mutual c-command relation, the head of AspP, the

gerund morpheme, can also have its Case feature valued (①). Also simultaneously, the DP *patients* moves in order to extend its probing domain, which initially does not included any Case goal (①). The first position it could move to is [Spec, VP] because this is the closest position that c-commands the V which, as mentioned, has just inherited a valued Case feature.

(83)   *

```
                        vP
                      /    \
                   v⁰       VP
                   |      /    \
             -Case:ACC  DP       V'
               -φ:=     |      /    \
                     patients DP      V'
                     -Case:_  |     /    \
                     +φ:VAL doctor V⁰    AspP
                           -Case: ACC |   /    \
                           +φ:VAL   keep Asp⁰    vP
                             ①    -Case:ACC |   /   \
                                   -φ:_   -ndo DP    vP
                                        -Case: ACC |  / \
                                          ①     patients v⁰ VP
                                               -Case:_      |
                                               +φ:VAL      wait
                                                 ①
```
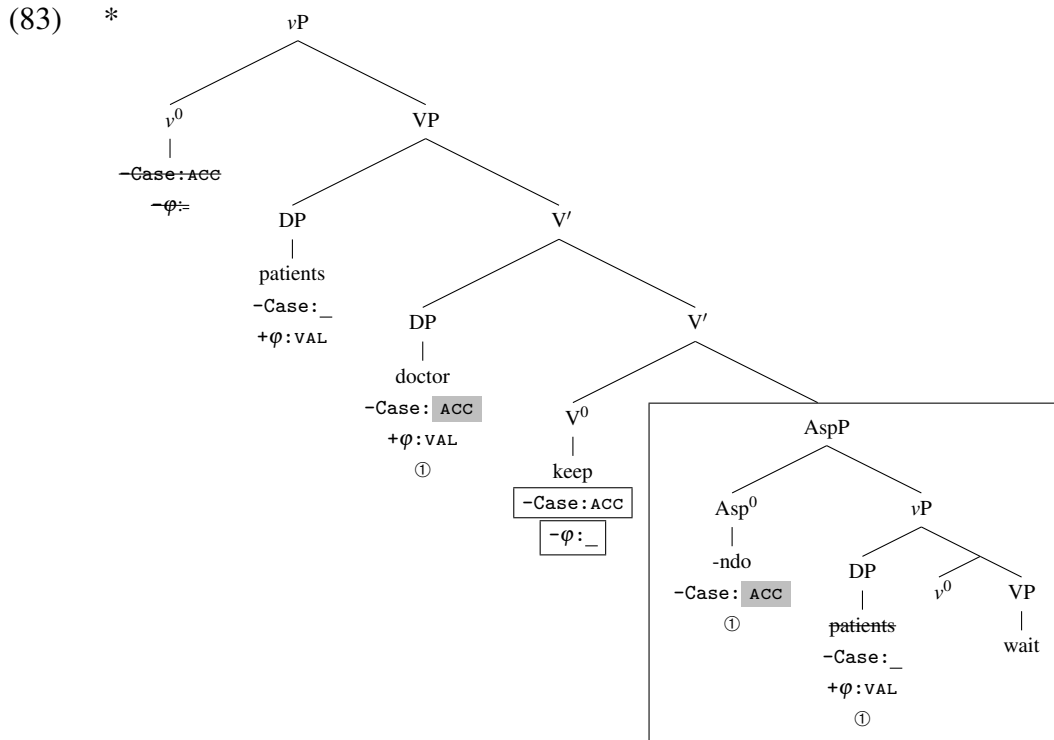
However, the movement of the DP *patients* from its base position to a second Spec position in the matrix VP ends up crossing the DP *doctor*. This movement is barred because it constitutes a minimality violation. As a consequence, the DP *patients* cannot move to extend its probing domain, so that its Case feature remains unvalued throughout the derivation, causing it to crash.[9]

This allows us to explain why (71), repeated below as (84), is ungrammatical. In (84), all thematic positions are filled by external merge, that is, by material taken straight from the numeration, as opposed to moving DPs previously introduced in the derivation. Although this is a possibility in the system (because there are no well-formedness conditions imposed on numerations), it implies an underivable string: in order to derive (84), the GC subject *patients* would have to move across the external argument *doctor*, a minimality violation. However, if this movement cannot be effected, the derivation crashes because *patients* cannot be Case-marked.

(84)   *O   João manteve [o médico] [os pacientes esperando por horas].
       the João kept   the doctor   the patients waiting   for hours

In sum, the analysis provided can not only account for the grammaticality of (74), repeated below as (85), but also for the ungrammaticality of (84). In other words, the analysis can

---

[9]It has come my attention that it could be the case that there is no minimality violation because the two [Spec, VP] positions are in the same minimal domain, that of V. If this holds, I fail to explain the ungrammaticality of (84). For now, I have no alternative explanation.

account for the fact that the subject of object control GCs is necessarily *PRO*. The analysis I put forth here opens the possibility of the derivation of object control GCs to proceed in two ways (possibilities (i) and (ii) above), depending on the content of the numeration. If there is not enough elements in the numeration to fill all thematic positions via external merge (option (i)), the subject of the GC can move into the thematic position inside the matrix clause that corresponds to the second internal argument of the matrix verb. The derivation converges because all imperfections are deleted in the optimal way. The outcome is (85), which displays control properties due to the A-movement of *patients* passing through more than one thematic position.

(85)   O   médico manteve os pacientes *PRO* esperando por horas.
        the doctor kept   the patients *PRO* waiting   for hours
        'The doctor made the patients keep waiting for hours.'

Another derivational possibility that falls out from the assumptions and proposals I make here is one where there indeed is material in the numeration to fulfill all thematic requirements via external merge (option (ii)). Though the numeration is possible, the derivation that results from it is not possible because it implies a movement that violates minimality (see however fn. 9). Due to the impossibility of this movement, the GC subject cannot be Case-marked and (84) is correctly predicted to be ungrammatical.

Having outlined the way object control GCs are built, we now turn to how the properties of their behavior are derived from the analysis. Regarding TP-dependent properties, recall that object control GCs cannot license sentential negation – (86) – nor clausal adverbials – (87).

(86)   a. *O médico manteve o   paciente não mexendo um dedo e   foi   fumar
            the doctor kept   the patient NEG moving   a   finger and went to-smoke
            um cigarro.
            a   cigarette

        b. *O João deixou os filhos não lendo   livro algum e   foi   fazer o   jantar.
            the João let   the sons   NEG reading book some   and went to-do the dinner

(87)   a.???O médico manteve os pacientes provavelmente esperando.
            the doctor kept   the patients probably   waiting

        b.???O mecânico deixou a   aeronave provavelmente sofrendo uma pane   e
            the mechanic kept   the airplane probably   suffering a   breakdown and
            foi   tomar   um café.
            went to-drink a   coffee

By my assumptions, this behavior is due to the absence of TP in an object control GC.

Object control GCs also display the "classic" behavior of *class 3* GCs regarding raising: when the matrix clause of the sentence where they are contained in is in passive form, the subject of the object control GC can be raised into the matrix subject position.
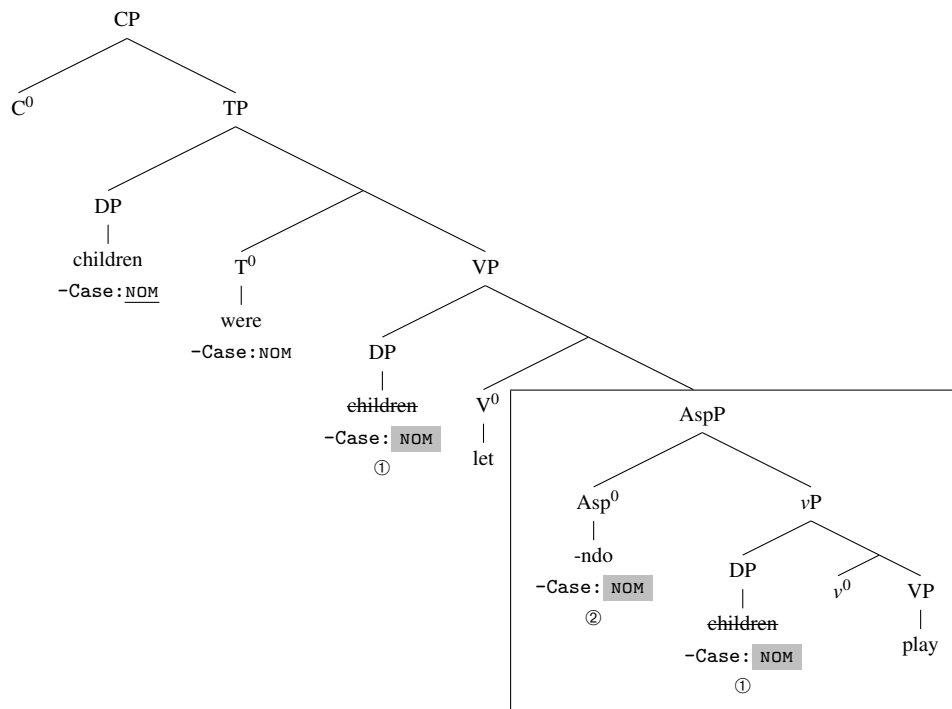
(88) a. Essas crianças foram deixadas *t* brincando na   área de recreação enquanto os
          these children were   let   *t* playing   in.the area of. recreation while   the
          pais   faziam compras.
          parents did   purchases
          'These children were left playing in the recreation area while their parents went
          shopping.'

      b. Os pacientes foram mantidos *t* esperando por horas.
          the patients   were kept   *t* waiting   for hours
          'The patients were forced to keep waiting for hours.'

This possibility is due to the object control GC, a *class 3* GC and hence a GC that is not self-sufficient for Case, being dependent on an external Case-valuer. In an active sentence, it is *v*/V and in a passive sentence, C/T. In both cases, the embedded subject moves to the relevant Spec position in order to extend its probing domain. Below is the schematic representation of the passive (88-a):

(89)
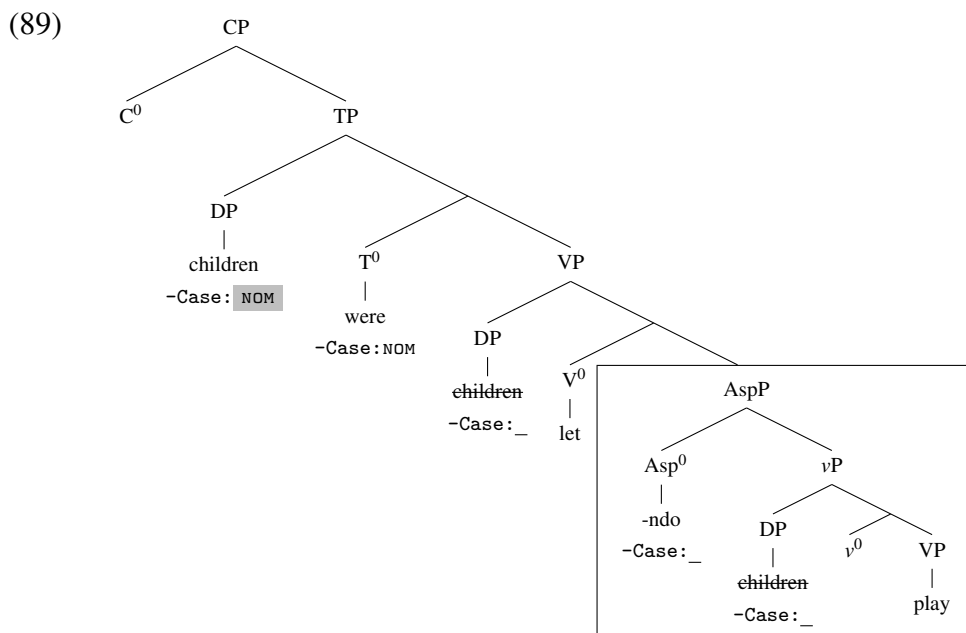
Later in the derivation, the higher copy of the subject *children* probes the structure in order to value and delete the Case feature of its lower copies (①). Because the gerund morpheme will then c-command a valued Case feature (that of the lowest copy of *children*), it can also have its own Case feature valued (②). All these operations take place at a single phase level, the matrix CP.

135

(90)

Tree diagram:

CP
- C⁰
- TP
  - DP
    - children
    - -Case:<u>NOM</u>
  - T⁰
    - were
    - -Case:NOM
  - VP
    - DP
      - ~~children~~
      - -Case: NOM
      - ①
    - V⁰
      - let
    - AspP
      - Asp⁰
        - -ndo
        - -Case: NOM
        - ②
      - vP
        - DP
          - ~~children~~
          - -Case: NOM
          - ①
        - v⁰
        - VP
          - play

Binding of an anaphoric subject of the object control GC by the matrix subject is also permitted.

(91) a. O João*ᵢ* se*ᵢ* deixou descansando por horas.
         the João SE let   resting   for hours
         'João left himself rest for hours.'

     b. O João*ᵢ* se*ᵢ* manteve esperando pacientemente por horas.
         the João SE kept   waiting   patiently   for hours
         'João made himself keep waiting for hours.'

The schematic representation of (91-a) is as follows:

(92)

Tree diagram:

vP
- DP
  - o João
- v⁰
- VP
  - DP
    - SE
  - V⁰
    - let
  - AspP
    - Asp⁰
      - -ndo
    - vP
      - DP
        - ~~SE~~
      - v⁰
      - VP
        - rest
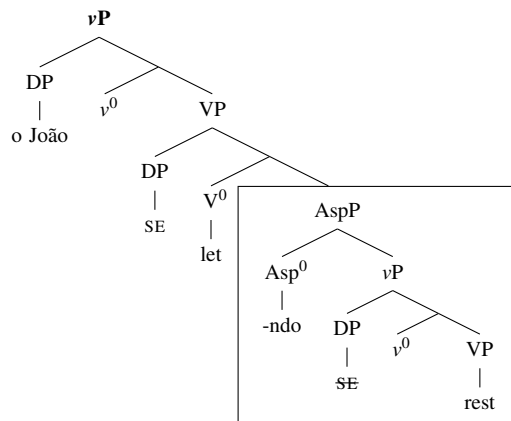
Binding is possible because the smallest phase/binding domain that contains the anaphor SE is the matrix *v*P, where it can be interpreted as correferential with the matrix subject *João* in its base-generation position, [Spec, *v*P].

The same can be said of inverse scope, which also seems to be possible for object control GCs.

(93) a. Algum médico manteve todo paciente esperando.
          some doctor kept   every patient waiting
          'Some doctor made all the patients keep waiting for hours.'

          ?*For every* x, x *is a patient and some doctor or other made* x *keep waiting.*

      b. Algum professor deixou todo aluno   esperando.
          some teacher let   every student waiting
          'Some teacher left all the students waiting.'

          ?*For every* x, x *is a students and some teacher or other left* x *waiting.*

(94) a. Três médicos mantiveram dois pacientes esperando.
          three doctors kept   two patients waiting
          'Three doctors made two patients keep waiting.'

          ?*There are two specific patients such that three doctors made them keep waiting.*

      b. Três professores deixaram dois alunos   brincando no   pátio.
          three professors let   two students playing   in.the courtyard
          'Three teachers left two students playing in the courtyard.'

          ?*There are two specific students such that three doctors left them playing in the
          courtyard.*

(95) a. O João geralmente mantém três   pacientes esperando.
          the João generally   keeps   three patients waiting
          'João generally makes three patients keep waiting.'

          ?*There are three specific patients such that João usually make them keep waiting.*

      b. O João geralmente deixa três   monitores   tomando conta da   prova.
          the João generally   lets   three teaching-assistants taking   care of.the test
          'João usually leaves three teaching assistants taking care of the exam.'

          ?*There are three specific teaching assistants such that João usually leaves them
          taking care of the test.*

The schematic representation of (94-a), for example, is the following:

(96)
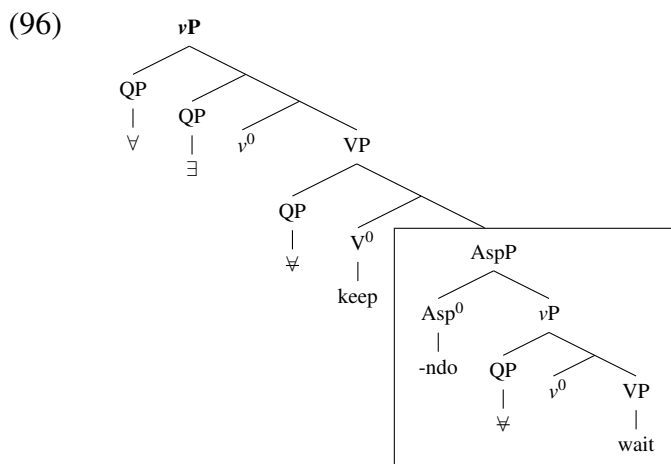
The smallest phase that the embedded universal quantifier could raise to is the matrix *v*P. From
the edge of this phase, it can take scope over the matrix existential quantifier in its base-
generation position, hence the inverse scope reading.

Armed with the analysis proposed, we can explain some characteristics of object control GCs, including not only the properties I relied on to distinguish and group GCs, but also its control properties.

4.4 Low adverbial GCs

The next *class 3* GC we look into is the low adverbial, that is, an adverbial GC with a manner or simultaneity reading like (97-a) and (97-b), respectively.

(97)   a.   Os ladrões arrombaram a   porta usando um pé-de-cabra.
              the robbers broke-down the door using   a   crowbar
              'The robbers broke the door using a crowbar.'

         b.   A   Paula fez uma caminhada ouvindo música.
              the Paula did a   walking   listening music
              'Paula went walking listening to music.'

I defer the derivation of all the adverbial GCs, which includes not only low, but also high and prepositional adverbials until chapter 6, where I attempt to compare the subject realization of these GC subtypes and account for their contrasts and similarities. For now, I restrict considerations to the overall configuration of a sentence containing a low adverbial.

Low, unlike high adverbials (see section 3.3), fall under the scope of sentential negation inside the matrix clause, as we can see from the NPI licensing contrasts below:

(98)   *Licensing of a high adverbial NPI by matrix sentential negation: ***

         a.   *O   João terminando trabalho algum, a   empresa não fica satisfeita.
              the João finishing   job   some   the company NEG gets satisfied

         b.   *O   João terminando trabalho algum, a   empresa não ficou satisfeita.
              the João finishing   job   some   the company NEG got   satisfied

         c.   *Terminando trabalho algum, o   João não fica satisfeito.
              finishing   job   some   the João NEG gets satisfied

         d.   *Terminando trabalho algum, o   João não ficou satisfeito.
              finishing   job   some   the João NEG got   satisfied

(99)   *Licensing of a high adverbial NPI by matrix sentential negation: ✓*

         a.   A   Maria não correu ouvindo música alguma.
              the Maria NEG ran   listening music   some
              'Maria did not run listening to any song at all.'

         b.   Os ladrões não invadiram a   casa arrombando   porta alguma.
              the robbers NEG invaded   the house breaking-down door some
              'The robbers did not invade the house breaking down any door at all.'

In order to capture the possibility of an NPI inside the low adverbial to be licensed by matrix sentential negation, I propose that low adverbials are adjoined to the main *v*P, where they

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are c-commanded by Neg (*não*). Presumably, this position is compatible with the manner or simultaneity interpretation of low adverbials.

(100)
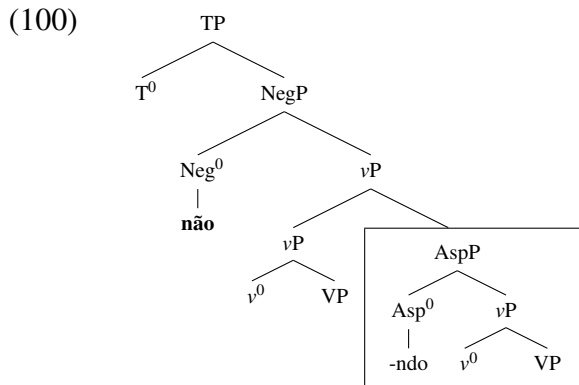
Bearing this position in mind, the overall schematic representation of (97-a) is in (101). As we will see in section 6.4, the subject of low adverbials is obligatorily null and furthermore it must be exhaustively correferential with the matrix subject. I analyze it as an instance of *PRO*, under the movement theory of control (MTC) presented above (section 4.3.1).

(101)
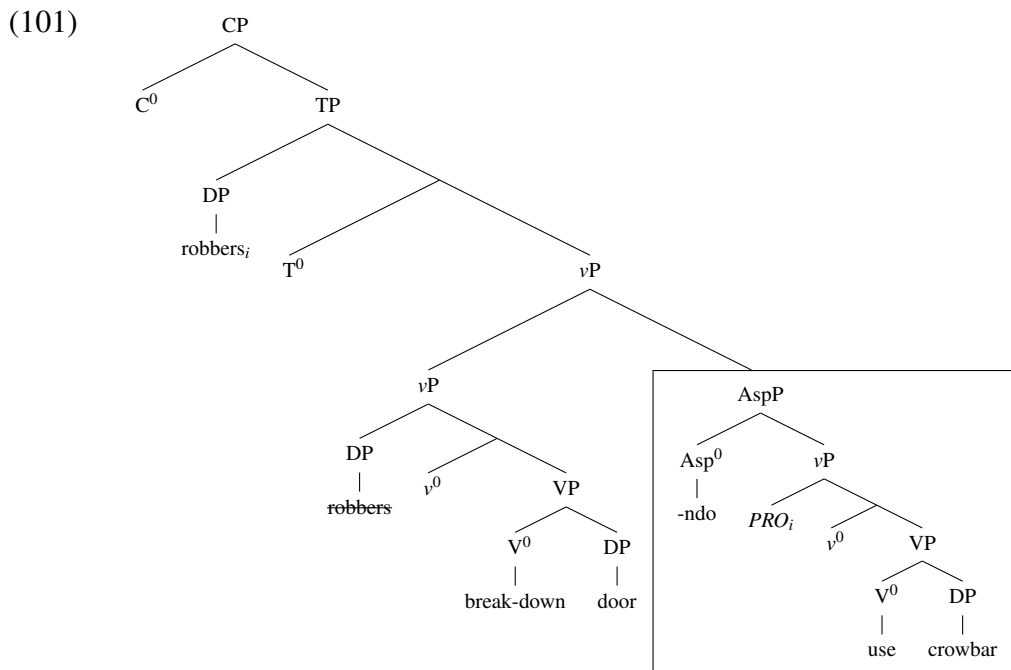
Like other subtypes of *class 3* GCs, low adverbials do not allow for sentential negation – (102) – nor for sentential adverbial licensing – (103).

(102)   a.???A   Maria faz   a   meditação dela   não mexendo um dedo.
         the Maria does the meditation of.she NEG moving   a   finger

       b.???A   Maria estuda não lendo   livro algum.
         the Maria studies NEG reading book some

(103)   a.   Os ladrões arrombaram a   porta provavelmente usando um pé-de-cabra.
         the robbers broke-down the door probably   using a   crowbar
         'The robbers broke down the door probably using a crowbar.' (cf. *It is probably*

> *the case that the robbers broke the door using a crowbar.*)

b. O João corre provavelmente ouvindo música.
  the João runs probably hearing music
  'João runs probably listening to music.'

(cf. *It is probably the case that João runs listening to music.*)

This behavior can be captured under the assumption that sentential negation and sentential adverbial licensing presuppose TP, a projection that this GC subtype lacks, like the other *class 3* GCs do.

 Raising, binding and inverse scope cannot be tested for low adverbials because their subject, as mentioned, is always null. Nevertheless, under MTC (see section 4.3.1), it is possible to say that there is raising from a low adverbial. According to MTC, both control and raising are reduced to movement of a DP governed by economy conditions; the only difference is that raising is movement to a Case position, while control results from movement to a further thematic position. I analyze low adverbials as instances of obligatory exhaustive control, hence, under MTC, they also involve movement. See details in section 6.4, where the derivation of low adverbials is depicted.

4.5 Adnominal GCs

In this section, we consider the last of the *class 3* GCs in the data set, namely, adnominal GCs, illustrated in (104). In this section, I list a few loose remarks on this construction. I also present a very tentative way of analyzing them, along with its potential shortcomings.

(104) Essa menina lendo o livro de lingüística caiu.
   this girl reading o book of linguistics fell
   'This girl reading the linguistics book fell.'

These constructions are traditionally called 'reduced relative clauses', presumably because they can be regarded as some defective counterpart of "full" relative clauses. (104), for example, is correlated with (105).

(105) Essa menina que está lendo o livro de lingüística caiu.
   this girl that is reading the book of linguistics fell
   'This girl who is reading the linguistics book fell.'

However, not all correlations are possible. In (104), the "head of the relative" is the subject, *essa menina* 'this girl'. The object (*o livro de lingüística* 'the linguistics book') cannot play this role, as shown by (106-a)'s ungrammaticality. The corresponding full relative in (106-b), on the other hand, is grammatical.

(106) a. *O livro de linguística essa menina lendo caiu.
      the book of linguistics this girl reading fell

b.   O   livro de lingüística que essa menina está lendo   caiu.
 the book of linguistics that this girl   is   reading fell.
 'The linguistics book that this girl is reading fell.'

There are also differences in predicate type. *Class 3* Anominal GCs do not admit an ILP – (107-a). In contrast, their full counterpart does – (107-b).

(107) a.   *Essa menina sabendo matemática (várias vezes) caiu.
  this   girl   knowing mathematics several times fell

  b.   Essa menina, que sabe   matemática (*várias vezes), caiu.
  this   girl   that knows mathematics several   times   caiu
  'This girl, who knows mathematics, caiu.'

Yet another difference is that the head of the relative cannot be a proper name like *Dilma Roussef* in an adnominal GC – (108-a); in a full relative, in contrast, it is acceptable – (108-b).

(108) a.   *A   Dilma Roussef lendo   o   livro de lingüística é a   presidente do
  the Dilma Roussed reading the book of linguistics is the president   of.the
  Brasil.
  Brazil

  b.   A   Dilma Roussef, que está lendo   o   livro de lingüística, é presidente
  the Dilma Roussef that is   reading the book of linguistics is president
  do   Brasil.
  of.the Brazil
  'Dilma Roussef, who is reading the linguistics book, is the president of Brazil.'

A correlated difference is that the only reading that seems to be available for adnominal GCs is a restrictive one (see, for example, (104)). Full relatives, in contrast, can have not only a restrictive reading – (105), (106-b) – , but also a non-restrictive one – (107-b), (108-b).

 The properties of adnominal GCs I enlisted above, along with a comparison with "full" relative clauses are summarized below:

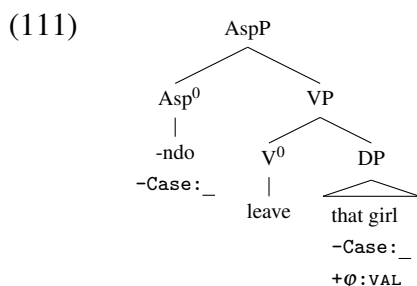| Property		Adnominal GC	Relative clause
Head of the relative	*Subject*	✓	✓
	Object	*	
ILP licensing		*	✓
Proper name as the head of the relative		*	✓
Reading	*Restrictive*	✓	✓
	Non-restrictive	*	

Table 4.2: Adnominal GCs vs. full relative clauses

 I try to derive some of these properties from the derivation of adnominal GCs. The derivation of a sentence like (109) starts by the assembling of the matrix *v*P (syntactic operations inside this *v*P not represented for simplification).
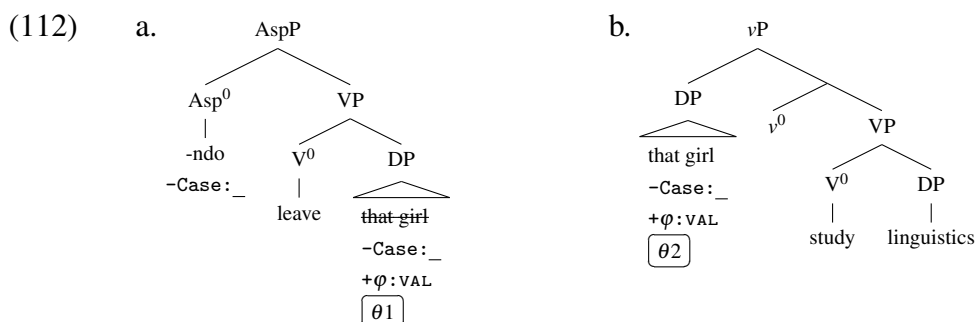
(109)　Aquela menina saindo　estuda　lingüística.
　　　　that　　girl　　leaving studies linguistics
　　　　'That girl leaving studies linguistics.'

(110)

```
          vP
         /  \
       v⁰    VP
            /  \
          V⁰    DP
          |      |
        study linguistics
```
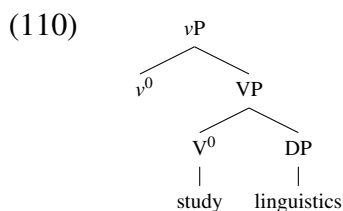
Suppose there is not enough material in the numeration to fulfill the matrix *v*'s external argument.[10] As a consequence of this, the *v*P is left in stand-by while such material is finally introduced into the workspace. In parallel, another subarray of the numeration is accessed and the GC is built. The derivation goes up to AspP only because adnominal GCs are of the *class 3* type.

(111)

```
              AspP
             /    \
          Asp⁰     VP
           |      /  \
         -ndo   V⁰    DP
        -Case:_  |    ⌒⌒
              leave  that girl
                    -Case:_
                    +φ:VAL
```

Now there is an element that can be the subject of the *v*P in (110), namely the DP *that girl* in (111). At this point of the derivation, this DP is active because it bears a Case feature to be valued. *That girl* then is copied and merged into the matrix *v*P. Because these two trees are disconnected, this is an instance of sideward movement (see section 6.2 below). In addition, *that girl* receives a second θ-role, 〔θ2〕. This is a possibility under MTC (see section 4.3.1).

(112)　a.

```
              AspP
             /    \
          Asp⁰     VP
           |      /  \
         -ndo   V⁰    DP
        -Case:_  |    ⌒⌒
              leave  t̶h̶a̶t̶ ̶g̶i̶r̶l̶
                    -Case:_
                    +φ:VAL
                     〔θ1〕
```

b.

```
              vP
             /  \
           DP    \
          ⌒⌒    v⁰    VP
        that girl    /  \
        -Case:_    V⁰    DP
        +φ:VAL     |      |
         〔θ2〕   study linguistics
```

The derivation continues by the formation of the matrix TP and CP. A phase having been reached, syntactic operations like feature inheritance (not depicted) are triggered. *That girl* moves to [Spec, TP] in order to have its Case feature valued.

[10]Recall again that this is a free option, for there are no well-formedness conditions on numerations. See discussion about (120) below on the possibility of there indeed being enough material in the numeration for all thematic requirements to be satisfied by external merge.

(113)
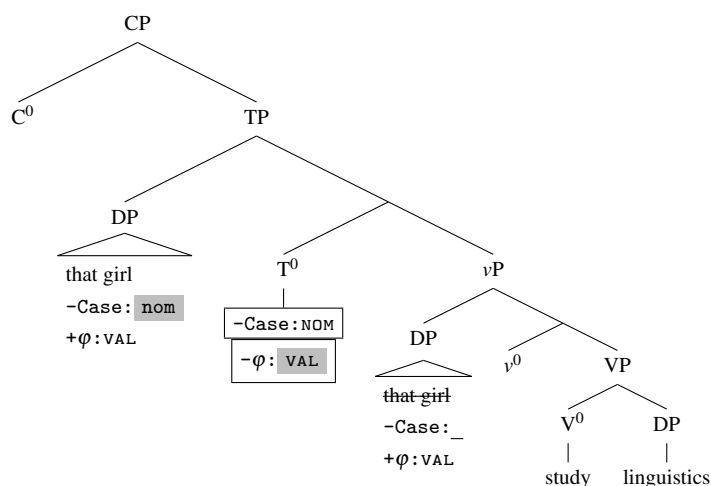
I assume that it is possible for certain syntactic objects to adjoin to others countercyclic. This is the analysis proposed in order to account for the lack of Principle C effects in relative clauses:

(114) a. *Which claim that John$_i$ was asleep was he$_i$ willing to discuss?

      b. Which claim that John$_i$ made was he$_i$ willing to discuss?

         (from Chomsky 1995b, ch. 3, p. 204, (34))

Chomsky (1995b) argues that deriving (114-a) requires that *that John was asleep* merges with *claim* in its base-generation position because this is a complement of the noun. As a consequence, **he** c-commands the lower copy of **John**, as we see in (115), hence the Principle C effects of (114-a).

(115) *[which [claim [that John was asleep]]] was **he** ~~was~~ willing to discuss ~~[which [claim [that **John** was asleep]]]~~

In contrast, *that John made* in (114-b) is not a argument to *claim*. Hence, it can either merge with *claim* cyclically, analogously to (115) – (116-a) – or countercyclically, only after Wh-movement of *which claim* – (116-b). In the first option, Principle C is also violated, but in the second, it is not. As we see in the final output in (116-b), **he** does not c-command **John**.

(116) a. *[which [claim] [that John made]] was **he** ~~was~~ willing to discuss ~~[which [claim] [that **John** made]]~~

      b. (i) [which [claim]] was **he** ~~was~~ willing to discuss ~~[which [claim]]~~

          (ii) [which [claim] *[that **John** made]*] was **he** ~~was~~ willing to discuss ~~[which [claim]]~~

Based on this analysis of relative clauses, I propose that the GC in (111) can be merged into the structure countercyclically.[11],[12] In other words, the GC in (111) adjoins to the DP *that girl* dominated by TP (CP omitted from the representation for simplification).
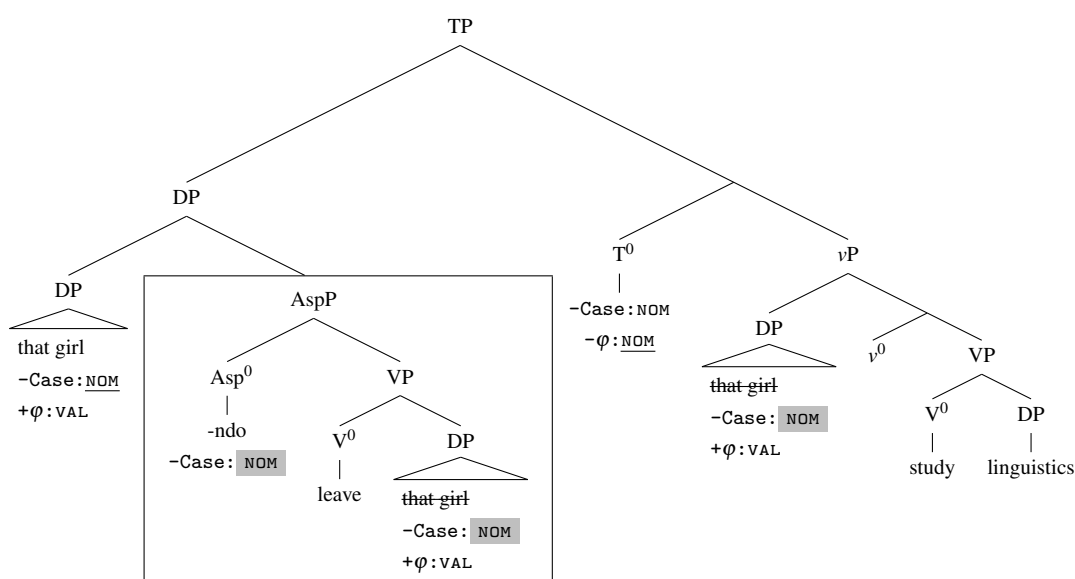
(117)
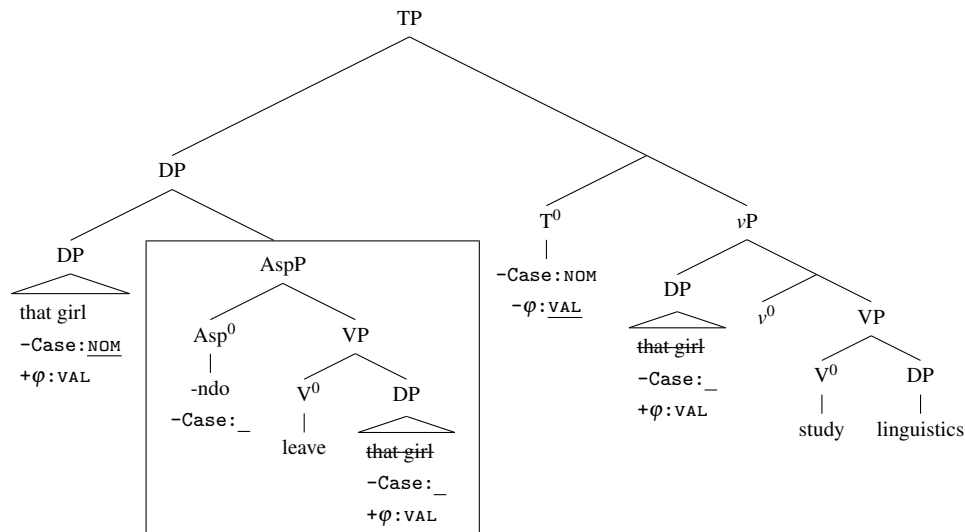
That girl probes the structure in order to value and delete the Case features of its lower copies. The highest copy of *that girl* c-commands the two copies of this DP.[13] After that, the gerund morpheme will finally have an instance of a valued Case feature in its probing domain (that of the copy of *that girl* left in the GC), so that its own Case can be valued too.

---

[11] Actually, as Nunes (2004, section 3.8.2) points out, there is no need to assume a countercyclic derivation. It could be the case that the GC adjoined to a copy of *that girl* prior to the merge of this DP to the matrix *v*P, that is, at a moment before (112) depicted above. Nevertheless, to simplify the discussion, I draw a countercyclic derivation.

[12] This is not to say that adnominal GCs and relative clauses should be equivalent, something I tried to argue against above. I simply assume that this adjunction possibility is free in the computation. Whether or not the final output yields a legitimate structure is dependent on independent factors (e.g., convergence, argument vs. adjunct differences etc). See also fn. 11.

[13] It has come to my attention that in order for there to be c-command between *that girl* in [Spec, TP] and the copy in [Spec, *v*P], I have to assume that the two segments of the duplicated DP counts as a single element. I am not sure this assumption is tenable. If it is not, the prediction is that the derivation should crash at PF: there will be more than one copy of the same syntactic object (*that girl*) undeleted and, as a consequence, the structure cannot be linearized (see section 6.2). I have no solution to this problem.

(118)

TP
- DP
  - DP: that girl, -Case:NOM, +φ:VAL
  - AspP
    - Asp⁰: -ndo, -Case: NOM
    - VP
      - V⁰: leave
      - DP: that girl, -Case: NOM, +φ:VAL
- T⁰: -Case:NOM, -φ:NOM
- vP
  - DP: that girl, -Case: NOM, +φ:VAL
  - v⁰
  - VP
    - V⁰: study
    - DP: linguistics

This is not the only way the derivation can proceed. As mentioned, it can be the case that there is enough material in the numeration for all thematic roles to be fulfilled by external merge. In this derivational path, the GC subject (*that girl*) remains inside the GC. Schematically:

(119)

TP
- DP
  - DP: this boy, -Case:NOM, +φ:VAL
  - AspP
    - Asp⁰: -ndo, -Case:_
    - VP
      - V⁰: leave
      - DP: that girl, -Case:_, +φ:VAL
- T⁰: -Case:NOM, -φ:VAL
- vP
  - DP: this boy, -Case:NOM, +φ:VAL
  - v⁰
  - VP
    - V⁰: study
    - DP: linguistics
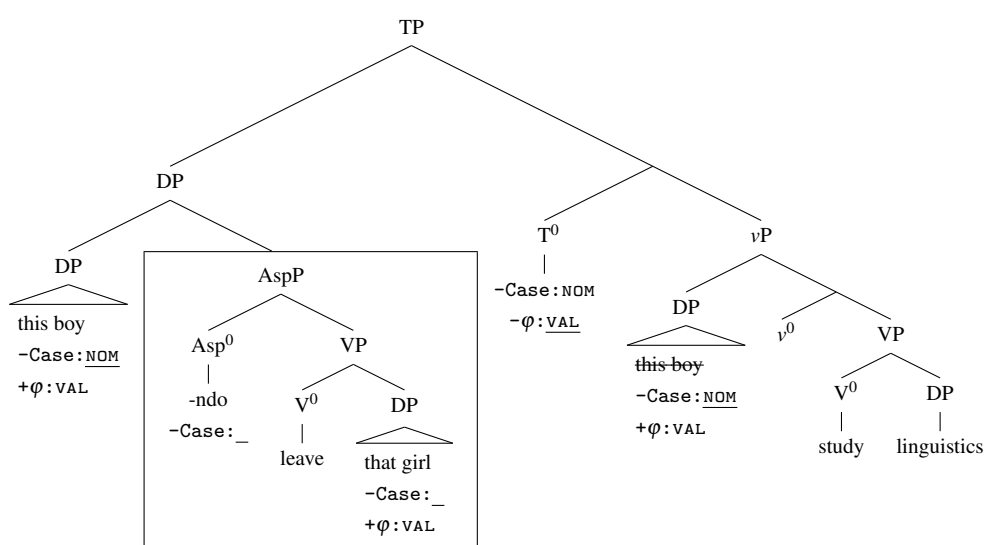
The derivation crashes because *that girl* cannot have its Case feature valued. This is so because it remains inside a domain that it not self-sufficient for Case. If it were to move to a second [Spec, TP] position in the matrix clause, it would cross the DP *this boy*, amounting to a relativized minimality violation (see however fn. 9). Furthermore, as we saw in (118), the valuation of the Case feature I ascribe to the gerund morpheme depends on the Case valuation of the GC subject. If the GC subject cannot have its Case feature valued, nor can the gerund morpheme. In sum, the analysis proposed correctly predicts that (120) should be ungrammatical.

(120)   *Esse menino aquela menina saindo estuda lingüística.
          this boy   that   girl   leaving studies linguistics

This analysis can also account for two of the properties of adnominal GCs, namely, the fact that the subject, but not the object can be the "head of the relative" of the adnominal GC, as well

as its relative clause-like interpretation. I will not be able to account for the impossibility of a proper name being the "head of the relative" and for the absence of a non-restrictive reading.

As seen in (106-a), repeated below, subjects, but not objects can be the "head of the relative" in adnominal GCs.

(121)   a. *O livro de linguística essa menina lendo   caiu.
             the book of linguistics this girl   reading fell

This property falls out from the analysis proposed in the following way: the subject of the GC moves sidewards from the GC into the matrix clause – (112). In order for this movement to be possible, the DP must be active in the derivation. This holds of (112) because the GC built is not self-sufficient for Case, so that neither its subject not gerund morpheme can have their respective Case features valued inside the GC itself. The object of all GCs, however, is always Case-marked inside the GC. This is done by the *v* head inside the GC. As a consequence, the GC object is frozen in place and cannot further move.[14]

Another property that can be said to fall out from the analysis is the relative clause-like interpretation of adnominal GCs. As mentioned above, adnominal GCs (the so-called 'reduced relatives') are usually paired with "full" relative clauses.

(122)   a.   Essa menina lendo   o livro de lingüística caiu.
              this girl   reading o book of linguistics fell
              'This girl reading the linguistics book fell.'

        b.   Essa menina que está lendo   o   livro de lingüística caiu.
              this girl   that is   reading the book of linguistics fell
              'This girl who is reading the linguistics book fell.'

This is likely to be the case because these structures share comparable interpretations. In (122-a), as well as in (122-b), *this girl* is interpreted as both the reader and the "faller". As far as full relative clauses are concerned, there are at least two ways this interpretive property can be attained, which are fleshed out by the movement and the operator analyses of relative clauses. Neither of these strategies have to be resorted to for adnominal GCs. In the analysis outlined above, the dual interpretation of *this girl* is a byproduct of this DP picking up two thematic roles: it is generated in the reader thematic position and then it moves to the "faller" thematic position. I do not claim to have provided crucial evidence that this is the only possible analysis. I claim merely that it is compatible with the data (see however fn. 13). Nonetheless, it raises a warning flag against analyzing adnominal GCs in terms of reduced versions of full relatives.

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[14]Alternatively, a possibility should be that the GC object moved before it is assigned accusative case inside the GC. However, this possibility is not tenable because it would imply accessing the numeration again before the subarray used to build the GC is exhausted. (This new access to numeration is needed to build the matrix clause in parallel.) The subarray needed to build the GC arguably contains *v*, a phase head. Thus, introducing *v* into the workspace is obligatory. As a consequence of this, a phase level is reached and syntactic operations, Case-valuation among them, are triggered at this point.

4.6 Conclusion

In this chapter, we saw the step-by-step derivation of *class 3* GCs, a class that comprises perceptual, existential, object control, low adverbial and adnominal GCs. These GCs are characterized by the lack of TP elements, like sentential negation and setential adverbials, and for the possibility of interacting with the matrix clause for Case-marking, binding and QR purposes. These properties were derived from the proposal that *class 3* GCs project only AspP, the bare minimum to build a GC. These GCs lack a TP projection and do not correspond to phases, hence the properties they display.

However, not all *class 3* GCs behave exactly alike. Existential GCs, for example, do not allow for raising nor for an anaphoric subject, two of the distinguishing properties of this class. Instead of forgoing the analysis, I tried to show that these "deviations" were a consequence of a special property of the existential verb, the possibility of assigning inherent partitive Case to its complement (Belletti, 1988). Ultimately, this property also provided a way of accounting for the definiteness effects of existential GCs without resorting to exceptional inherent Case marking. An instrumental ingredient in this account was the proposal that the gerund morpheme has a Case feature to be valued. Another *class 3* GC that had an extra factor acting in its derivation was object control GCs, which are selected by verbs that contain two internal arguments positions (*manter* 'keep' and *deixar* 'let'), one of which is fulfilled by the GC. An analysis was provided based on the movement theory of control.

For the most part, I think the analysis is successful. However, it is not problem-free. The explanation of the impossibility of the subject of the object control GC to be a non-null DP implied resorting to minimality. However, it may be the case that no minimality issue arises (see fn. 9). Another problem came up in the derivation of adnominal GCs, the notion of c-command assumed when coupled with duplicated projections (see fn. 13). I will leave these residual problems for future research.

Chapter 5

Class 2 GCs

Having inspected *class 1* and *class 3*, we take a look at the intermediate case, *class 2* GCs. This class includes the complement to verbs like *imaginar* 'imagine' – (1-a) –, *adorar* 'love' and *gostar* 'love' – (1-b) –, *considerar* 'consider' – (1-c) –, subject – (1-d) –, as well as prepositional adverbial – (1-e) – GCs.

(1)   a.   O João imagina a   Maria jogando na   seleção daqui a quinze anos.
              the João imagines the Maria playing in.the selection of.here to fifteen years
              'João imagines Maria playing in the national soccer team in fifteen years' time.'

        b.   O João adorou a   Maria / gostou da   Maria ganhando o   campeonato.
              the João loved   the Maria / loved of.the Maria winning   the championship
              'João enjoyed Maria winning the championship.'

        c.   O João considera a   Maria como sendo uma boa   pessoa.
              the João considers the Maria as   being a   good person
              'João considers Maria to be a good person.'

        d.   Os funcionários chegando tarde incomodou o   chefe.
              the employees   arriving late   annoyed   the boss
              'That his emplyees arrived late annoyed the boss.'

        e.   A Maria não consegue estudar para a   prova com os irmãos   fazendo
              the Maria NEG manages to-study for   the test   with the brothers doing
              bagunça.
              mess
              'Maria cannot study for the test with her siblings making such a mess.'

I called these subtypes 'the intermediate case' because they have mixed behavior with respect to the other two classes. On the one hand, they behave like *class 1* GCs because they allow for sentential negation and sentential adverbial licensing. I attempt to capture this resemblance by tying these properties to TP and by proposing that *class 1* and *class 2* GCs include this projection in their structure. *Class 3* GCs, on the other hand, display a mirroring behavior regarding these properties and thus lack a TP projection. In contrast, *class 2* GCs behave like *class 3* in that the subtypes in both classes allow for their subject to be raised into the matrix clause, for it to be an anaphor and also make room for an inverse scope reading. I attempt to capture this

resemblance by unifying the domain for these phenomena. More precisely, I propose that the relevant domain for them is a phase. *Class 2* and *class 3* GCs are similar in lacking a phasal projection, namely, a CP, which a *class 1* GC does include. Although the topmost categories of *class 2* and of *class 3* GCs differ (TP and AspP, respectively), these projections converge in not being a phase. Moreover, lacking a CP projection, both *class 2* and *class 3* GCs are instances of GCs that are not self-sufficient for Case (see section 3.1). In sum, *class 2* GCs are intermediate in sharing some properties both with *class 1* and with *class 3* GCs, without being identical to either.

The properties of the behavior of *class 2* GCs are summarized below:

GC subtype	ILP	Negation	Adverbial	Raising	Anaphor	Inverse Scope
Propositional	✓	✓	✓	✓	✓	?
Subject	✓	✓	✓	–	*	?
Prepositional adv	✓	✓	✓	–	*	–

Table 5.1: Behavior of *class 2* GCs

5.1 Propositional GCs

5.1.1 A note on imaginative perceptual GCs

I lumped together under the heading 'propositional' the GCs that are selected by verbs such as *adorar* 'love', *gostar* 'love', *considerar* 'consider' and *imaginar* 'imagine'. I also analyze perceptual GCs with an imaginative/epistemic reading[1] as propositional GCs.

(2)   Eu posso ver   meu filho ganhando uma medalha de ouro no   campeonato.
      I   can   to-see my son winning a   medal   of gold in.the championship
      'I can see my son getting a golden medal in the championship.'

      (from Rodrigues 2002, 33, (18); gloss and translation are mine, SF)

This implies that perceptual verbs can combine not only with an AspP, that is, with a *class 3* GC (see section 4.1), but also with a TP. This should come as no surprise, for perceptual predicates, specially *ver* 'see', seem to display diverse subcategorization possibilities. This can be seen by the small sample below:

(3)   a.   O João viu [$_{DP}$ o livro na   mesa].
            the João saw   the book in.the table
            'João saw the book on the table.'

       b.   O João viu [$_{Inf}$ o   filho ganhar uma medalha de ouro].
            the João saw   the son to-win a   medal   of gold

---

[1] See Boivin (1998) and Rodrigues (2006). For raising Boivin (1998) to my attention, I would like to thank Marcus Lunguinho (p.c.) and Susi Wurmbrand (p.c.). For sharing her thesis (Rodrigues, 2006) with me, I would like to thank Patrícia Rodrigues.

'João saw his son win a golden medal.'

c. O João viu [$_{GC}$ o filho ganhando uma medalha de ouro].
   the João saw   the son winning a   medal   of gold
   'João saw his son winning a golden medal.'

d. O João viu [$_{CP}$ que o filho ganhou uma medalha de ouro].
   the João saw   that the son won a   medal   of gold
   'João saw that his son won a golden medal.'

This also implies that (3-c) is ambiguous: its underlying structure can be either an AspP or a TP. In the former case, *ver* 'see' combines with a *class 3* GC; in the latter, with a *class 2* GC. Rodrigues (2006) remarks that the epistemic reading of perceptual constructions is more easily yielded when the perceptual verb is in present form and accompanied by a modal verb, as in (2).

Nevertheless, although superficially similar, these GCs that perceptual verbs can subcategorize for can be distinguished. A perceptual sentence with an imaginative/epistemic GC complement can be paraphrased by *imaginar* 'imagine', as in (4). This is not the case for *class 3* GCs.

(4) Eu posso *imaginar* meu filho ganhando uma medalha de ouro no campeonato.
   I   can   imagine   my son winning a   medal   of gold in.the championship
   'I can imagine my son getting a golden medal in the championship.'

Moreover, *class 3* GCs do not allow for an ILP, nor for sentential negation and a sentential adverbial – (5). In contrast, all of this is a possibility for *class 2* GCs – (6).

(5) a. *O João viu o filho sabendo matemática (várias vezes).
      the João saw the son knowing mathematics several times

b. *O João viu o filho não mexendo um dedo para ajudar.
      the João saw the son NEG moving a finger for to-help

c. *O João viu o avião provavelmente sofrendo uma pane.
      the João saw the airplane probably suffering a breakdown

(6) a. O João pode ver o filho sabendo matemática (*várias vezes).
      the João can to-see the son knowing mathematics several times
   'João can see his son knowing mathematics.'

b. O João pode ver o filho não mexendo um dedo para ajudar.
      the João can to-see the son NEG moving a finger for to-help
   'João can see his son not doing anything at all.'[2]

c. O João pode ver o avião provavelmente sofrendo uma pane.
      the João can to-see the airplane probably suffering a breakdown
   'João can see the airplane probably breaking down.'

---

[2]This is likely what caused me to claim in previous stages of the research (see Fong 2014) that *class 3* perceptual GCs can license sentential negation. In this dissertation, I make the opposite claim (see section 4.1).

Finally, there is an entailment difference. *Class 3* perceptual GCs describe an event and the truth of the overall sentence entails the truth of the complement – (7). However, if the complement is a *class 2* GC, this entailment does not hold. (See fn. 1, p. 9.)

(7) O João viu a   Maria andando descalça. → A   Maria andou descalça.
     the João saw the Maria walking barefoot   the Maria walked barefoot
     'João saw Maria walking barefoot.'

(8) #O João pode ver   a   Maria sabendo matemática. → A   Maria sabe   matemática.
     the João can to-see the Maria knowing mathematics   the Maria knows mathematics
     'João can imagine a scenario where Maria knows mathematics.'

Class 3 perceptual GCs were analyzed in section 4.1 above. Perceptual GCs with an imaginative/epistemic reading are analyzed in this section, along with the GCs subcategorized for by verbs such as *adorar* 'love', *gostar* 'love', *imaginar* 'imagine' and *considerar* 'consider'. Having clarified this distinction, we turn to the derivation of propositional GCs.

5.1.2   Derivation of propositional GCs

An example of propositional GC is in (9).

(9) O João adorou os filhos chegando cedo.
     the João loved the sons arriving early
   'João loved his children arriving early.'

As usual, the derivation starts by assembling the lexical projections of the embedded predicate, *arrive*. Because this is a *class 2* GC, the embedded clause projects not only the bare minimum AspP, like *class 3*, but also TP, unlike *class 3*, but like *class 1* GCs. But *class 2* GCs are not completely similar to *class 1* because, unlike those, *class 2* GCs do not include a CP projection. Because I assume feature inheritance (section 2.1), according to which, T only acquires features derivationally, via C-to-T feature inheritance, the T in *class 2* GCs enters the derivation empty and remains empty because there is no C it could inherit features from (annotated as '∅').

(10)
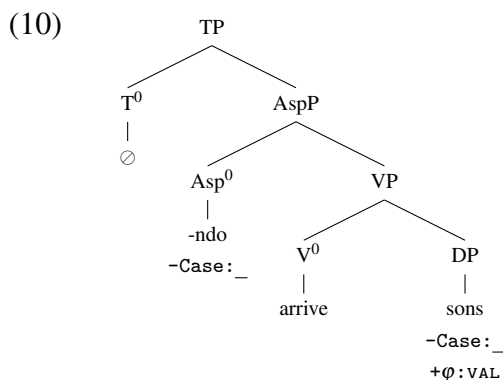
The GC having been assembled, the propositional predicate, *love*, enters the derivation and merges with it. Then, *v*P is formed above the structure just derived. With the introduction of *v*,

a phase level is reached and syntactic operations (feature inheritance, probing, Agree, feature valuation etc) are triggered at this point.
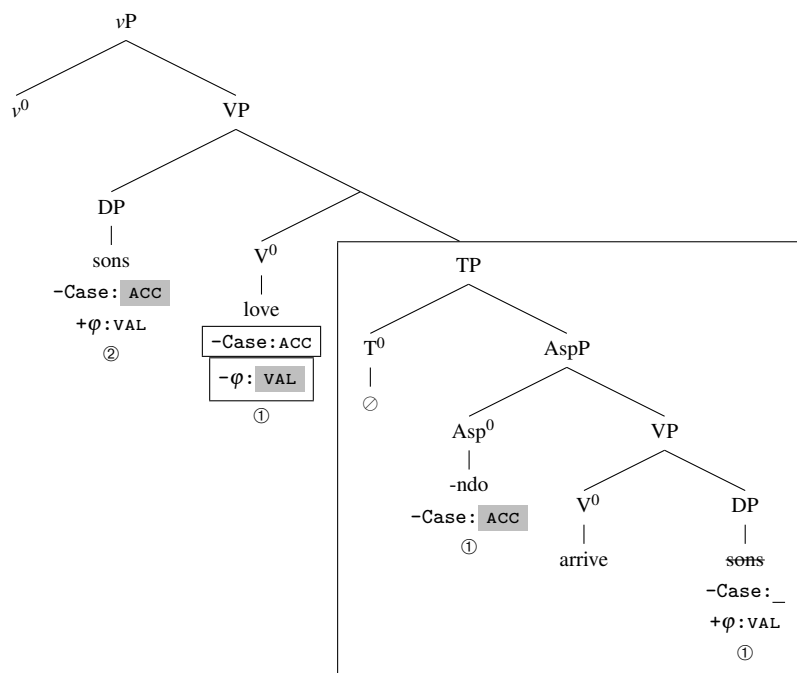
(11)
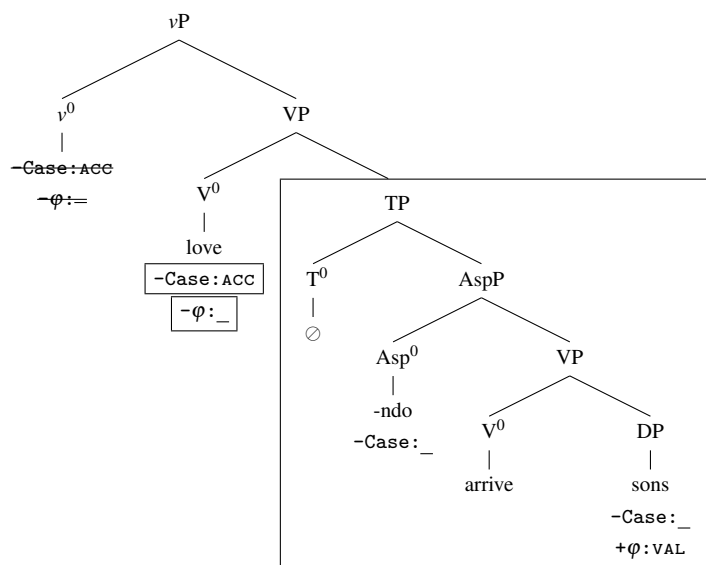
At the moment right after feature inheritance, the unvalued Case features in the gerund morpheme and in the DP *sons* start probing. This is the earliest moment when these imperfections can be dealt with during the derivation. The gerund morpheme can be valued in situ because TP could be taken as an extended projection (see definition in (16), p. 57) of AspP, the maximum projection $\{-ndo\}$ projects; TP and V, which has just inherited a valued Case feature, are in a mutual c-command relation. By my definition of 'feature valuation based on extended projection' ((18), p. 58), repeated below, this is enough for the Case in the gerund morpheme to be valued (①).

(12)   If the syntactic object *W* bearing a goal $[\pm\text{F}:\text{VAL}]$ is not c-commanded (neither mutually nor asymmetrically) by the syntactic object *X* that bears the probe $[\pm\text{F}:\_]$, but *W* is in a mutual c-command relation with *Y*, *Y* the topmost extended projection of *X*, feature valuation of the probe can be effected.
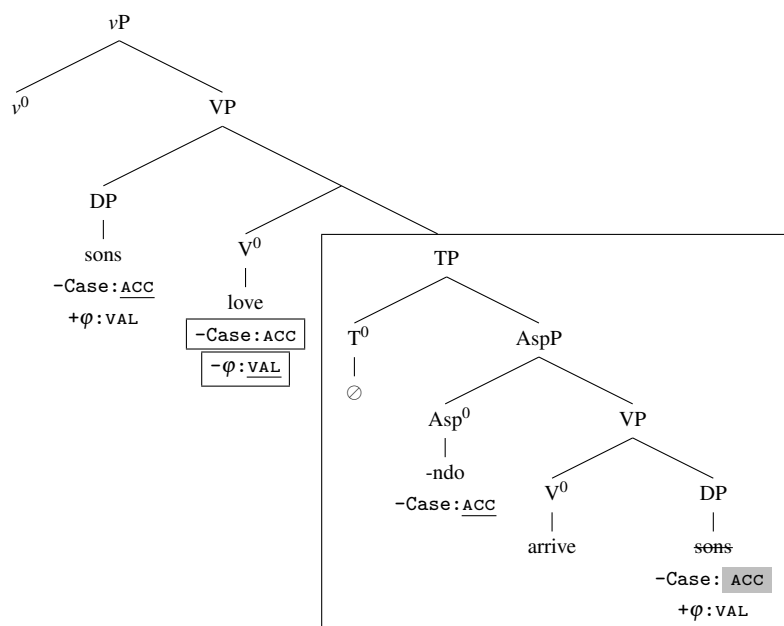
As mentioned above, the DP *sons* and the gerund morpheme start probing simultaneously. The DP does not find any goal to its Case in its initial probing domain. As a consequence, the DP has to move (①). The first position where it can move to in order to c-command a Case goal is [Spec, VP] inside the matrix clause: at the moment right after feature inheritance, this is the first position that c-commands a valued Case feature. Since the gerund morpheme and the DP start probing simultaneously, the Case in $\{-ndo\}$ gets valued when the DP is moving and therefore cannot count as a potential goal. After the DP moves, its Case also gets valued (②). The φ-features in V can be valued in situ because V asymmetrically c-commands the DP *sons* in its base-generation position (①).

(13)

```
                    vP
              ┌──────┴──────┐
             v0            VP
                     ┌──────┴──────┐
                    DP             ┌──────┴──────────────────┐
                    │             V0          ┌──────────────────────────┐
                   sons          love         │           TP              │
               -Case: ACC    ┌─────────┐      │     ┌──────┴──────┐       │
                +φ:VAL       │-Case:ACC│      │    T0           AspP      │
                  ②         ├─────────┤      │    │      ┌──────┴──────┐ │
                            │-φ: VAL  │      │    ⊘    Asp0          VP  │
                            └─────────┘      │         │       ┌─────┴──┐│
                               ①             │        -ndo     V0      DP│
                                             │     -Case: ACC  │       │ │
                                             │        ①       arrive  sons
                                             │              -Case:_    │
                                             │              +φ:VAL     │
                                             │                ①        │
                                             └──────────────────────────┘
```

At this phase level, the higher copy of the moved subject *sons* also probes the structure and values the Case feature of its lower copy, so that it can be deleted too.

(14)

```
                    vP
              ┌──────┴──────┐
             v0            VP
                     ┌──────┴──────┐
                    DP             ┌──────┴──────────────────┐
                    │             V0          ┌──────────────────────────┐
                   sons          love         │           TP              │
               -Case:ACC    ┌─────────┐      │     ┌──────┴──────┐       │
                +φ:VAL       │-Case:ACC│      │    T0           AspP      │
                            ├─────────┤      │    │      ┌──────┴──────┐ │
                            │-φ:VAL   │      │    ⊘    Asp0          VP  │
                            └─────────┘      │         │       ┌─────┴──┐│
                                             │        -ndo     V0      DP│
                                             │     -Case:ACC   │       │ │
                                             │                arrive  sons
                                             │              -Case: ACC │
                                             │              +φ:VAL     │
                                             └──────────────────────────┘
```

The derivation continues with the introduction of the matrix external argument (*João*), the assembling of TP and CP and the usual syntactic operations until (9) is derived.

(15)
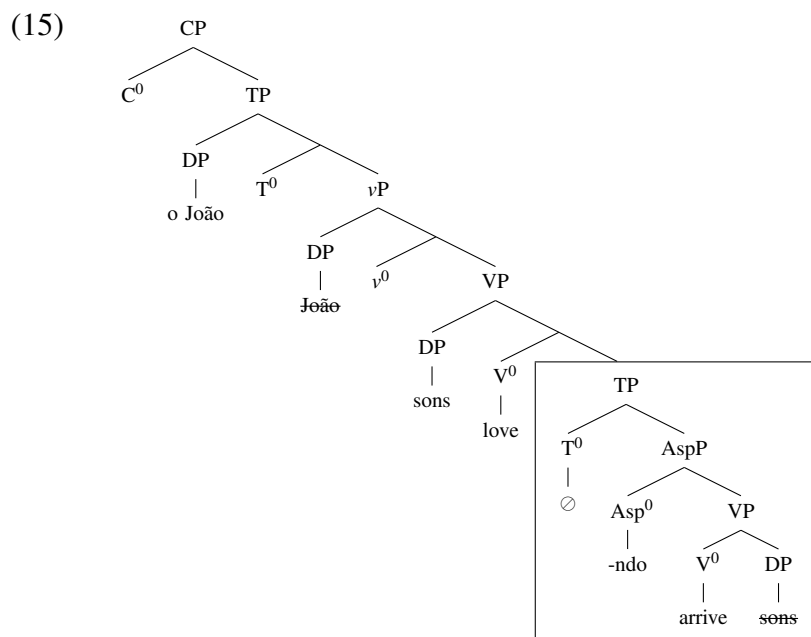
As is the usual strategy in this dissertation, I try to derive some properties of the behavior of a given GC subtype from its computation and structural make-up. Propositional GCs, like *class 1*, but unlike *class 3* GCs, allow for for sentential negation – (16) – and for sentential adverbial licensing – (17).

(16)　O　João adorou a　Maria *não*　mexendo um dedo.
　　　the João loved　the Maria NEG moving　a　finger
　　　'João loved Maria not doing anything at all.'

(17)　O　João imagined a　aeronave provavelmente podendo sofrer　uma pane
　　　the João imagined the airplane　probably　　can-*ndo* to-suffer a　breakdown
　　　na　volta.
　　　in.the return
　　　'João imagined the airplane probably breaking down on its way back.'

Sentential negation and sentential adverbial licensing are taken to be TP-dependent properties. *Class 1* and *class 2* GCs project TP, so that these elements are expected to be licenseable in the GC subtypes that belong to these two classes.

The GC selected by verbs like *imaginar* 'imaginar' and *considerar* 'consider' allow for their subject to be raised to the matrix subject position:[3]

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[3] However, *adorar* 'love' does not seem to allow the subject of its GC complement to be raised:

(i)　*A　Maria foi　adorada *t* cantando.
　　　the Maria was loved　　*t* singing

In the absence of an extra factor explaining this impossibility, it seriously undermines the analysis. Along with this problem, Reuland (1983) remarks that the subject of the equivalent construction in English favors a narrow scope reading, in contrast to the inverse scope possibility I claim *class 2* GCs to display.

(ii)　I hated everyone I liked being hanged.
　　　(from Reuland 1983, (23))

(18)   a.   A Maria foi imaginada *t* jogando na   seleção daqui a quinze anos.
            the Maria was imagined   *t* playing in.the selection of.here at fifteens years
            'Maria was imagined playing in the national soccer team in fifteen years time.'

       b.   A Maria é considerada *t* como sendo uma boa   pessoa.
            the Maria is considered   *t* as   being a   good person
            'Maria is considered to be a good person.'

This can be accounted for by the proposal that they are TPs and therefore not phases and that the domain for syntactic operations like Case-marking is a phase. As a consequence, the smallest phase where the subject of the propositional GC can be Case-marked must be inside the matrix clause. If the sentence is active, the Case-marker is *v*/V; if it is a passive sentence, it is C/T. The schematic representation of (18-a), for example, is as follows:

(19)
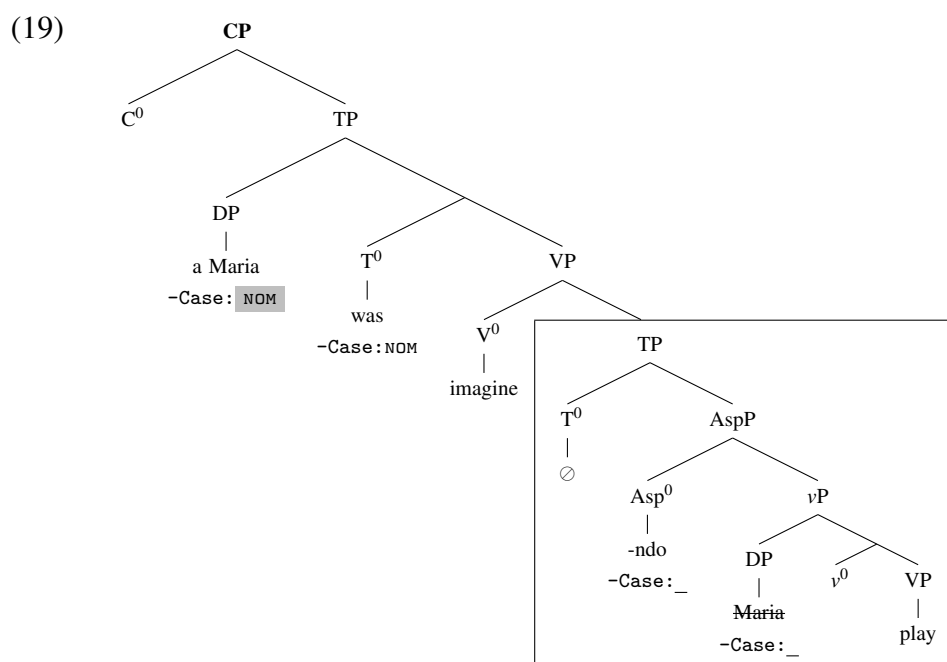
In (19), the subject of the propositional GC, *Maria*, does not have access to a Case goal in its initial probing domain. Once the matrix CP is built and the matrix T inherits a nominative Case feature from C, it becomes a valid Case goal and the DP can move to [Spec, TP] in order to c-command it and have its Case feature valued. This captures the possibility of the subject of a propositional GC raising into the matrix clause. Afterwards, the moved subject probes the structure in order to value and delete the Case feature of its lower copy (①). Later, the gerund morpheme finally has a valued Case feature in its probing domain and can have its Case feature valued too (②).

I have no solution to these problems.

(20)
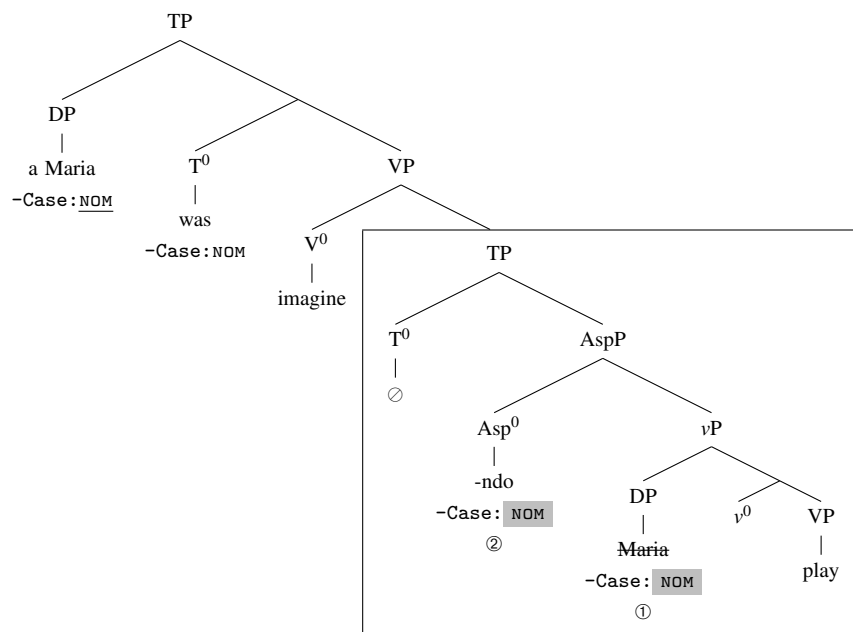
Other cases of what I consider to be propositional GCs call for more detailed comments. The derivation of *gostar* 'love' sentences – (21-a) – must be different because of the presence of the preposition *de* 'of' as part of *gostar*'s complement. This preposition presumably allows for the gerund morpheme and the GC subject to be Case-marked.[4] The outcome is an instance of "indirect" self-sufficiency for Case, that is, self-sufficiency for Case in a GC that is not the result of inheritance of a Case feature from C to T. Something analogous happens in the derivation of existential GCs due to partitive Case (see section 4.2). A potential consequence of this occurrence of *de* in the complement to *gostar* is that the GC subject ends up frozen inside the GC, thereby ruling out raising. This would capture the ungrammaticality of (21-b).

(21)   a.   O João gostou dos   filhos chegando cedo.
           the João loved of.the sons arriving   early
           'João loved his children arriving early.'

      b.   *Os filhos foram gostados *t* chegando cedo.
           the sons were loved   *t* arriving   early

This would explain the "deviance" of *gostar* GCs. Unlike other instances of propositional GCs, the GC complement to *gostar* does not allow for its subject to be raised. But there may be an independent reason for this, namely, an idiosyncratic property of *gostar*, the possibility of its complement including a preposition that satisfies all Case needs inside this complement.

I do not have a full analysis of the derivation of *gostar* GCs nor of the occurrence or prohibition of *de* in its complement. Speculatively, it may be the case that the preposition *de* can be optionally present or absent in the numeration from which a *gostar* sentence is derived, whichever its complement category (see possible complements to *gostar* on section 1.5.2.2). If there is a Case need that can be satisfied by *de* and *de* indeed is present in the numeration, the derivation converges; if it is not, the derivation crashes. If there is no Case need and *de* is

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[4]See discussion on section 1.5.2.2 above.

present in the numeration, *de*'s introduction in the derivation is never triggered and the derivation crashes because the numeration is not exhausted; if there is no Case need and there is no *de* in the numeration either, the derivation can also converge.

As for how Case-marking takes place in a *gostar* GC, another speculative comment: it may be the case that the preposition *de* assigns inherent, oblique (OBL) Case to its complement. This would be how Asp in the GC complement to *gostar* is Case-valued (①). Recall that I assume that it suffices for a goal to be symmetrically c-commanded by the topmost projection of the probe for valuation to take place – (12). In addition, recall that I assume that inherent Case does not have to wait until the phase level to be assigned because it is assigned along with a θ-role. Later on, when a phase level indeed is reached (②), the GC subject moves to [Spec, TP] (③), where it c-commands the now valued Case feature of the gerund morpheme in Asp (④). I also assume that the extended projections of a given head act in the syntax as if they were a single unit, so that [Spec, TP] in the GC counts as the closest position the GC subject can move to in order to c-command the Case feature in $\{-ndo\}$.

(22)
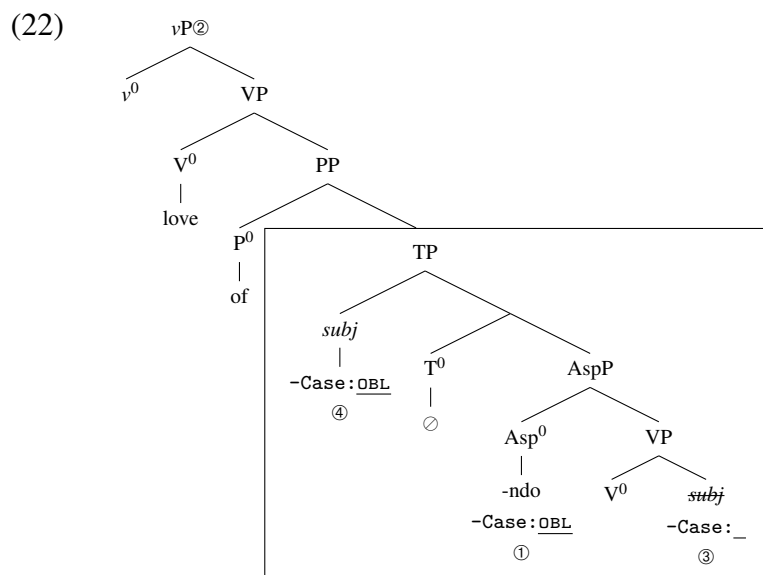
This schematic representation is just tentative, but it captures an interesting behavior of the preposition *de* in *gostar* GC complements. In some syntactic environments, when *de* is followed by a determiner like *o* 'the', *de* and the determiner can be contracted into *do* (*of+the*), as in (23-b). However, this contraction may be optional, as shown by (23-a)'s grammaticality.

(23)   a.   o   fato *de o*   João ser   lingüista
            the fact of the João to-be linguist
            'the fact that João is a linguist'

       b.   o   fato *do*   João ser   lingüista
            the fact **of+the** João to-be linguist
            'the fact that João is a linguist'

However, when the complement to *gostar* is a GC, contraction is not just a possibility; rather it is obligatory, as seen by the contrast between (24-a) vs. (24-b).

(24) a. *O João gostou *de os* filhos chegando cedo.
          the João loved   of the sons   arriving   early

      b. O João gostou *dos*   filhos chegando cedo.
          the João loved   **of+the** sons   arriving   early
          'João loved his children arriving early.'

This obligatoriness may perhaps be captured by the adjacency between *de* and the GC subject in [Spec, TP] in (22). Needless to say, a fuller account of *de* contraction is called for.

Just like *gostar*, the complement of *considerar* 'consider' also contains a preposition, *como* 'as'.[5] However, unlike *gostar*, passivization is possible in the GC complement to *considerar*:

(25) a. O João considera a   Maria como sendo uma boa   pessoa.
          the João considers the Maria as   being a   good person
          'João considers Maria to be a good person.'

      b. A   Maria é considerada *t* como sendo uma boa   pessoa.
          the Maria is considered   *t* as   being a   good person
          'Maria is considered to be a good person.'

A tentative explanation would be that verbs like *considerar* 'consider'[6] is an object control verb, similarly to *manter* 'keep' and *deixar* 'let' (see section 4.3). The schematic representation of (25-a) is thus as follows:[7]

(26)
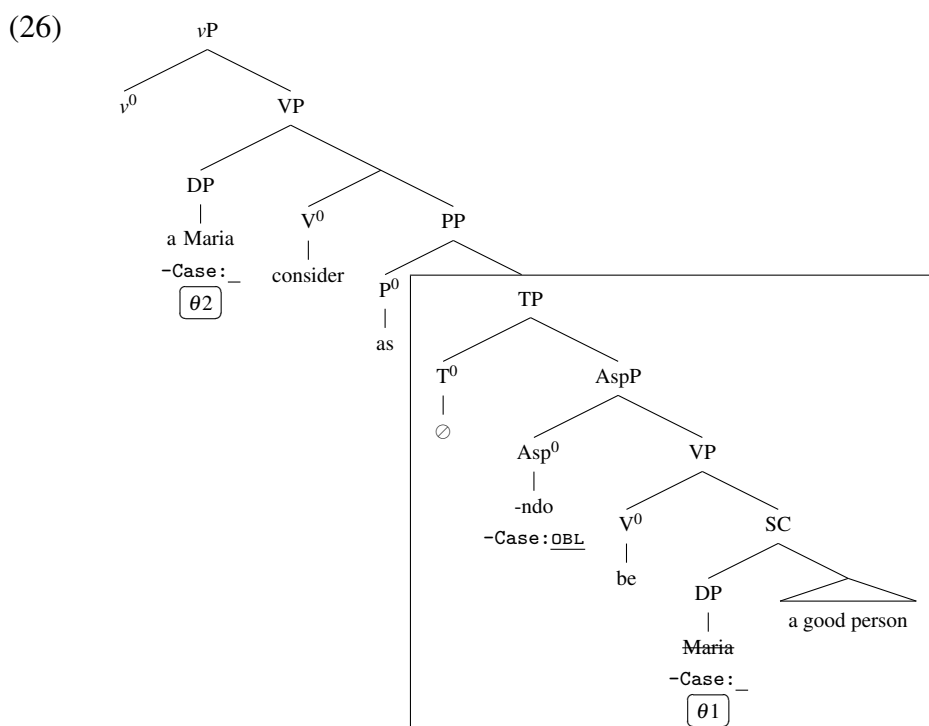
Perhaps *como* 'as' is also optional in the numeration (as I proposed for *gostar*'s *de*) and it assigns oblique Case inherently. The GC's TP is assigned this Case, along with a θ-role. At this point,

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[5] See discussion on section 1.5.2.1.

[6] *Interpretar* 'interpret' and *analisar* 'analyze' behave the same way.

[7] 'SC' stands for *small clause*. I use the term for convenience only.

the DP inside the GC (*Maria*) does not move to extend its probing domain because a phase has not been derived yet. But it does move in order to fulfill the second internal argument position of *consider*, where it receives a second θ-role (it had already recived one within the GC). When a phase level is finally reached, the DP *Maria* is assigned accusative Case because in the position it had moved to, [Spec, VP], it c-commands the V that inherits accusative Case. The preposition *como* 'as' does not affect the Case-marking of the GC subject as it perhaps does in *gostar* complements (see (22) above) because of the extra internal argument position in *considerar* sentences. If these remarks are on the right track, the prediction is that the GC subject can be passivized. This prediction is borne out by facts, as shown by (25-b)'s grammaticality. Needless to say, a thorough analysis is called for.

A problem here is that there is nothing to exclude a construction where the supposed inner DP argument of *considerar* and the the GC subject are both non-null:

(27)   *O   João considera *a   Maria* como sendo *o   Paulo* uma boa   pessoa.
        the João considers the Maria as   being the Paulo a   good person

This is a problem generated by the tentative considerations I make here (if I had not proposed an object control analysis for *considerar* 'consider', no problem would arise). I have no explanation for this impossibility.

On to other properties, the subject of the GCs selected for by *imaginar* 'imagine' and *considerar* 'consider' can be an anaphor that is correferent with the matrix subject:

(28)   a.   A Maria$_i$ se$_i$ imagina jogando na   seleção daqui a quinze anos.
              the Maria SE imagines playing in.the selection of.here at fifteen years
              'Maria imagines herself playing in the national soccer team in fifteen years' time.'

        b.   O João$_i$ se$_i$ considera como sendo uma boa   pessoa.
              the João SE considers as   being a   good person
              'João considers himself to be a good person.'

This can be accounted for by the proposals concerning the structure of *class 2* GCs and the domain for binding, that is, a phase. The schematic representation of (28-a) is the following:

(29)
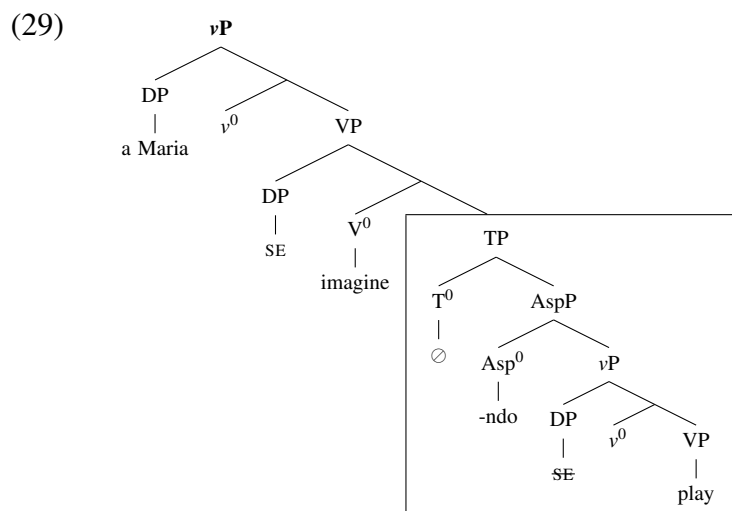
The first phase/binding domain that includes the anaphor *se* is the matrix *v*P. In this domain, it can be interpreted as correferential with the base-generation copy of the matrix subject, *Maria*, in [Spec, *v*P]. The analysis thus captures the behavior of propositional GC regarding binding.

Furthermore, it seems to be the case that the subject of the GC that is complement to verbs like *imaginar* 'imagine' and *considerar* 'consider' can take scope over a matrix quantifier.

(30)   a.   Algum professor imaginou todo aluno   cantando.
                  some   professor imagined all   student singing
                  'Some teacher imagined all student singing.'

                  ?*For every* x, x *is a student and some teacher or other imagined* x *sing.*

    b.   Três professores imaginaram dois alunos   cantando.
                  three professors   imagined   two students singing
                  'Three teachers imagined two students singing.'

                  ?*There are two specific students such that three teachers imagined them sing.*

    c.   O João geralmente imagina três   alunos   cantando.
                  the João generally   imagines three students singing
                  'João generally imagines three students singing.'

                  ?*There are three specific students such that João usually imagines them sing.*

The schematic representation of (30-b) is the following:

(31)
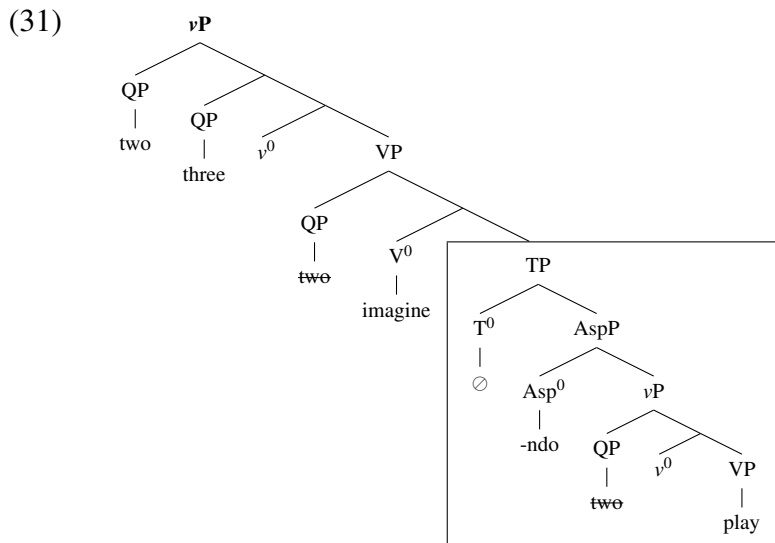
The closest phase edge the *two* QP (the GC subject) is the matrix *v*P. From this raised position, it c-commands the matrix *three* QP in its base-generation position. All the conditions on quantifier raising are met and the ambiguity in (30-b) is captured.

5.2   Subject GCs

Verbs like *incomodar* 'annoy' and *orgulhar* 'make proud' can take a GC as their subject.

(32)   a.   O João chegando atrasado incomodou o   chefe.
                  the João arriving   late   annoyed   the boss
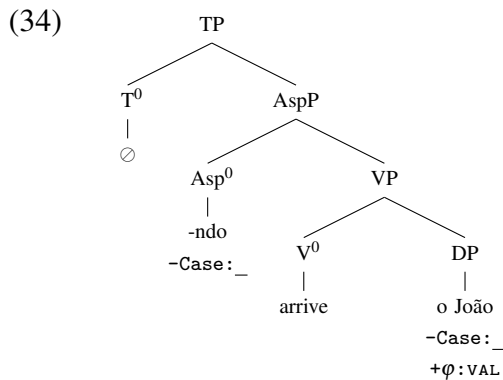
'João arriving late annoyed the boss.'

b. A Maria acertando   os exercícios orgulha   o   João.
   the Maria getting-right the exercises   makes-proud the João
   'Maria getting the exercises right makes João proud.'

The derivation of a sentence like (32-a) starts with the derivation of the lexical projections of the matrix predicate, *annoy*.

(33)

```
        vP
       /  \
      v⁰   VP
          /  \
         V⁰   DP
         |    |
      annoy  boss
```
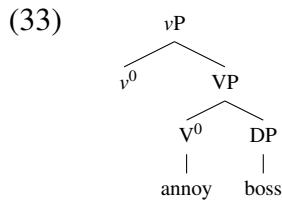
A phase (transitive *v*P) is reached and then syntactic operations, such as *v*-to-V feature inheritance and feature valuation of V and of the object (*boss*), are triggered (not represented for simplicity). The derivation of the matrix clause cannot go on at this point because there is no appropriate phrase available to fulfill its external argument θ-role. I assume thus that the partial matrix structure derived up to now is left in stand-by in the workspace while such an appropriate phrase is built on the side.

This phrase is the GC *o João chegando atrasado* 'João arriving late'. Since this is a *class 2* GC, the structure to be derived includes the bare minimum AspP, as well as TP; CP, however, is not projected.

(34)

```
              TP
            /    \
          T⁰      AspP
          |      /    \
          ∅   Asp⁰     VP
              |       /   \
            -ndo     V⁰    DP
          -Case:_    |     |
                  arrive  o João
                         -Case:_
                         +φ:VAL
```

The structure derived contains two probes, namely, the unvalued Case features of the gerund morpheme and that of the DP *João*. A phase level has not been reached yet, so there is no probing. (Recall that I assume that all syntactic operations, including probing, are effected only at the phase level). Now an appropriate argument to the *v*P previously derived – (33) – is available, so that the TP just formed merges with it as its external argument.

(35)
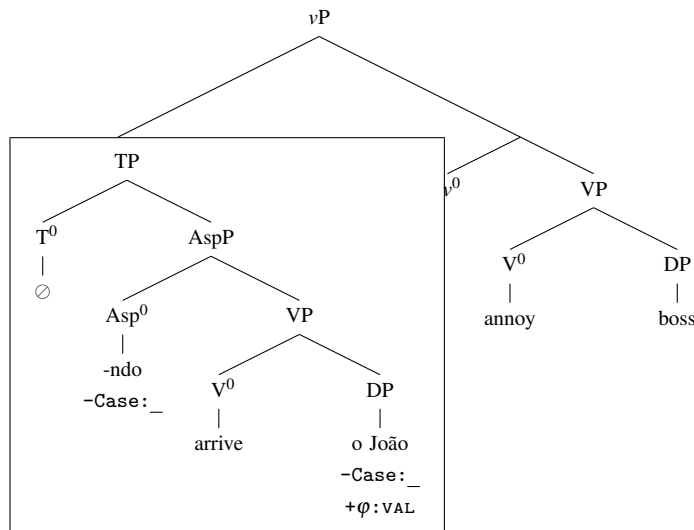
The derivation continues by merging T with the *v*P just derived and C with the TP that is formed as a result. Because CP is a phase, after CP is formed, the features that are a lexical specification of C (not represented below) are inherited by T.

(36)
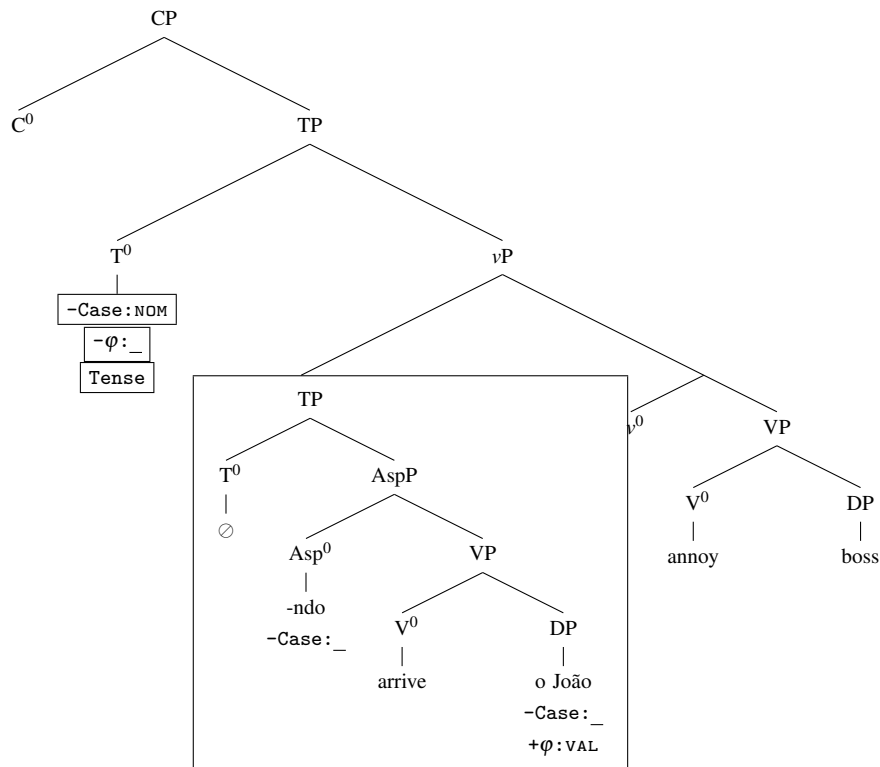
After feature inheritance, there finally is an appropriate goal for the `[-Case:_]` probes in the structure. However, that goal (`[-Case:NOM]` in T) is higher than the syntactic objects bearing the corresponding probes. As a consequence, they will have to move in order to extend their c-command/probing domains. Now a problem emerges as there are two candidates for moving, the gerund morpheme and the DP *João*. I propose that the decision is settled by intervention effects (repeated from (46), p. 71).

(37) β intervenes between α and γ if α c-commands β and β c-commands γ.

According to this condition, the gerund morpheme has to move first because it is c-commanded by the matrix T and in turn c-commands the DP. Presumably, the gerund morpheme alone cannot move because this would amount to moving an affix out from the verbal complex where it belongs. I propose that this problem can be overcome by moving the whole phrase where the gerund morpheme is housed. In addition, recall that I assume Grimshaw (2000)'s definition of Extended Projection (see (16). p. 57), so I take TP and AspP in a *class 2* GC to be extended projections of the verb and therefore they function as a unit. Thus, in order for the gerund morpheme to extend its probing domain in (36), the whole TP has to move because, if the gerund morpheme were to move alone, a morphologically adequate verbal cluster could not be formed and it is the whole TP that moves because this is the topmost extended projection of $\{-ndo\}$.

(38)
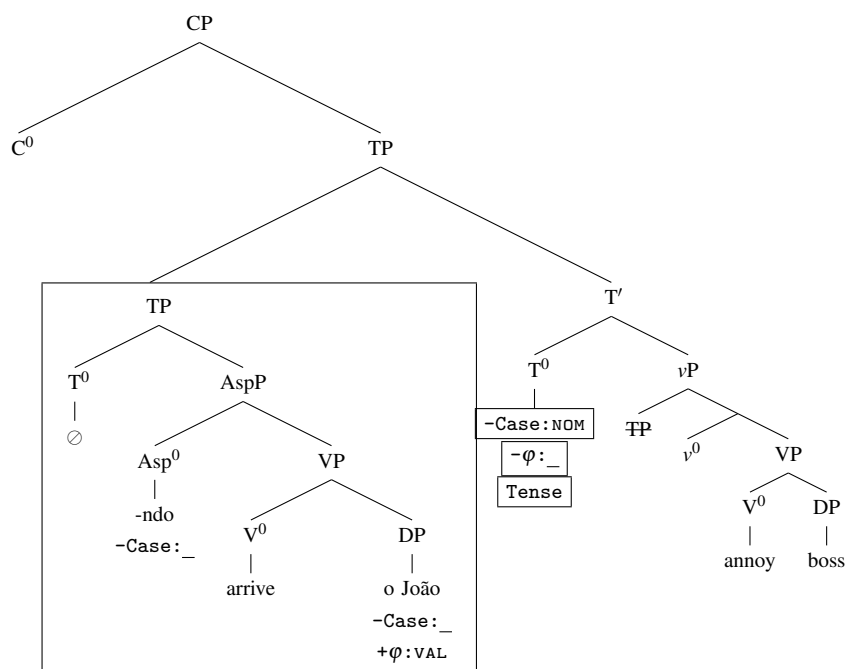
From this new position, the GC TP and the T′ in the matrix clause are in a mutual c-command relation. Recall that I proposed that feature valuation can be based on extended projections (see (12) above). Because TP is an extended projection of AspP, where the gerund morpheme is housed, this is enough for the [-Case:_] in $\{-ndo\}$ to be valued by the [-Case:NOM] in the matrix T.

(39)
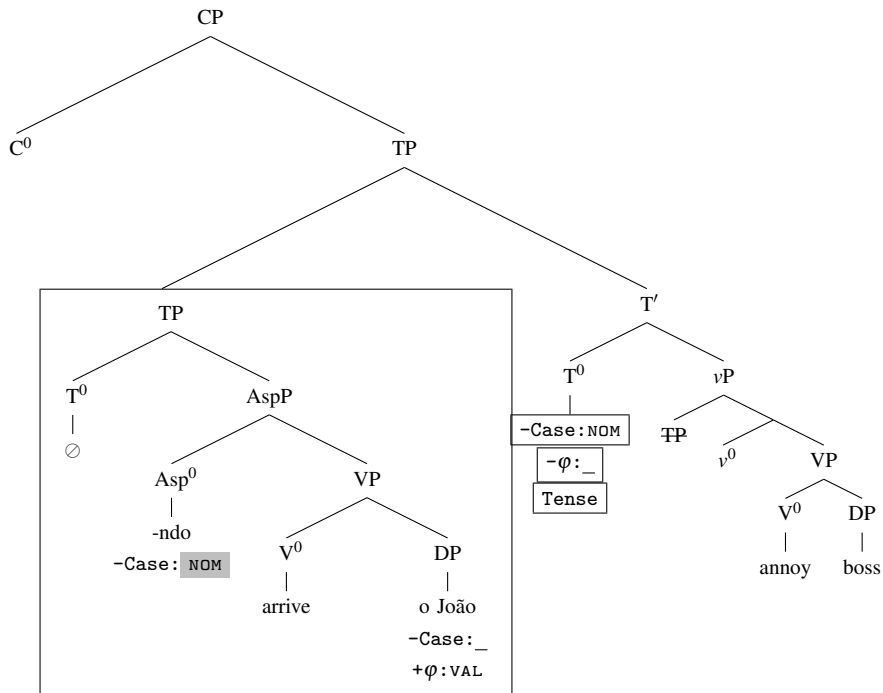
At this point of the derivation, there is no other Case probe, so that the [-Case:_] in the DP *João* can move to extend its probing domain without inducing an intervention effect. The first position it could move to where it can c-command a Case goal is the Spec position in the TP inside the GC, the extended projection of the gerund morpheme that has just had its Case feature valued.

(40)
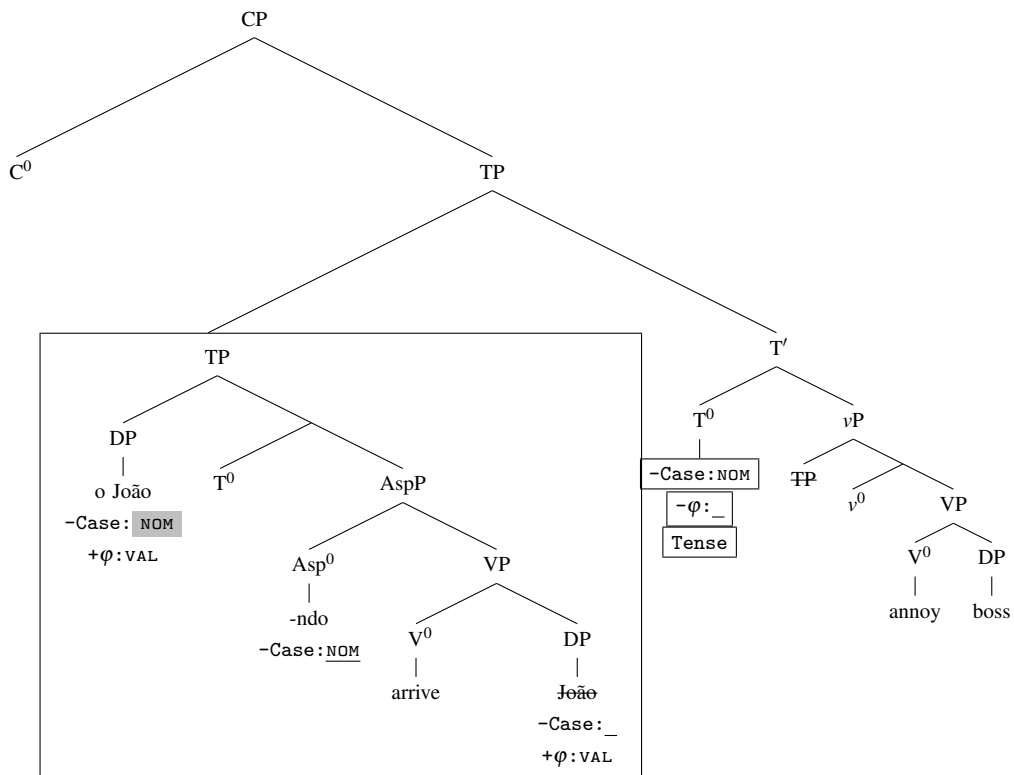
Finally, the higher copy of the subject of the GC (*João*) probes the structure to value and delete the Case feature of its lower copy. (Not depicted for simplification.)

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This is derivation the analysis affords for subject GCs. Next, we turn to the properties of the behavior of this GC subtype. Subject GCs can license sentential negation – (41) – and a sentential adverbial like *provavelmente* 'probably' – (42).

(41)   Os alunos   não   mexendo um dedo   orgulha   o   pai.
       the students NEG moving   a   finger makes-proud the father
       'The students not doing anything at all makes her father proud.

(42)   A aeronave provavelmente sofrendo uma pane na volta angustia o João.

       the airplane probably suffering a breakdown in.the return anguishes the João

       'The airplane probably breaking down on its way back anguishes João.'

According to the assumptions made here, the possibility of a subject GC including both sentential negation and a sentential adverbial are straightforward: these elements presuppose TP and this projection is indeed present in *class 2* GCs.

Unlike what happens to propositional GCs, the subject of a subject GC cannot be raised by itself to the matrix subject position, stranding the rest of the GC.

(43)   a. *Os filhos orgulharam *t* entrando na   universidade o   João.
          the sons   made-proud *t* entering in.the university   the João

       b. *As crianças incomodaram *t* correndo no   estacionamento o   porteiro.
   the children annoyed   *t* running in.the parking-lot   the janitor

Sub-extraction from a Spec position is known to be generally forbidden, so the pattern in (43) just falls under a broader pattern.

Subject GCs, again unlike propositional GCs, cannot have an anaphoric subject:

(44)   a. *Se chegando atrasado incomodou o   João.
          SE arriving   late   annoyed   the João

       b. *Se acertando   os exercícios orgulha   o   João.
          SE getting-right the exercises   makes-proud the João

Does this mean that classifying subject GCs under *class 2* was a wrong maneuver? Perhaps not, as there is an independent reason why the constructions in (44) are ungrammatical. The schematic configuration of (44) is the following:

(45)
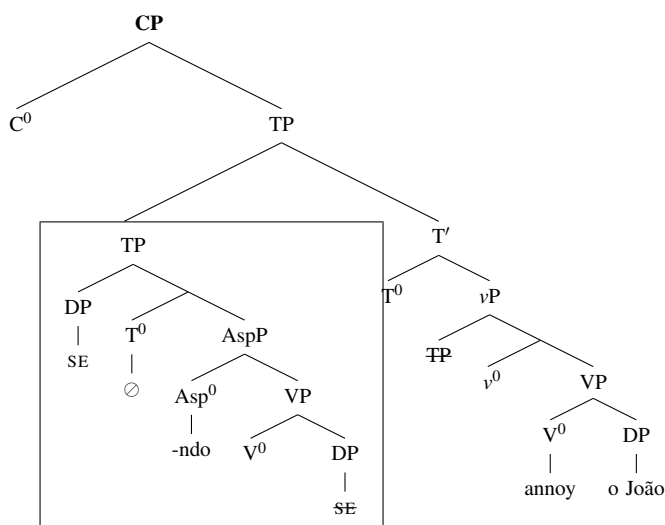
The smallest phase that contains the anaphor and which therefore counts as its binding domain is the matrix clause CP. Recall that *class 2* GCs, being TPs, are not phases. The anaphor sitting in [Spec, TP] is the highest nominal phrase, so it cannot be interpreted are correferential with any c-commanding phrase in its domain, as required by Principle A. Thus, there is an independent reason why the constructions in (44) are ungrammatical, despite an anaphoric subject being a possibility for other *class 2* GCs: the overall configuration where a subject GC is does not make room for the licensing of the anaphor.

As for an inverse scope reading, it seems to be possible for subject GCs, as it is for propositional GCs.[8]

(46) Duas meninas jogando na   seleção orgulhou   três   treinadores.
      two   girls   playing in.the selection made-proud three trainers
      'Two girls playing in the national soccer team made three trainers proud.'

      ?*There are two specific girls such that the fact that they played in the NT made three trainers proud.*
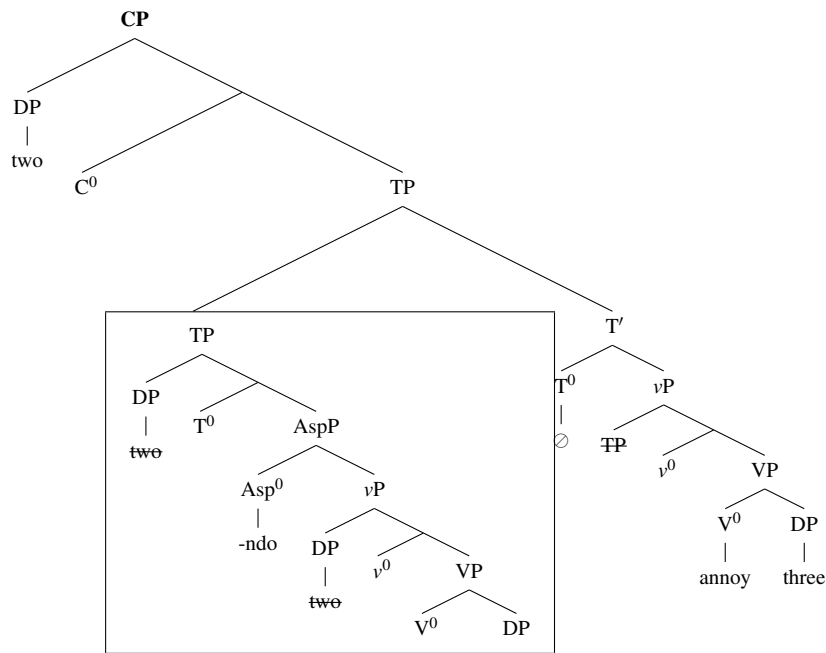
The schematic structure of (46) is the following:

---

[8]We can add a follow-up sentence with a pronoun the antecedent of which is *two girls*:

(i) Duas meninas*i* jogando na   seleção orgulhou   três   treinadores. Elas*i* jogam desde criancinha.
     two   girls   playing in.the selection made-proud three trainers   they play since small-child
     'Two girls playing in the national soccer team made three trainers proud. They have been playing soccer since early childhood'

I assume that this is possible because a pronoun requires a DP with a specific reading as its antecedent, a reading made available if *two girls* takes scope over *three trainers*.

(47)

```
                    CP
           ┌─────────┴─────────┐
          DP                   TP
          │            ┌───────┴────────┐
         two          TP                T′
                 ┌─────┴──────┐    ┌─────┴─────┐
          C⁰    TP            │   T⁰          vP
            ┌────┴────┐       │    │      ┌────┴────┐
           DP   T⁰   AspP     │    ∅      TP       VP
           │      ┌───┴───┐   │          v⁰   ┌────┴────┐
          two   Asp⁰      vP            v⁰   V⁰       DP
                 │     ┌───┴───┐              │        │
               -ndo   DP      VP            annoy    three
                      │   ┌────┴───┐
                     two v⁰  V⁰   DP
                             ┌──┴──┐
                            V⁰    DP
```

In accordance with the QR theory I assume here, the *two* QP inside the subject GC would have to move to the edge of the first phase that contains it. In the case at hand, this is the matrix [Spec, CP] position. From that position, it can c-command the *three* QP in the matrix clause. This instance of QR is legitimate both because it complies with the phasal requirement on QR and because it extends the scope of the *two* QP: in its base position, the *two* QP does not c-command any operator, but, in the position it QRs to, it can c-command the *three* QP in the matrix clause. This accounts for the ambiguity of (46).

## 5.3 Prepositional adverbial GCs

Finally, we turn to the last of *class 2* GCs considered here, namely, prepositional adverbials. The label is due to the preposition that precedes the adverbial (*com* 'with' in (48-a)). This subtype of adverbial GC cannot have a null subject; it must be necessarily an overt DP.

(48)   a.   O João estudou *com* os irmãos   gritando.
             the João studied with the brothers shouting
             'João studied with his brothers shouting.'

      b. *Os irmãos   estudaram *com ec* gritando.
   the brothers studied   with *ec* shouting

Another property of a prepositional adverbials is that they fall outside the scope of sentential negation inside the matrix clause.

(49)   a.   *A Maria não estudou com o João lendo   livro algum.
             the Maria NEG studied with the João reading book some

      b. *O João não arrumou a   sala   com a   Maria mexendo um dedo.
          the João NEG tidied-up the room with the Maria moving   a   finger

Based on this property, I propose that they are adjoined to the matrix TP, which is above NegP.

(50)
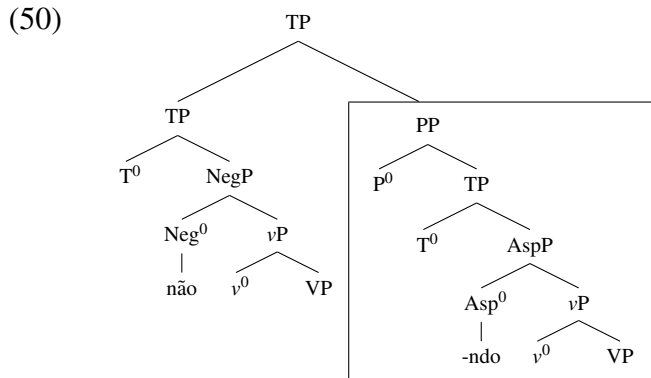
We will see the derivation of all adverbial GCs in chapter 6 below. For now it suffices to see the final configuration of a sentence like (48-a):

(51)
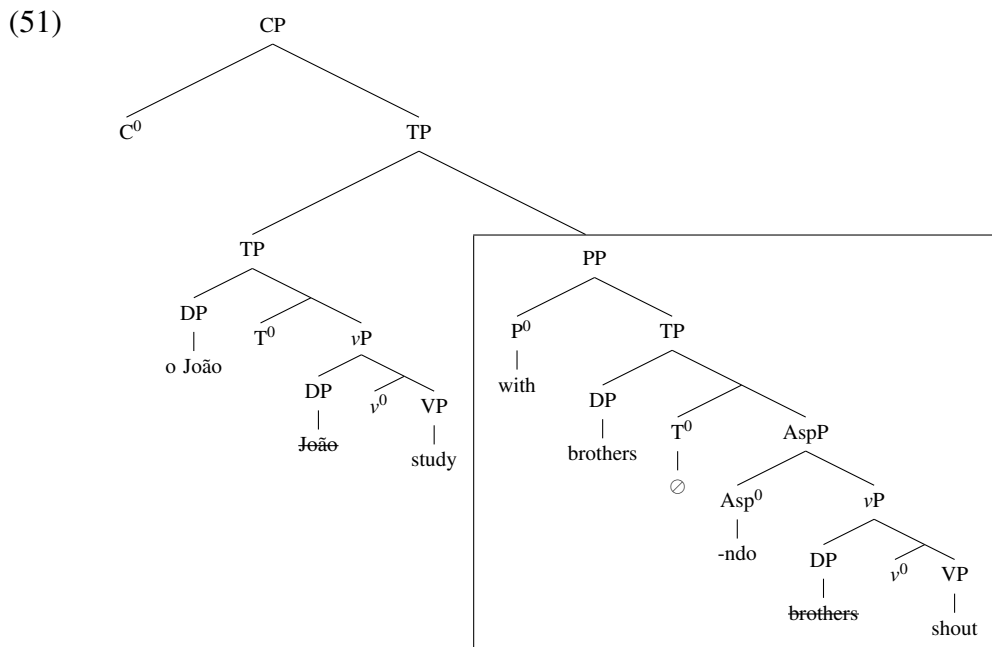
From this structure, along with the proposals and assumptions made, I try to derive the particulars of the behavior of prepositional adverbials.

Prepositional adverbials allow for sentential negation – (52) – and sentential adverbial licensing – (53).

(52) A Maria não consegue dar   aula com os alunos   não mexendo um dedo.
     the Maria not manages to-give class with the students NEG moving   a   finger
     'Maria cannot teach with the students doing nothing at all.'

(53) O João quer viajar   sem   a   aeronave provavelmente sofrendo uma
     the João wants to-travel without the airplane   probably   suffering a
     pane   na   volta.
     breakdown in.the return
     'João wants to travel without the airplane probably breaking down on its way back.'

These properties can be straightforwardly captured by the analysis, for I assume that sentential negation and sentential adverbial licensing presupposes TP, a projection that is indeed present in *class 2* GCs like the prepositional adverbial.

Turning to properties that I analyzed as phase-dependent, we cannot consider raising because this regards passivization in the matrix clause and movement of the GC subject into the matrix subject position.[9] As for the properties we can assess, an anaphoric subject is not allowed – (54) – and an inverse scope reading seems not to be available either – (55).

(54)   *A   Maria$_i$ não consegue estudar com se$_i$ checando o   celular   toda hora.
         the Maria NEG manages to-study with SE checking the mobile-phone every hour

(55)   Três professores conseguiram dar   aula com dois aluno   gritando.
         three professors   managed   to-give class with two student shouting
         'Three teachers managed to teach with two students shouting.'

         ?*There are two specific students such that three teachers managed to teach while these students were shouting.*

The impossibility of binding in (54) "divert" from what is "expected" from *class 2* GCs. Propositional GCs, for example, allow for an anaphoric subject (see section 5.1 above). There may be however independent reasons why prepositional adverbials behave the way they do. Recall that prepositional adverbials seem to be placed in a relatively high position in the sentence structure.
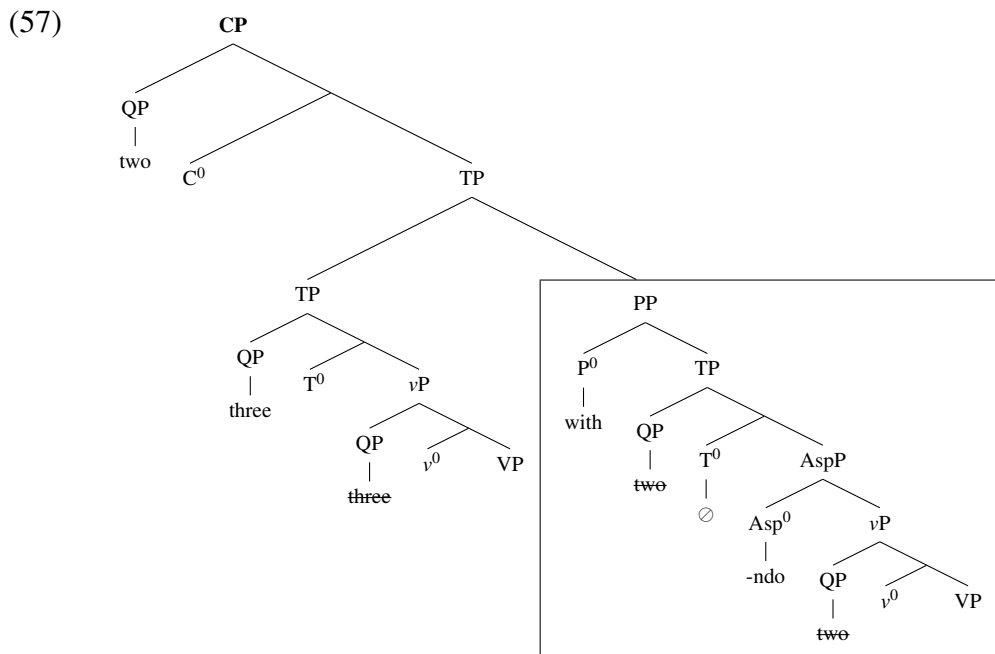
(56)
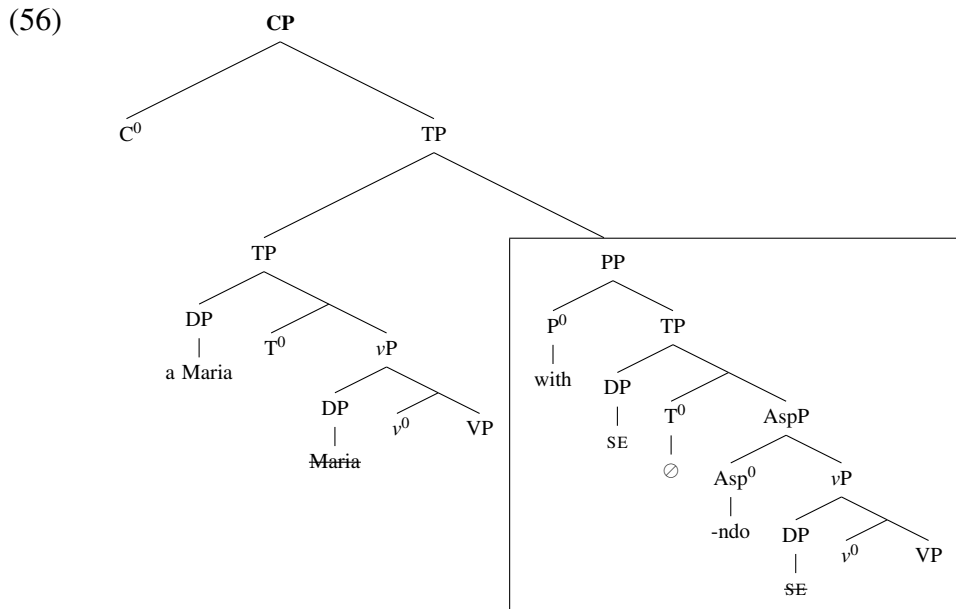
The binding impossibility in (54) can be explained by the fact that there is no c-command relation between the matrix clause subject and the GC subject, the matrix CP being the smallest phase and hence binding domain for an anaphoric subject in the prepositional GC. Thus, the ungrammaticality of (54) can be independently accounted for if we take into consideration the c-command requirement on binding, together with the position I propose prepositional adverbials

---

[9]See however chapter 6, where, assuming MTC, I discuss why movement from a prepositional GC is not possible, resulting in the subject of this adverbial GC subtype being obligatorily overt.

fill in the overall sentence.

As for the inverse scope reading possibility in (55), it can also be captured by the analysis proposed.

(57)

```
                            CP
              ┌─────────────┴──────────────┐
             QP                            │
              │                            │
            two    ┌──────────────┬────────┴──────────┐
                   C⁰                                 TP
                          ┌────────────────┬──────────────────────────┐
                         TP                                           PP
                  ┌───────┼───────┐                      ┌─────────────┼──────────┐
                 QP      T⁰       vP                     P⁰                       TP
                  │          ┌─────┴─────┐                │           ┌────────────┴──────┐
                three       QP          ...              with        QP      T⁰          AspP
                       ┌────┴───┐                              │      │    ┌────┴───────────┐
                      QP   v⁰   VP                            two   ∅   Asp⁰              vP
                       │                                              │         ┌────────┴────┐
                     three                                          -ndo       QP   v⁰       VP
                                                                               │
                                                                             two
```

The closest phase edge the *two* QP could move to is the matrix [Spec, CP], from where it can c-command the matrix *three* QP, hence the inverse scope reading.

In sum, there is no contradiction for the analysis between the fact that prepositional adverbials do not allow for their subject to be an anaphor correferent with the matrix subject and the fact that it allows for an inverse scope reading. The former is not possible due to the high position of this GC subtype in the overall sentence, while the latter is a possibility because, however high, the subject of the GC can move to the edge of a phase and extend its scope from there.

5.4 Conclusion

This chapter was dedicated to *class 2* GCs, the GCs that share properties both with *class 1* and with *class 3* GCs. Like *class 1*, *class 2* GCs project TP, distinguishing them from *class 3* GCs. This accounts for why *class 1* and *class 2* GCs converge so far as sentential negation and sentential adverbial licensing are concerned. Unlike *class 1*, but like *class 3*, *class 2* GCs are not phases because their topmost projection is TP. This captures the similar behavior of *class 2* and *class 3* GCs regarding raising, binding and inverse scope. The sharing of properties with each of the other two classes is what renders *class 2* an intermediate class, but without making them fully identical to either.

As is the usual strategy in this dissertation, I tried to derive the behavior of *class 2* GCs from the way their computation proceeds, coupled with assumptions and proposals concerning their structural make-up. I also tried to show that when a given GC subtype does not display

the same behavior as that of its kin, there was an independent factor at play (e.g., independent restrictions on extraction from subjects and positioning of the GC with respect to the overall structure). Two important ingredients in the analysis of *class 2* GCs were the incorporation of the concept of extended projection and the proposal that c-command of the goal by an extended projection of the probe suffices for feature valuation to be effected. I have to say that, although this trick does the job, it *is* a trick, so that a review of this analysis is in order. I leave it for future research.

Finally, in this chapter I made some tentative remarks on the prepositions *de* 'of' and *como* 'as', which are present in the GC subcategorized for by *gostar* 'love' and *considerar* 'consider', respectively. As I mentioned, the analysis of the licensing of these prepositions requires thorough working, which I leave for future analysis too. It is important that this work is done because it is on the occurrence of these prepositions that I based the proposal that the gerund morpheme has a Case feature to be valued (see section 1.5.2).

Chapter 6

Adverbial GCs and control

In this chapter, we finally see the derivation of adverbial GCs. The control possibilities, which are the distinguishing properties of these GC subtypes, will be shown to fall out from the analysis provided, along with some ancillary assumptions.

6.1 Introduction: control issues raised by adverbial GCs

In this dissertation, I inspect three types of adverbial GCs, high, low and prepositional.

(1) *High adverbial GCs*

    a.   O   João chegando mais cedo, a   firma   termina o   projeto.
        the João arriving   more early the company finishes the project
        'If João arrives earlier, the company will be able to finish the project.'

    b.   O   João chegando atrasado de novo, a   firma   não conseguiu terminar o
        the João arriving   late   of new the company not managed to-finish the
        projeto.
        project
        'Because João arrived late again, the company did not manage to finish the project.'

    c.   *ec* Chegando mais cedo, o   João vai conseguir terminar o   projeto.
        ec arriving   more early the João goes to-manage to-finish the project
        'If he arrives earlier, João will be able to finish the project.'

    d.   *ec* Chegando atrasado de novo, o   João não conseguiu terminar o   projeto.
        ec arriving   late   of again the João not managed   to-finish the project
        'Because he arrived late again, João did not manage to finish the project.

(2) *Low adverbial GCs*

    a.   *O   João caminha a   Maria ouvindo música.
        the João walks   the Maria listening music

    b.   O   João caminha *ec* ouvindo música.
        the João walks   *ec* listening music
        'João walks listening to music.'

(3)   *Prepositional adverbial GCs*

    a.   O   João estudou com os irmãos gritando.
          the João studies with the brothers shouting
          'João studied with his brothers shouting.'

    b.   *Os irmãos   estudaram com *ec* gritando.
          the brothers studied   with *ec* shouting

These labels refer to the relative height of the adverbial clause in the structure or to whether or not they are preceded by a preposition. Each of these three adverbial GCs happens to belong to each of the three classes of GCs proposed. High adverbials are an instance of *class 1*, also dubbed 'GCs self-sufficient for Case'. Low adverbials are instances of *class 3* and prepositional adverbials, of *class 2*, both of these classes being part of the GCs that are not self-sufficient for Case.

Each of these adverbial GCs has its own particularities. High adverbials differ both in interpretation and in subject realization. They can have a conditional reading – (1-a), (1-c) – or a causal one – (1-b), (1-d) – and the subject can be a non-null DP (*o João*) – (1-a), (1-b) – or it can be null – (1-c), (1-d). For low adverbials, this alternation is not available: the subject is necessarily null – (2-b) vs. (2-a). The same can be said of prepositional adverbials, except that the subject is necessarily overt – (3-a) vs. (3-b).

Despite these differences, the analysis proposed allows the three types of adverbial GCs to be uniformly analyzed just as the other GC subtypes were. I take the null subject in (1-c), (1-d), (2-b) to be *PRO* because, as we will see, these structures display the hallmarks of obligatory exhaustive control. In order to analyze these structures, I assume the movement theory of control (MTC), introduced in section 4.3.1 above, and sideward movement, to be outlined in section 6.2 below. The particularities in the behavior of adverbial GCs, specially those concerning their subject (i.e, null vs. non-null subject alternation, and obligatorily null subject or obligatorily overt subject) will be derived from independent factors in the syntactic computation, namely:

(4)   a.   Does the numeration contain enough material for all θ-requirements to be satisfied via external merge or must internal merge be resorted to?

    b.   Is the subject of the adverbial GC active in the derivation for it to be able to move?

    c.   Does the absence of a subject in the GC structure cause the derivation to crash?

According to the MTC, control results when the same syntactic object passes through more than one thematic position via A-movement. For this movement to be possible, the moving element must be active in the derivation, that is, it must have a feature to be valued, otherwise, the movement is ruled out on economy grounds (more precisely, by the activation condition). This leads to the prediction that GCs that are not self-sufficient for Case (i.e., *class 2* and *class 3* GCs) allow for control, since their subject cannot be Case-valued within the GC, so that it remains active to move into the matrix clause. If this movement targets a thematic position, the result is control. This is precisely what we see in low adverbials, a member of *class 3* GCs –
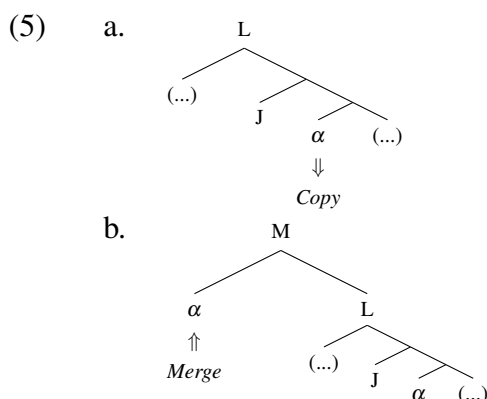
(2-b). However, this is not the case for *class 2* GCs – (3-a). Thus, the first question we have to answer, if we assume MTC, as I do here, is, why should there be a contrast between the two members of the GCs that are not self-sufficient for Case regarding the realization of their subjects?
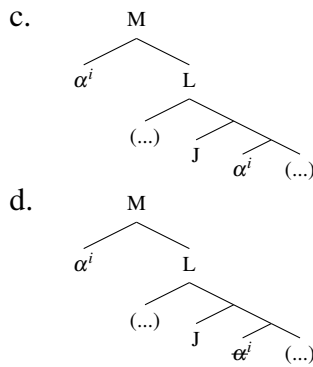
In turn, GCs self-sufficient for Case (*class 1*) have their own Case-valuation resources. Thus, their subject is expected not to be active to move into an additional thematic position inside the matrix clause. The result is a high adverbial with a non-null subject, as in (1-a) and (1-b). This result is correct, but not exhaustive because, as seen in (1-c) and (1-d), it is also possible that high adverbial GCs have a *PRO* subject. If these GCs are self-sufficient for Case, how come their subject is active to move into a thematic position inside the matrix clause, resulting in control? I argue that, although it is *possible* for the subject of a GC self-sufficient for Case to have its Case valued inside the GC, this is not *obligatory*. It suffices that (i) the subject moves before Case valuation takes place and that (ii) the absence of a DP inside a GC does not cause the derivation to crash. These two desiderata can be jointly fulfilled only in high adverbials, hence the optionality in subject realization.

In the next sections, we see the derivation of each type of adverbial GC in turn, paying special attention to the properties of their subject. These properties will be shown to fall out from the feature valuation system assumed and from the analysis of GC contrasts and similarities based on the proposal of different structure sizes. Before we get to GCs though, I outline an ingredient that will be crucial to the analysis, namely, sideward movement.

6.2 Sideward movement

According to Nunes (2001, 2004), movement is not a primitive operation in the computational system. Rather, it is the *effect* of conjoining other operations independently necessary in the computational system, namely, Copy, Merge, Form Chain and Chain Reduction. In (5-a), a syntactic object α, contained in *L*, is copied. In (5-b), α merges with *L*, giving rise to a new syntactic object, *M*. In (5-c), a chain is formed, as indicated by the super-scripted *i*s in the two instances of α. In (5-d), Chain Reduction, defined in (6), takes place.

(5) a.

b.

174

c.
```
          M
        /   \
      α^i     L
            /   \
         (...)    \
                J    \
                   α^i  (...)
```

d.
```
          M
        /   \
      α^i     L
            /   \
         (...)    \
                J    \
                   α̶^i  (...)
```

(6)   *Chain Reduction*: Delete the minimal number of constituents of a nontrivial chain CH that suffices for CH to be mapped into a linear order in accordance with the LCA[1]. (Nunes, 2004, 27, (44))

For a syntactic structure to be linearized, two requirements must be fulfilled, asymmetry and anti-reflexivity (Nunes, 2004, 25):

(7)   a.   *Asymmetry*: if α precedes β, then it must be the case that β does not precede α.
   b.   *Irreflexivity*: if α precedes β, then it must be the case that $\alpha \neq \beta$.

In (5-c), the highest copy of α (the one immediately dominated by M) asymmetrically c-commands *J*. However, *J* also asymmetrically c-commands the lower copy of α. Thus, *J* should both precede and be preceded by α, a contradictory requirement that violates (7-a). Furthermore, the higher copy of α asymmetrically c-commands the lower copy of α, so that α ends up preceding itself, a violation against the anti-reflexivity requirement (7-b). In order to solve these problems, thereby allowing the structure to be linearized at PF, Chain Reduction eliminates the minimal number of chain links to allow linearization to go through. In (5-d), after the lower copy of α is deleted, the only possible order between α and *J* is one where α precedes *J*. In addition, as a consequence of Chain Reduction, α no longer precedes itself. Generally, it is the highest copy of a moved element that survives Chain Reduction, since it has more deleted features. (See further details in Nunes 2001, 2004.)

A consequence of the proposal that movement does not exist as a primitive operation, but only as an effect of bringing together operations that are indeed primitive is that it is possible for movement to occur in the absence of Form Chain and Chain Reduction. The result is **sideward movement**. In (8), there are two independent syntactic objects, *K* and *L*, both available in the same workspace. α, contained in *L*, is copied and merged with *K* in (9), yielding *M*. Since movement is not a primitive operation in the computational system, the null hypothesis is that nothing prevents a copied syntactic object (α) to merge with a disconnected syntactic object (*K*). The result can be described as an instance of sideward movement.

---

[1]Linear Correspondence Axiom: "Let X, Y be nonterminals and x, y terminals such that X dominates x and Y dominates y. Then if X asymmetrically c-commands Y, x precedes y." (Kayne 1994 *apud* Nunes 2001, 307, (5)).
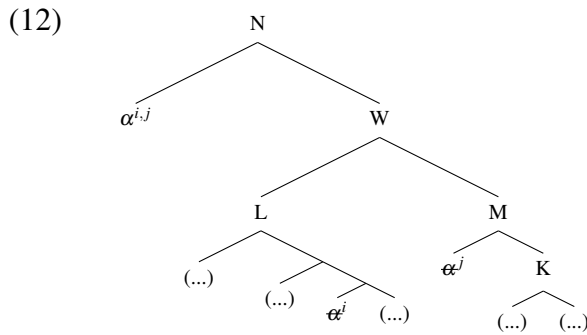
(8) a.

L

(...)

(...)

α (...)

$\Downarrow$

Copy

b.

K

(...)   (...)

(9) a.

L

(...)

(...) α (...)

b.

M

α K

$\Uparrow$
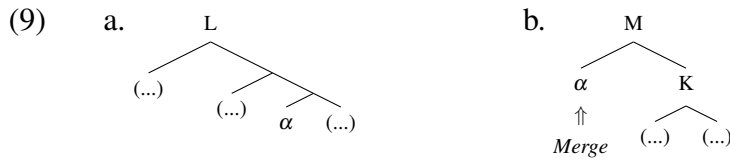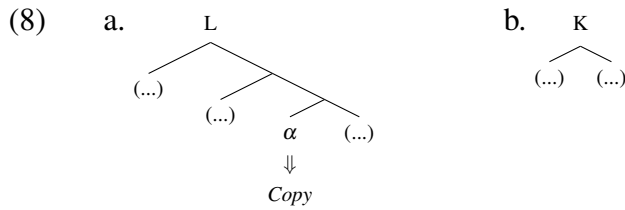
Merge   (...)   (...)

Later on in the derivation, *L* and *M* may be joined together in a single tree *W*. α may be copied again and merged with *W*, yielding *N*.

(10)

N

α W

L   M

(...) α K

(...) α (...)   (...)   (...)
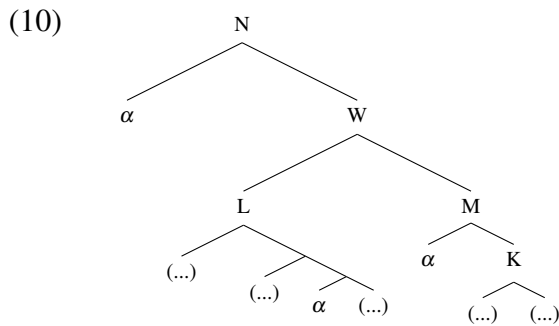
There cannot be any c-command relation between the copy of α in *L* and the copy in *M*, so that they cannot form a chain. In the absence of a chain, Chain Reduction – (6) – cannot be effected and thus, the derivation would fail to converge at PF due to linearization problems. However, there is one more copy of α, the highest copy, which is immediately dominated by *N*. This higher copy c-commands both the copy of α contained in *L* and the copy of α contained in *M*. The highest copy of α can then form a different chain CH with each of these lower copies, CH1 = ($\alpha^{i,j}$, α^i) and CH2 = ($\alpha^{i,j}$, α^j).

(11)

N

$\alpha^{i,j}$ W

L   M

(...) α^j K

(...) α^i (...)   (...)   (...)
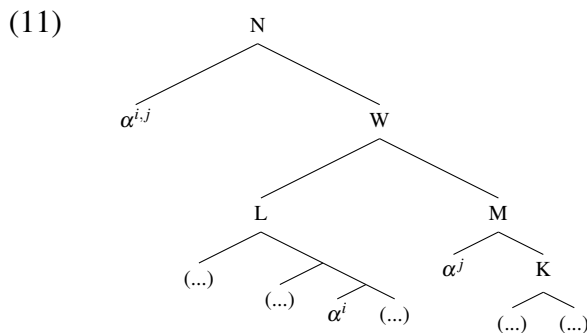
As mentioned, it is generally the highest link in a chain that has more features deleted and thus, it is the highest copy of CH1 and of CH2 that survives Chain Reduction. Since there is just one instance of α in (12), the asymmetry and anti-reflexivity requirements on linearization can both be met.

(12)

```
                    N
             _____/_____
            /              \
        α^{i,j}             W
                     _____/_____
                    /              \
                   L                M
              ____/\____        ___/\___
             /    |     \      /        \
           (...)  |      \   α^{j}       K
                 (...)    \          ___/\___
                   ____/\____       /        \
                  /          \    (...)     (...)
                α^{i}       (...)
```

Sideward movement is an addition to our toolkit in chapter 2 and it will be integrated with MTC in order to capture the control possibilities in adverbial GCs. However, our theoretical tools are not made more complex by neither. As emphasized by Nunes (2001, 2004), sideward movement should be independently available in the computational system and is therefore cost-less. The same can be said of MTC, as emphasized by Hornstein (1999, 2003); Boeckx et al. (2010), which conceives of control not as a primitive module in the grammar, but rather as a byproduct of A-movement.
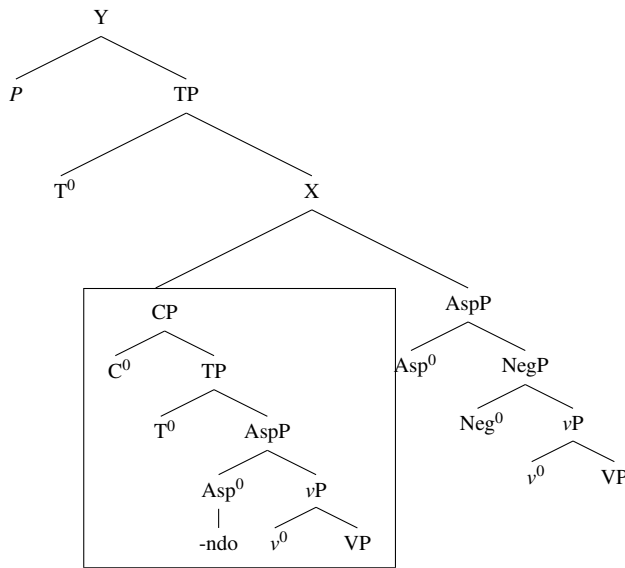
6.3 High adverbials: the overt subject type

We start with a GC subtype that is more straightforward to the analysis, namely, high adverbials the subject of which is non-null. This is so because high adverbials are an instance of *class 1* GCs, that is, the GCs that are self-sufficient for Case. The subject of the GCs belonging to this class should be able to be Case-valued inside the GC itself, preventing it from moving into the matrix clause. As a consequence, control should not obtain. The trickier case, when control does obtain in high adverbials, will be dealt with in section 6.4 below.

Recall that a high adverbial like (1-a), repeated below, is a CP and that it is 'high' because it is an adjunct to a relatively high portion *X* of the matrix clause, a position that is high enough to preempt NPI licensing by matrix sentential negation, but not so high so that it eschews c-command by the matrix subject. (See data and discussion in section 3.3.) Nevertheless, the high adverbial is pronounced in a position *P* that is even higher.[2]

(13) O   João chegando mais cedo, a   firma   termina o   projeto.
      the João arriving   more early the company finishes the project
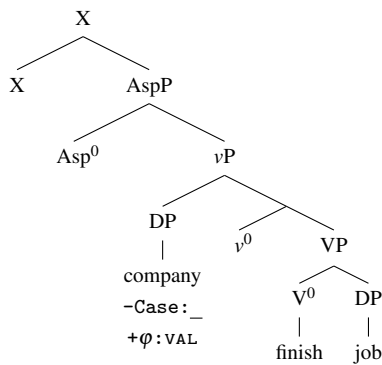   'If João arrives earlier, the company will be able to finish the project.'

---

[2]Recall that the particular identities of *X*, *Y* and *P* are not important to me now.

(14)

```
                    Y
            _____|_____
           P                 TP
                      _____|_____
                    T⁰                 X
                              _____|_____
                             |                   |
                  _____CP_____       AspP
                 |                      |      ___|___
                 C⁰                    TP    Asp⁰   NegP
                            _____|__        ___|___
                          T⁰              AspP   Neg⁰    vP
                                       ____|____       __|__
                                     Asp⁰       vP    v⁰    VP
                                      |        _|_
                                     -ndo     v⁰  VP
```
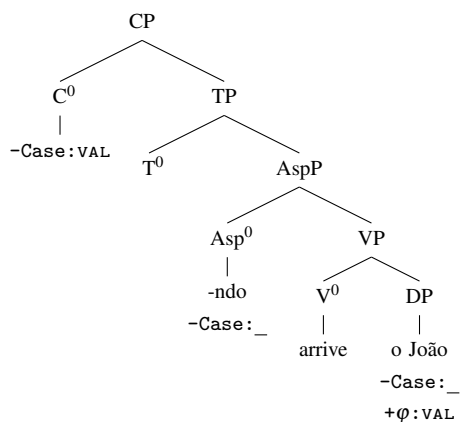
Suppose the derivation of a sentence such as (13) starts by exhausting the numeration of the matrix *v*P (*finish the job*) and then forming what will become the matrix AspP. The *X* projection to which the high adverbial will adjoin is also formed.

(15)

```
                X
          _____|_____
         X            AspP
                 _____|_____
               Asp⁰           vP
                         _____|_____
                       DP             |
                        |            _v⁰_____VP
                    company        v⁰      ___|___
                    -Case:_               V⁰      DP
                    +φ:VAL                 |       |
                                        finish    job
```

Suppose also that X structure just assembled is left in stand-by, so that what will become the adverbial GC can be later adjoined to it. The GC adverbial then starts being assembled.

(16)

```
               CP
         _____|_____
        C⁰            TP
        |        _____|_____
    -Case:VAL   T⁰           AspP
                        _____|_____
                      Asp⁰           VP
                       |         _____|_____
                      -ndo      V⁰          DP
                    -Case:_      |           |
                             arrive       o João
                                          -Case:_
                                          +φ:VAL
```

Since this is a GC self-sufficient for Case, C bears a valued Case feature, which is inherited by T at the phase level (①). The matching feature in the gerund morpheme (Asp) can be valued by T given the c-command relation between AspP and T (②). At the same time, the DP *o João*

does not find any valued Case feature in its initial probing domain, so that it is allowed to move to the first position where it can c-command one, that is, it is allowed to move in order to extend its probing domain (②). This position is [Spec, TP], where the DP can c-command T and finally have its Case feature valued (③).

(17)
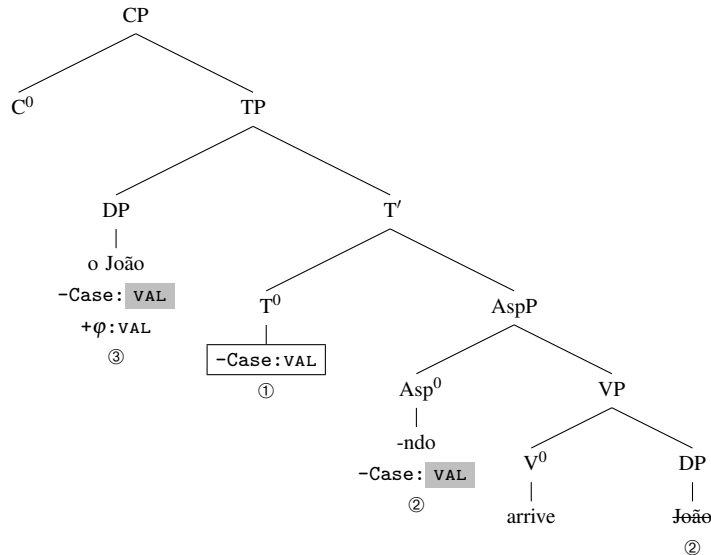
The GC just assembled merges with the matrix structure previously derived – (15) –, but which was left in stand-by. The derivation is finished after the formation of the matrix CP, feature inheritance from C to T and valuation of the unvalued features in the matrix subject and in T. (The matrix CP was not represented for simplicity.)

(18)
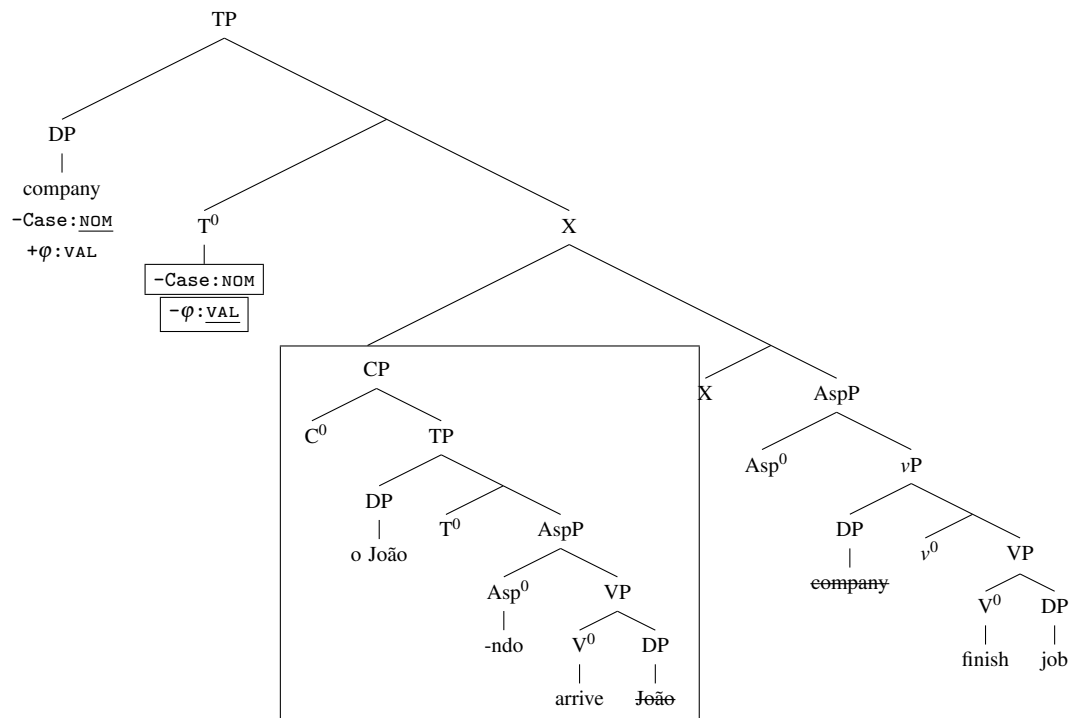
Later on, the GC moves to the position *P* where it is pronounced.

The analysis proposed allows us to derive a high adverbial with an overt subject (*o João* in the sentence above). This GC projects a CP, from which there is inheritance of a valued Case

feature. Under the assumptions made here, this feature acts as a goal to the corresponding, but unvalued feature in the GC subject, which can then be valued within the GC itself.

If this is so, the challenge posed to the present analysis is to explain why the same subtype of GC self-sufficient for Case also allows for a *PRO* subject. This is particularly intriguing if MTC is assumed, as I do here. If the subject of this GC can have its Case feature valued inside this domain, it becomes inactive in the derivation and therefore it should not be able to move to a thematic position in the matrix clause. According to the MTC, which construes control as a by-product of A-movement passing through more than one thematic position, this should prevent control from arising. I try to show that the analysis proposed can nevertheless capture the control variant of high adverbial GCs.

First, with the aid of sideward movement, together with the MTC, I analyze another type of adverbial GC, the low adverbial. One of the distinguishing properties of this GC subtype is that their subject is obligatorily *PRO*. In section 4.4, I classed it among the *class 3* GCs, which are not self-sufficient for Case. Because of this, the subject of a low adverbial is dependent on an external Case valuer. In turn, this renders it active in the derivation at the point where a thematic position inside the matrix clause is to be filled.

After discussing low adverbials, we turn to prepositional adverbials, a member of *class 2* GCs. These are also not self-sufficient for Case, just like low adverbials. If, Case-wise, low and prepositional adverbials are both not self-sufficient, why should they differ in the realization of their subjects? As we saw above, the subject of low adverbials is obligatorily null, while that of prepositional adverbials is obligatorily overt. Existential GCs (section 4.2) were analyzed as an instance of GC that is not self-sufficient due to the lack of Case feature inheritance, but where there is an alternative Case source, namely, the partitive Case I assume the existential predicate to assign. Prepositional adverbs could also be argued to have such an alternative source, rendering it another instance of GC that is *indirectly* self-sufficient for Case. The independent source is the preposition, *sem* 'without' or *com* 'with'.

Finally, having shown how control obtains, I go back to high adverbials and try to derive the possibility of its subject being *PRO*, despite the prediction that control should not be possible. For this possibility to be accounted for, no new ingredient will be introduced. All it will take is that the subject of this subtype of GC self-sufficient for Case moves *before* Case valuation inside the GC takes place and that the absence of a DP inside the GC does not cause the derivation to crash.

I also show how the derivation of high adverbial GCs are different from that of complement GCs in allowing a moment in the derivation where the GC subject can move before Case valuation at the phase level. This explains why control is possible for high adverbials, but not for complement GCs. High adverbials are, however, similar to subject GCs, in that the derivation of sentences containing these GC subtypes implies a moment where the GC and the matrix clause are both present in the workspace. It is this moment in the derivation that allows the GC subject to move before Case valuation takes place inside the GC. However, subject GCs, unlike high

adverbials, cannot be control structures. Now, Chain Formation explains why control is ruled out in subject GCs.

6.4 Low adverbial GCs: necessarily null subject

In this section, we turn to adverbial GCs the subject of which is obligatorily an empty category, namely, low adverbials.

That this *ec* is an obligatorily controlled *PRO* (see Hornstein 1999, 2003; Boeckx et al. 2010) is indicated by the fact that it displays the trademark properties of this kind of empty category. (19-a), (19-b) and (19-c) show that there must be a local and c-commanding antecedent for the empty subject of the GC. (19-d) shows that, under ellipsis, only a sloppy reading is available. (19-e) shows that split antecedents are not possible. (19-f) shows that the empty subject must have a *de se* interpretation. Finally, (19-g) shows that it is interpreted as a bound variable if the antecedent is an *only* DP.

(19)   a.   *Choveu caminhando no   parque.
                rained walking   in.the park

        b.   *O João$_i$ disse [que choveu ec_i caminhando no   parque].
              the João said that rained *ec* walking   in.the park

        c.   [O irmão [do   João]$_i$]$_j$ corre $ec_{*i/j}$ ouvindo música.
              the brother of.the João   runs *ec*   hearing music
              'João's brother runs listening to music.'

        d.   A Maria corre ouvindo música e   o   João também.
              the Maria runs hearing music and the João too
              'Maria runs listening to music and João does too.'

              (João$_j$ also runs $ec_{*i/j}$ listening to music.)

        e.   *O João$_i$ disse para a   Maria$_j$ correr ec_{i+j} ouvindo música.
              the João said for the Maria to-run *ec*   hearing music
              'João told Maria to run listening to music.'

        f.   O infeliz   corre ouvindo música.
              the unhappy runs hearing music
              'The unfortunate runs listening to music.'

        g.   Somente o   João corre ouvindo música.
              only   the João runs hearing music
              'Only João runs listening to music.'

Having established that the necessarily empty subject of low adverbials is an obligatorily controlled *PRO*, let us see the derivation of these structures. The derivation of a sentence like (2-b), repeated below, starts with the assembling of the *v*P of the matrix clause, *o João caminha* 'João walks', the smallest phase there.
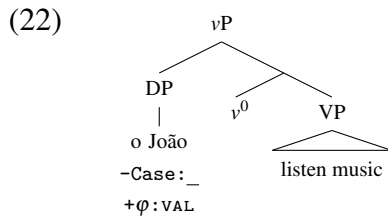
(20)   O João caminha *PRO* ouvindo música.
           the João walks   *PRO* listening music

'João walks listening to music.'

(21)

```
        vP
       /  \
      v⁰   VP
            |
           walk
```
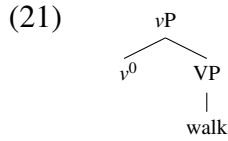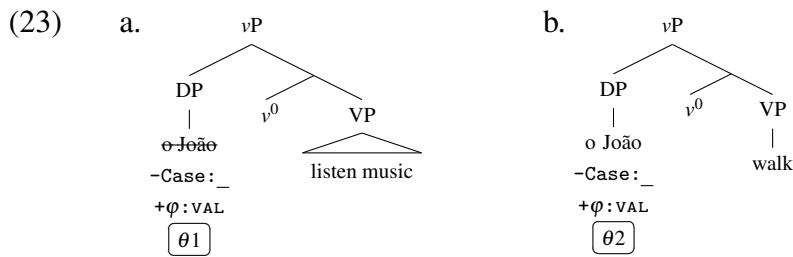
A phase having been reached, the usual syntactic operations are triggered. Recall that I assume an economy condition according to which if a given head triggers two types of operations, the decision between them is based on whether a given operation can potentially result in correction of formal imperfections or it amounts to the introduction of more imperfections. Hence, when a *v*P is assembled, the introduction of its external argument takes place after feature inheritance and the ensuing valuation operations.

These operations effected (not represented for simplicity), it is finally time to fulfill the external argument requirement. Suppose there is not enough material in the lexical array to fulfill this requirement via external merge.[3] The matrix *v*P assembled thus far – (21) – is then left in stand-by until an appropriate phrase enters the workspace. Meanwhile, another lexical array is accessed and the structure that will become the low adverbial (*listening to music*) starts being assembled.

(22)

```
              vP
            /    \
         DP       \
          |       /  \
       o João   v⁰    VP
                     /  \
      -Case:_   listen music
      +φ:VAL
```

Now, there is an adequate phrase to fulfill the external argument requirement of the matrix clause, namely, the DP *João* in the GC. This DP is a valid candidate to play this role because its Case still has not been valued. This DP can move to the external argument position in the matrix clause – (23)-b –, where it receives a second thematic role $\boxed{\theta2}$, on top of the one it had received in its base-generation position inside the GC, $\boxed{\theta1}$ – (23)-a. Since the structures where this movement proceeds from and where it targets are disconnected at this point, this is an instance of sideward movement.

(23) a.

```
            vP
          /    \
       DP        \
        |        /  \
    o̶ ̶J̶o̶ã̶o̶    v⁰    VP
                    /  \
   -Case:_    listen music
   +φ:VAL
    θ1
```

b.

```
            vP
          /    \
       DP        \
        |        /  \
    o João    v⁰    VP
                     |
   -Case:_          walk
   +φ:VAL
    θ2
```

I assume that this instance of sideward movement takes place right after the introduction of *o*

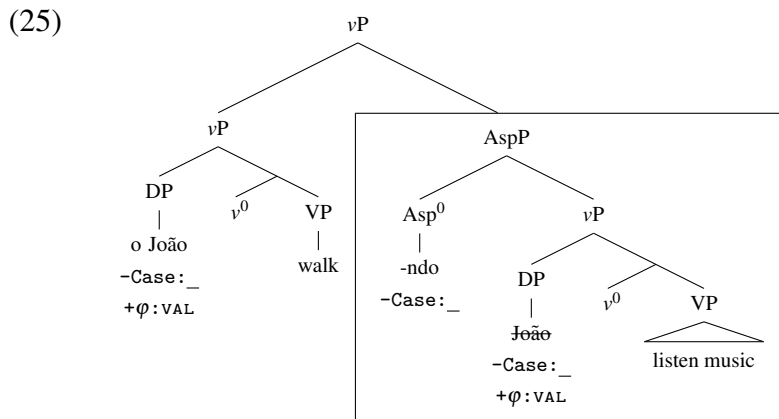[3]Because there are no well-formedness conditions on numerations (Nunes, 2013), this is a logical possibility. The other logical possibility, that is, that there indeed is enough material for all thematic positions to be filled by external merge, will be considered presently.

João in the workspace, via a thematic position in the GC, because this is the earliest moment in the overall derivation when the external argument of the matrix *v*P can be fulfilled. In addition, since this movement is required for thematic reasons, rather than being a movement to correct imperfections, I assume it does not have to hold up until the phase level in order to be effected. (I made a similar assumption when discussing existential GCs (section 4.2), where the assignment of inherent partitive Case did not have to hold up until a phasal projection was reached.)

The derivation proceeds by assembling the functional projections of the low adverbial. Since this is a *class 3* GC, only the bare minimum AspP is formed. The matrix clause keeps standing by until the GC is formed and adjoins to the matrix *v*P.

(24)

AspP
Asp^0 / -ndo -Case:_ / *v*P
DP / João -Case:_ +φ:VAL / *v*^{0} / VP listen music
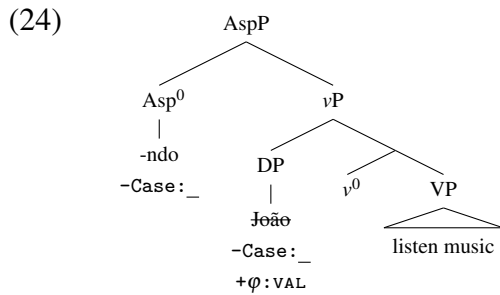
Finally, the matrix clause *v*P and the GC are joined together, so that the latter is adjoined to the former. Recall the GCs under consideration are low adverbials because they attach to a relatively low position in the matrix clause (as concluded from sentential negation data) and correlatively have a manner or simultaneity reading.

(25)

*v*P
*v*P
DP / o João -Case:_ +φ:VAL / *v*^{0} / VP walk

AspP
Asp^0 / -ndo -Case:_ / *v*P
DP / João -Case:_ +φ:VAL / *v*^{0} / VP listen music

The matrix TP and CP are assembled and the usual syntactic operations are effected.

(26)
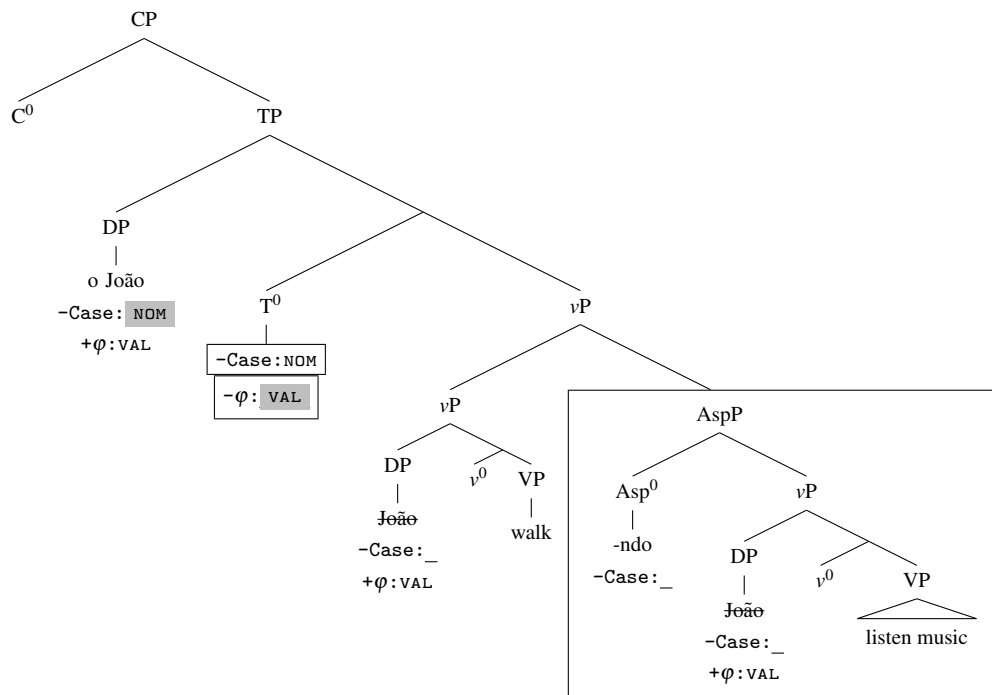
Now, it is necessary for the Case feature in the lower copies of *o João* to delete for LF purposes – Case is an uninterpretable feature – and for all the copies of this DP, except for one, to delete for PF purposes (i.e., for linearization purposes). Recall that I assume, following Nunes (2004), that the uninterpretable features of a lower copies must be deleted in order for the movement chain to be uniform – the head of the chain, due to economy considerations, will have the smallest number of undeleted uninterpretable feature, if any at all. Recall also that I assume that feature deletion is contingent on Agree. Thus, the lower copies of *o João* agree with the higher copy, so that their Case features can be deleted too.

(27)
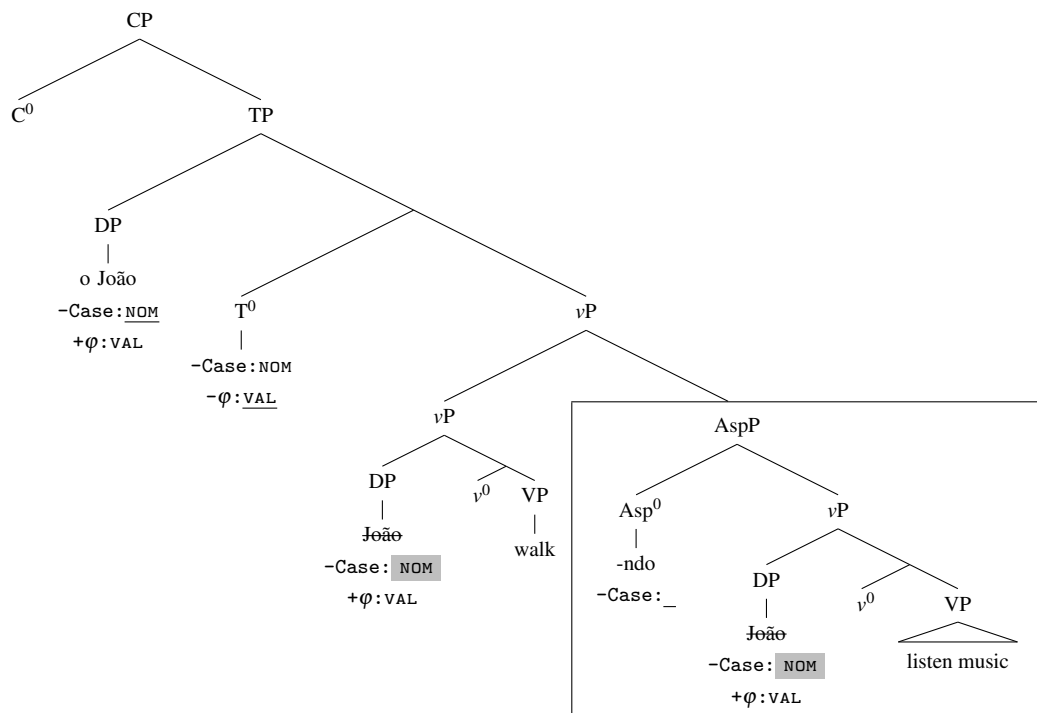
Finally, at this point of the derivation, the Case feature in the gerund morpheme can be valued, since it c-commands a valued matching feature, the Case feature in the copy of *o João* left inside the GC that is has just been valued in order to allow for Chain Uniformization. All these operations take place inside the same phase (i.e., the matrix CP) and the gerund morpheme has not been Spelled-Out yet.

(28)
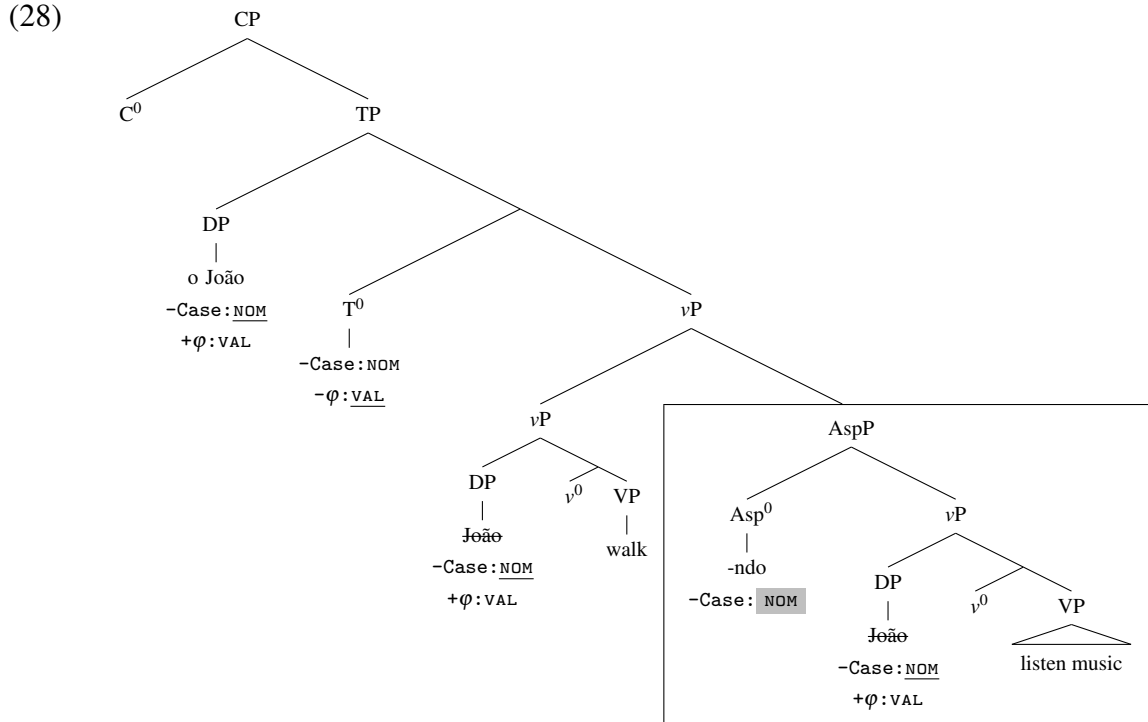
The derivation converges at LF because all uninterpretable features, including those in lower copies, are deleted. The derivation can also converge at PF because the highest copy of *o João* c-commands each of its lower copies, so that they can deleted for linearization purposes. Because the movement that generated these lower copies passes through more than one θ-role position – (23) –, the resulting interpretation is that of a control structure.

Consider now the derivation of a construction where there is enough material in the numeration to fill all θ-positions via external merge, eschewing A-movement to θ-positions. The resulting structure should be (2-a), repeated below as (29-a).

(29)   a. *O João caminha a   Maria ouvindo música.
            the João walks   the Maria listening music

       b. O João caminha *PRO* ouvindo música.
            the João walks   *PRO* listening music
            'João walks listening to music.'

The construction in (29-a) is the overt subject variant of the control sentence we just saw the derivation of, (20), repeated as (29-b). Unlike (29-b), (29-a) is ungrammatical. In the face of this contrast, the question we have to answer is, why is the subject of low adverbials necessarily *PRO*? The derivation of (29-a) proceeds in almost the same way as that of (29-b), except that the subject base-generated inside the low adverbial does not move sidewards into the thematic

subject position of the matrix clause – (23). This is the case because the numeration for (29-a) contains enough DPs to fulfill all θ-requirements via external merge, dispensing with move. The final output of (29-a)'s derivation is thus the following:

(30)
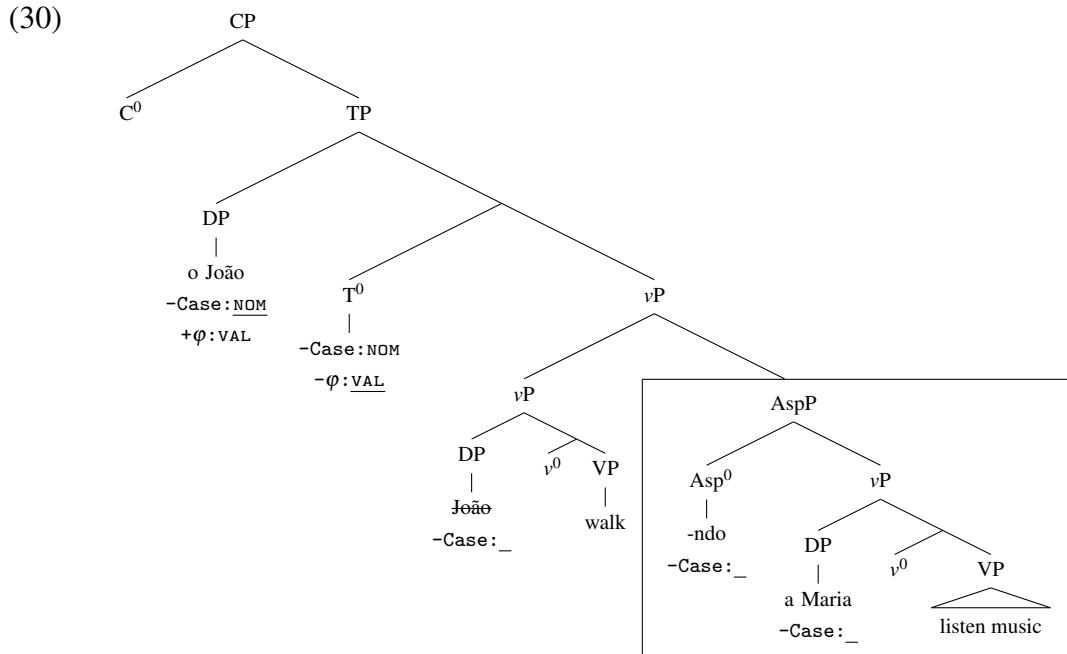
In (30), there is no way the subject in the low adverbial, *a Maria*, and the gerund morpheme can have their respective Case feature valued. Recall that, in the derivation of (29-b), the subject of the low adverbial is a copy of the DP that ends up as the matrix subject. As a consequence, it still has a Case feature to be valued and deleted. In order for the derivation to converge at LF, it is necessary to uniformize the chain it belongs to. This is done via deletion, which in turn, presupposes Agree – (27). As a consequence of the valuation of the low adverbial subject copy, the gerund morpheme can have its Case feature valued too – (28).

In (30), however, the subject of the low adverbial is not a copy. Rather, it is a DP (*a Maria*) that was base-generated there and which remained there throughout the derivation. Hence, there will be no need for Chain Uniformization, nor for deletion and valuation of lower copies. As a consequence, there is no strategy available to value and delete the Case feature of *a Maria*. And neither is there one for the Case feature in the gerund morpheme, since it depended on the Case valuation of the subject copy. In sum, (29-a) is ungrammatical due to a violation of Full Interpretation – Case features, which are uninterpretable, arrive undeleted at LF.

The analysis provided can thus account for (29-a)'s ungrammaticality, as opposed to (29-b)'s grammaticality. In other words, the subject of low adverbials is necessarily null because the only convergent derivation is one where the GC subject moves into the matrix clause, leaving a copy behind. As a collateral effect of Chain Uniformization, the copy of the subject inside the low adverbial can have its Case valued and, later on, so can the gerund morpheme. Because the low adverbial subject A-moves into the matrix clause via a thematic door, the necessarily null subject of low adverbials is *PRO*.

6.5 Prepositional adverbials: necessarily overt subject

In this section, we look at prepositional adverbials, which, being *class 2* GCs, are instances of GCs that are not self-sufficient for Case. The low adverbials inspected above belonged to this group too and we saw that the lack of Case inside the GC was one of the crucial assets in providing an account for the obligatoriness of *PRO* as the subject of low adverbials. However, the subject of prepositional adverbials is necessarily an overt DP. This was seen by the contrast in (3), repeated below.

(31) a. O João estudou com os irmãos   gritando.
         the João studies with the brothers shouting
         'João studied with his brothers shouting.'

      b. *Os irmãos   estudaram com *ec* gritando.
         the brothers studied   with *ec* shouting

Can the analysis account for this fact too? In order to answer this question, let us see how a sentence like (31-a) is derived.

The derivation of (31-a) starts by the formation of the matrix clause, *João studied*. First, the smallest phase *v*P is derived. Suppose there is enough material in the numeration for all θ-requirements to be satisfied via external merge.[4] The derivation goes up to TP and it is left in stand-by "waiting" for the adjunction of the GC.[5]

(32)
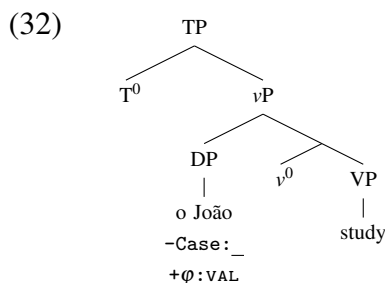
In the same workspace, what will become the prepositional adverbial starts being assembled. Prepositional adverbials were analyzed as *class 2* GCs, so that their structure includes not only the bare minimum AspP, but also TP. CP, though, is not projected.

---

[4]The other logical possibility, namely, that there is not, so that movement into a thematic position is required, is surveyed presently.

[5]Based on NPI licensing facts, I proposed that prepositional adverbials are adjoined to the matrix TP. See section 5.3.

(33)

```
                        TP
                 ┌───────┴────────┐
                T⁰              AspP
                │          ┌──────┴──────┐
                ⊘        Asp⁰            vP
                           │       ┌──────┴──────┐
                         -ndo      DP          ┌──┴──┐
                       -Case:_     │          v⁰    VP
                                brothers              │
                                -Case:_             shout
                                +φ:VAL
```
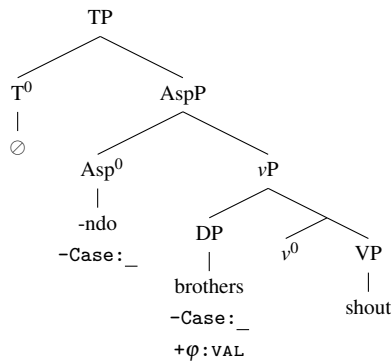
The TP assembled merges with the preposition that precedes it, namely *com* 'with'. I assumed that prepositions like *de* 'of' in the complement of *gostar* 'love' assign inherent oblique Case. The null hypothesis is that the same should hold of prepositions like *com* 'with' or *sem* 'without'. The only difference seem to be that while *de* plays only a functional role (i.e., Case-marking when there is no other strategy available), *sem* and *com* (also) contribute to the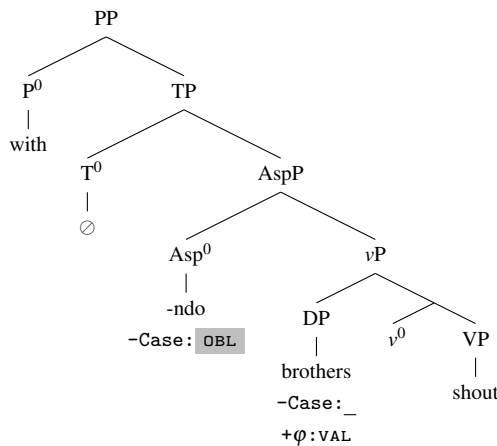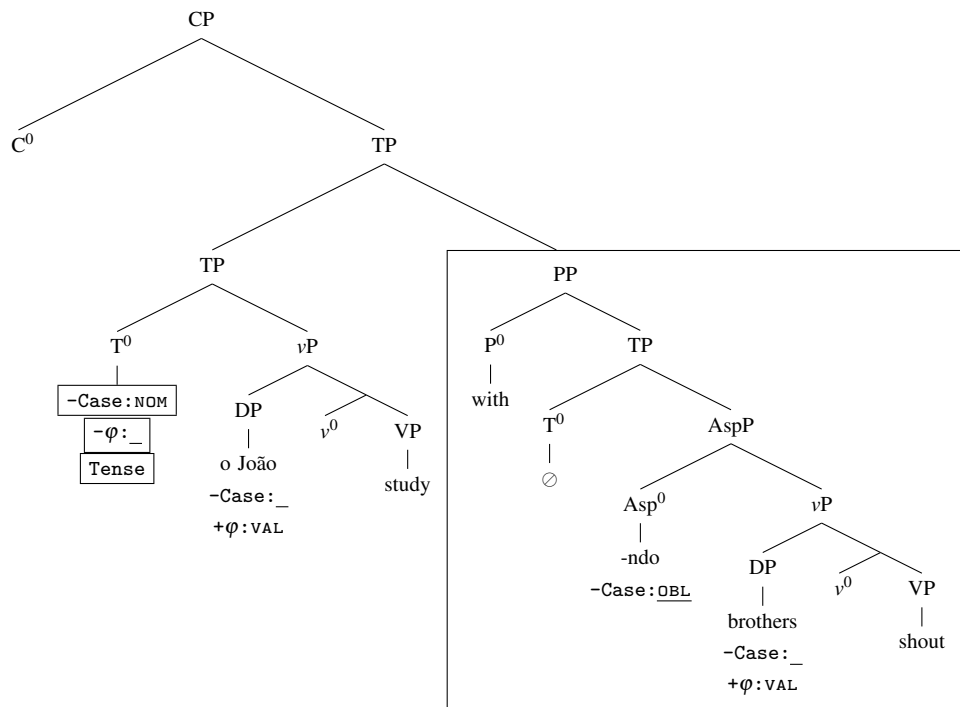 meaning of the sentence, as suggested by the fact that substituting one with the other drastically changes the meaning of the sentence. Nevertheless, this difference does not seem to affect Case-marking properties, so I assume that both *de* and *sem* and *com* assign oblique (OBL) case to their complements. I also assume this Case is inherent, so that it is assigned along with a θ-role. P and TP are in a mutual c-command relation and, because TP is an extended projection of the gerund morpheme, in the system assumed, this suffices for the Case in the gerund morpheme to be valued. (See however objections in section 5.4.)

(34)

```
                     PP
              ┌──────┴──────┐
             P⁰            TP
             │        ┌─────┴─────┐
            with     T⁰          AspP
                     │       ┌─────┴─────┐
                     ⊘     Asp⁰          vP
                             │       ┌─────┴─────┐
                           -ndo      DP        ┌──┴──┐
                        -Case: OBL   │        v⁰    VP
                                  brothers            │
                                  -Case:_           shout
                                  +φ:VAL
```
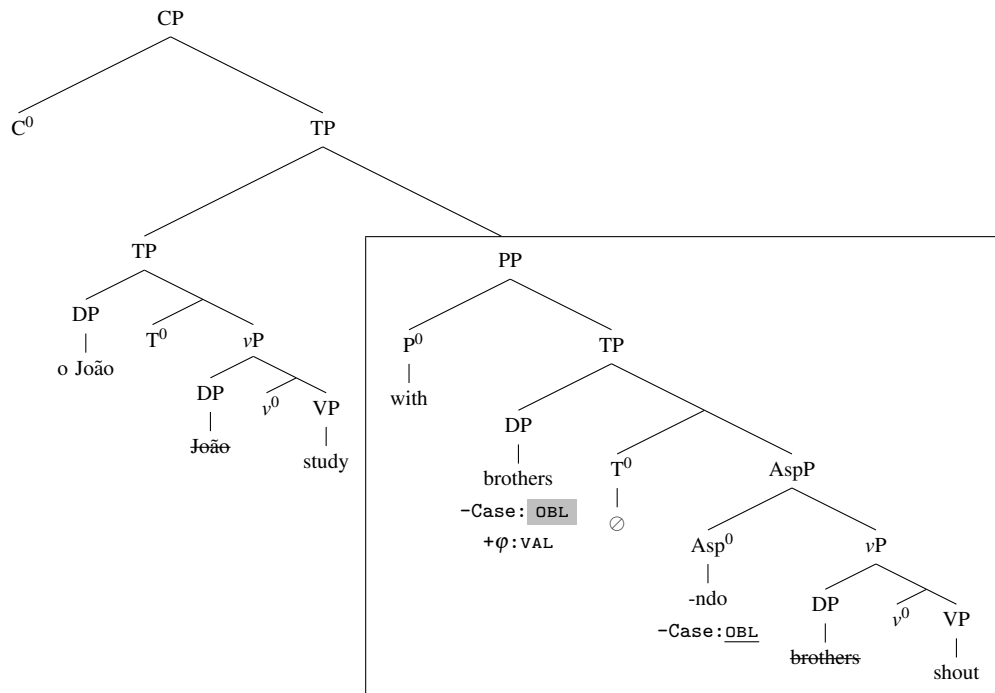
The derivation proceeds by joining together the matrix TP previously assembled and the GC just derived. Then, a CP is built on top of the matrix TP. A phase having been reached, syntactic operations, like C-to-T feature inheritance in the matrix clause, can be triggered

(35)

```
                         CP
              ┌───────────┴───────────┐
             C⁰                       TP
                          ┌────────────┴────────────┐
                         TP                          PP
                   ┌──────┴──────┐            ┌───────┴───────┐
                  T⁰             vP          P⁰               TP
             ┌─────────┐     ┌────┴────┐      |        ┌───────┴───────┐
             -Case:NOM  DP    v⁰    VP  with   T⁰              AspP
             ┌─────────┐ |          |         |        ┌───────┴───────┐
             -φ:_      o João     study       ∅      Asp⁰              vP
             ┌─────────┐ -Case:_                      |          ┌──────┴──────┐
             Tense     +φ:VAL                        -ndo        DP    v⁰    VP
                                                   -Case:OBL      |           |
                                                               brothers     shout
                                                               -Case:_
                                                               +φ:VAL
```

In the matrix clause, the subject *João* moves to [Spec, TP] in order for its Case to be valued. In turn, in the prepositional adverbial, the DP *brothers* also has to move for its probing domain to be extended, since, initially, it contains no appropriate goal. The first position it could move to is [Spec, TP], the extended projection of the gerund morpheme (head of AspP), which had previously had its own Case feature valued by the preposition. (Irrelevant details omitted.)

(36)

```
                         CP
              ┌───────────┴───────────┐
             C⁰                       TP
                          ┌────────────┴────────────┐
                         TP                          PP
                 ┌────────┼────────┐          ┌───────┴───────┐
                DP       T⁰        vP         P⁰              TP
                |            ┌──────┴──────┐   |      ┌────────┴────────┐
             o João        DP    v⁰    VP  with      DP               TP
                           |           |            |         ┌────────┴────────┐
                          João       study       brothers    T⁰              AspP
                                                 -Case:OBL    |         ┌───────┴───────┐
                                                 +φ:VAL       ∅        Asp⁰             vP
                                                                       |          ┌──────┴──────┐
                                                                      -ndo        DP    v⁰    VP
                                                                    -Case:OBL      |           |
                                                                               brothers      shout
```

All imperfections having been corrected, the derivation comes to an end and (31-a) can be derived.

Now it is possible to understand why the subject of a prepositional adverbial can be an overt subject, even though this GC subtype was classified as a GC that is not self-sufficient for Case. Due to the presence of a Case feature in the gerund morpheme and also due to the presence of a preposition preceding the GC, such that this preposition can assign inherent oblique Case to $\{-ndo\}$, the subject of the prepositional GC can have its Case valued inside the GC itself. Thus, the preposition overcomes the lack of self-sufficiency for Case typical of *class 2* GCs. For low adverbials, in contrast, there is no plan B to fall back on. Consequently, the subject has to move out from the GC to be Case-marked.

But this does not exhaust the possibilities, since the presence of the preposition accounts for why a subject *can* be licensed inside the prepositional GC, but not why this is the *only* possibility. It is not only the case that prepositional adverbials are different from low adverbials because the subject of the latter must be null, while that of the former must be overt; it is also the case that prepositional adverbials are different from high adverbials because, although both allow for their subject to be overt, only high adverbials allow an alternation with a null subject. The answer to this problem may again lie in the presence of the preposition and its properties.

(37)   a.   sem/com   delicadeza
             without/with tenderness

        b.   *sem/com   delicado
             without/with tender

The contrast in (37) indicates that prepositions like *sem* and *com* can combine with a noun, but not with an adjective. Notice also that adjectives in BP can inflect in number and gender, but not in person. Assuming the "what you see is what you get" approach in Ferreira (2010) (see section 1.5.1.1), we could say that adjectives only have `[Number]` and `[Gender]` features, but not `[Person]`. Bearing this in mind, I propose that the prepositions *sem* and *com* include an unvalued `[Person]` feature. These proposals can capture the contrast in (37). Due to their featural make-up, these prepositions require a `[Person:VAL]` in their complement/c-command domain. This requirement can be fulfilled by a noun like *delicadeza* 'tenderness', by the assumption that nouns contain a full range of φ-features, but not by an adjective like *delicado* 'tender' because it lacks the required feature.[6]

All in all, I propose that the prepositions *sem* and *com* have a complete set of φ-features to be valued and, as a consequence, there must be a corresponding valued set in their c-command domain to act as goals. A full DP (e.g. *brothers*) bears just this kind of feature set. If such a DP is present in the prepositional adverbial, the features in the preposition can be valued. However, if the DP vacates the probing domain of the preposition, there will be no goal for the unvalued

---

[6]Given the proposal that the existential expletive in BP bears a `[-Person:3]` feature, the prediction is that a prepositional adverbial could be existential. However, this prediction is contrary to fact.

(i)   *O João quer estudar sem   *pro* tendo gente demais   na   biblioteca.
        the João wants to-study without *pro* having people too-much in.the library

I have no explanation for this impossiblity.

complete φ-set in the preposition. As a consequence, the prediction, borne out by facts, is that the derivation should crash.

Suppose there is not enough material for all θ-requirements to be fulfilled by external merge, so that movement into a thematic position of a DP previously introduced in the derivation is a necessity. Schematically:

(38)
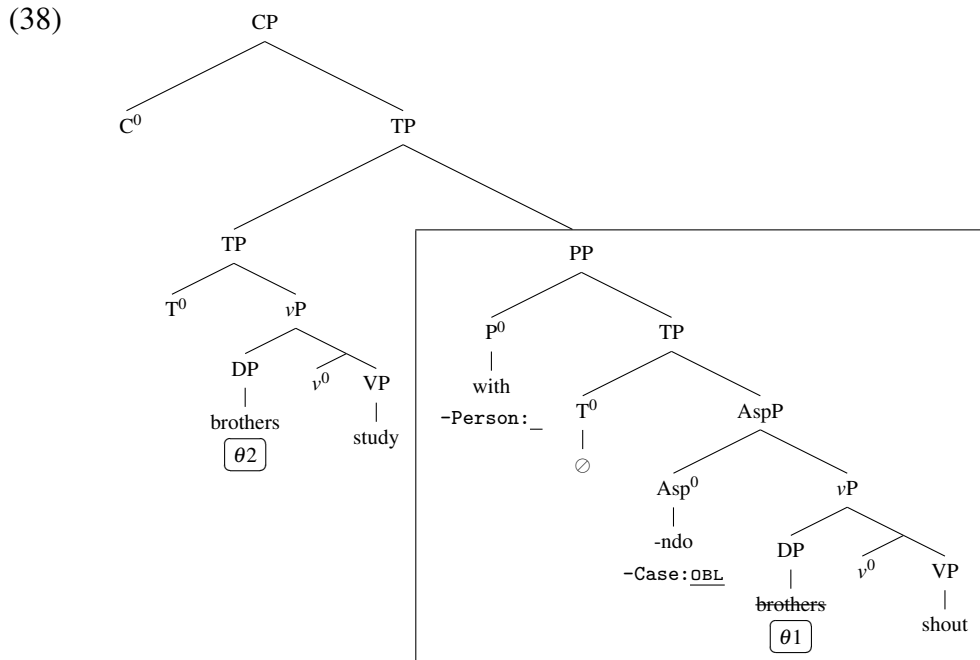
There is nothing that prevents the movement of this DP (*brothers* in the case at hand), into a thematic position in the matrix clause, while it is still active. It is only later in the derivation that the absence of a DP inside the prepositional GC takes its toll, that is, when the unvalued complete set of φ-features of the preposition starts probing and finds no DP with the matching features as a goal. Without a goal, there is no Agree, nor feature deletion and the derivation crashes because undeleted uninterpretable features arrive at the interfaces. This accounts for (31-b)'s ungrammaticality. In sum, in prepositional adverbial GCs, it is not only the case that its subject *can* remain inside the GC, it *has* to because, otherwise, the derivation crashes. This would be why this GC subtype is compatible only with an overt subject.

However, since I assume, following Nunes (2004), that copies should not enjoy special treatment in the derivation, one could reasonably ask why the lower copy of (38) cannot count as a valid goal for the φ-probe in the preposition. If it did (and it must, under the assumptions made here), the derivation should converge, since *sem/com* could have their complete set of φ-features deleted by the corresponding complete set of the DP copy. The prediction is that (31-a) should be grammatical, contrary to fact. I have no solution to this problem.

In the next section, we turn to the adverbial GCs where an overt subject is possible, but, unlike what happens in prepositional adverbials, not the only possibility available.

6.6 High adverbials: the control type

Recall from (1-c) and (1-d), repeated below, that the subject of high adverbials can be an empty category.

(39) a. *ec* Chegando mais cedo, o João vai terminar o projeto.
          ec arriving more early the João goes to-finish the project
          'If he arrives earlier, João will finish the project.'

      b. *ec* Chegando atrasado de novo, o João não conseguiu terminar o projeto.
          ec arriving late of again the João not managed to-finish the project
          'Because he arrived late again, João did not manage to finish the project.

This *ec* displays the properties of obligatorily controlled *PRO*.[7] (40-a) shows that the presence of an antecedent is obligatory. (40-b) shows that, under ellipsis, a sloppy reading obtains. (40-c) shows that split antecedents is not a possibility for the *ec* subject of the high adverbial. (40-d) shows that only a *de se* reading is available. Finally, (40-e) shows that the *ec* is interpreted as a bound variable if the antecedent is an *only* DP.

(40) a. **ec* Tomando banho mais rápido, evita desperdício.
          ec taking bath more quick avoids waste

      b. *ec* Chegando mais cedo, o João vai conseguir terminar o trabalho e o
          ec arriving more early the João goes to-manage to-finish the project and the
          Paulo também vai.
          Paulo too goes
          'If he$_i$ arrives earlier, João$_i$ will manage to finish the job and so will Paulo.'
          (If he$_j$ arrives earlier, Paulo$_j$ will also manage to finish the job.)

      c. **A Maria$_i$ disse que, *ec*$_{i+j}$ chegando mais cedo, o João$_j$ vai conseguir
          the Maria said that *ec* arriving more early the João goes to-manage
          terminar o trabalho.
          to-finish the job

      d. *ec* Chegando mais cedo, o infeliz vai conseguir terminar o trabalho.
          ec arriving more early the unfortunate goes to-manage to-finish the job
          'If he arrives more early, the unfortunate will be able to finish the job.'

      e. *ec* Chegando mais cedo, somente o João vai conseguir terminar o trabalho.
          ec arriving more early only the João goes to-manage to-finish the job
          'If he arrives earlier, only João will be able to finish the job.'

The data above point to the conclusion that the *ec* subject in high adverbials is an obligatorily controlled *PRO*. However, the fact that there does not seem to be a c-command relation between the antecedent and *ec* points us in the opposite direction. Nevertheless, recall from section 3.3 that it does seem to be the case that the matrix subject c-commands the subject position of the high adverbial, as we can see from open variable licensing – (41) –, NPI licensing – (42) – and

---

[7]I use only the high adverbial conditionally interpreted to illustrate control behavior, but the causal high adverbial behaves alike.

each... the other licensing – (43).

(41)   a.   O filho dele tirando boas notas, todo pai   fica contente.
               the son of.he taking good grades every father gets happy
               'If his$_i$ son gets good grades, every father$_i$ gets happy.'

        b.   O filho dele tirando boas notas, todo pai   ficou contente.
               the son of.he taking good grades every father gets happy
               'Because his$_i$ son got good grades, every father$_i$ got happy.'

(42)   a.   ?Aluno algum tirando boa nota, nenhum professor vai ficar contente.
               student some taking good grade no   professor goes to-get happy
               'If no student at all gets good grades, the teachers will not be happy.'

        b.   Aluno algum tirando boa nota, nenhum professor ficou contente.
               student some taking good grade no   professor goes to-get   happy
               'Because no student at all got good grades, the teachers did not get happy.'

(43)   a.   O outro cooperando, cada membro do   par vai conseguir terminar a
               the other cooperating each member of.the pair goes to-manage to-finish the
               tarefa.
               task
               'If the other helps, each member of the pair will manage to finish the task.'

        b.   O outro cooperando, cada membro do   par conseguiu terminar a   tarefa.
               the other cooperating each member of.the pair managed   to-finish the task
               'Because the other helped, each member of the pair managed to finish the task.'

Recall also that these facts and the pronunciation site of the high adverbial, two seemingly contradictory properties, were reconciled by the proposal that the GCs are base-generated in a position that is c-commanded by the matrix subject, but moved to a higher position. In any case, there is at least in one moment in the derivation where the matrix subject can c-command the high adverbial subject. Thus, the c-command relation between *PRO* and its antecedent, one of the signature properties of obligatory control, can be said to hold of high adverbials too.

The derivation of a *PRO* high adverbial like (39-a) starts by the assembling of the lexical projections of the matrix clause, *o João termina o trabalho* 'João finishes the job'.
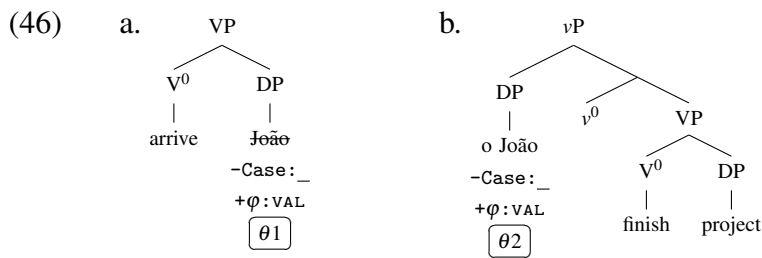
(44)
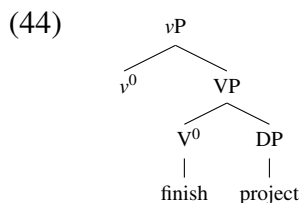
It can be the case that the numeration has less material than necessary for all thematic requirements to be satisfied by external merge, so that internal merge of a previously merged syntactic object is triggered.[8] Crucially, such syntactic object has to be active in the derivation, that is, it must have a feature to be valued. While the matrix *v*P awaits for such a syntactic object to enter

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[8]The derivational option where there are as many DPs in the numeration as there are thematic requirements was considered in section 6.3 above.
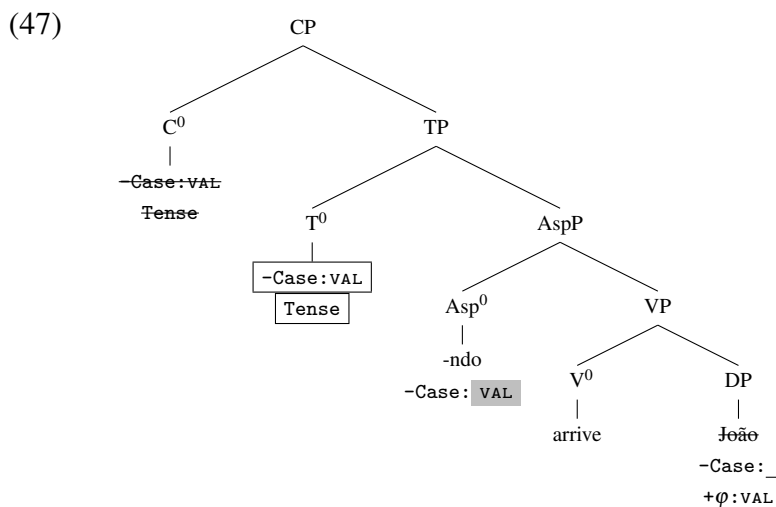
the workspace and fill its external argument position, it is left in stand-by and the GC starts being assembled.

(45)

```
        VP
       /  \
     V⁰    DP
     |      |
   arrive  João
        -Case:_
        +φ:VAL
```
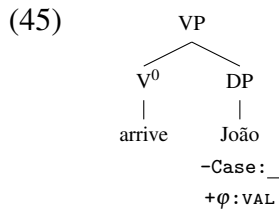
Now there finally is an appropriate phrase to fulfill the external argument requirement of the matrix predicate, namely, the DP *João*. This DP is base-generated as the argument selected by *chegar* 'arrive', the GC predicate, and receives a theta-role $\boxed{\theta 1}$ from it – (46)-a. *João* is still active in the derivation because, since only lexical projections have been formed so far, its Case feature has not been valued yet. *João* can move at this point in the derivation because this is the earliest moment in the derivation when the external argument position in the matrix clause can be fulfilled. *João* moves sidewards and merges with the *v* of the matrix clause, where it receives a second theta-role, $\boxed{\theta 2}$ – (46)-b.

(46)   a.
```
        VP
       /  \
     V⁰    DP
     |      |
   arrive  ~~João~~
        -Case:_
        +φ:VAL
        [θ1]
```

b.
```
           vP
          /  \
        DP    \
        |     v⁰   VP
      o João      /  \
      -Case:_   V⁰    DP
      +φ:VAL    |      |
      [θ2]    finish  project
```
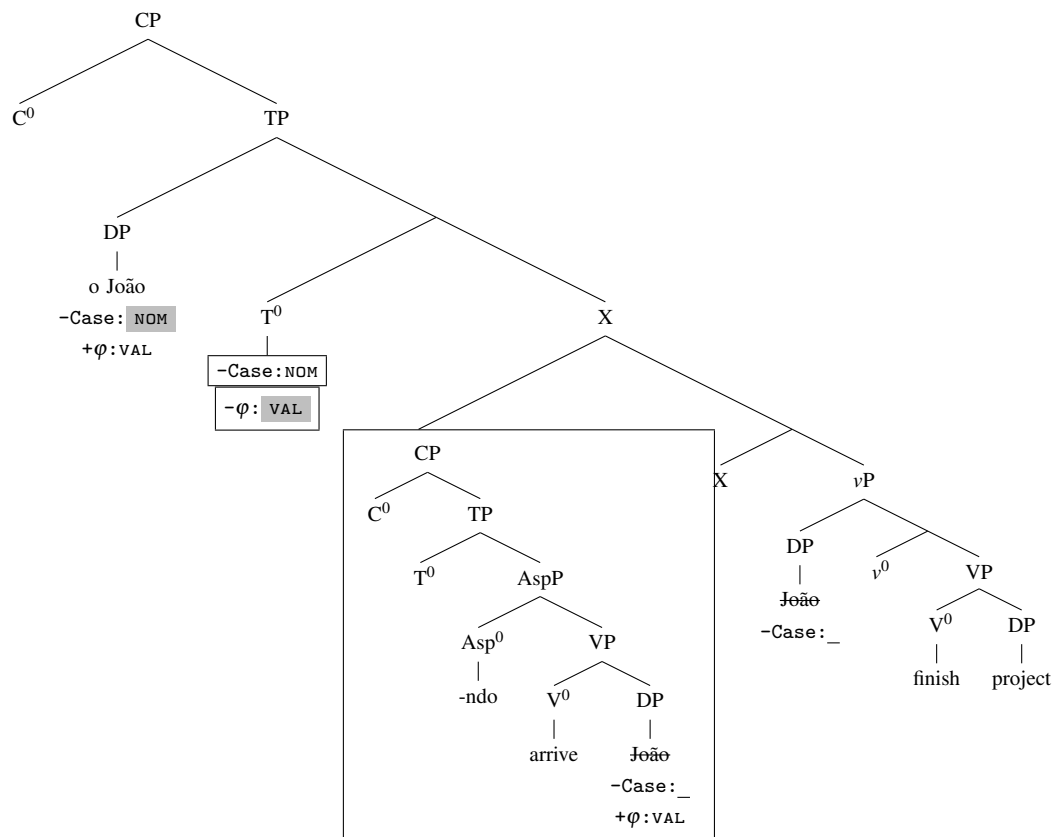
The derivation proceeds with the formation of the functional projections of each clause. In the GC, after AspP, TP and CP are assembled, there occurs feature inheritance from C to T. Given the c-command relation between AspP and T, the Case of the gerund morpheme in Asp can be valued by the corresponding, but valued feature T has just inherited.

(47)

```
                    CP
                   /  \
                 C⁰    TP
                 |    /  \
            -Case:VAL T⁰   AspP
             Tense   |    /  \
                  -Case:VAL Asp⁰  VP
                   Tense   |    /  \
                         -ndo  V⁰   DP
                       -Case: VAL |    |
                              arrive ~~João~~
                                   -Case:_
                                   +φ:VAL
```

In the matrix clause, the X projection where I propose the high adverbial is adjoined to is formed and the GC merges with it. Then, TP and CP in the matrix clause are formed and the C features
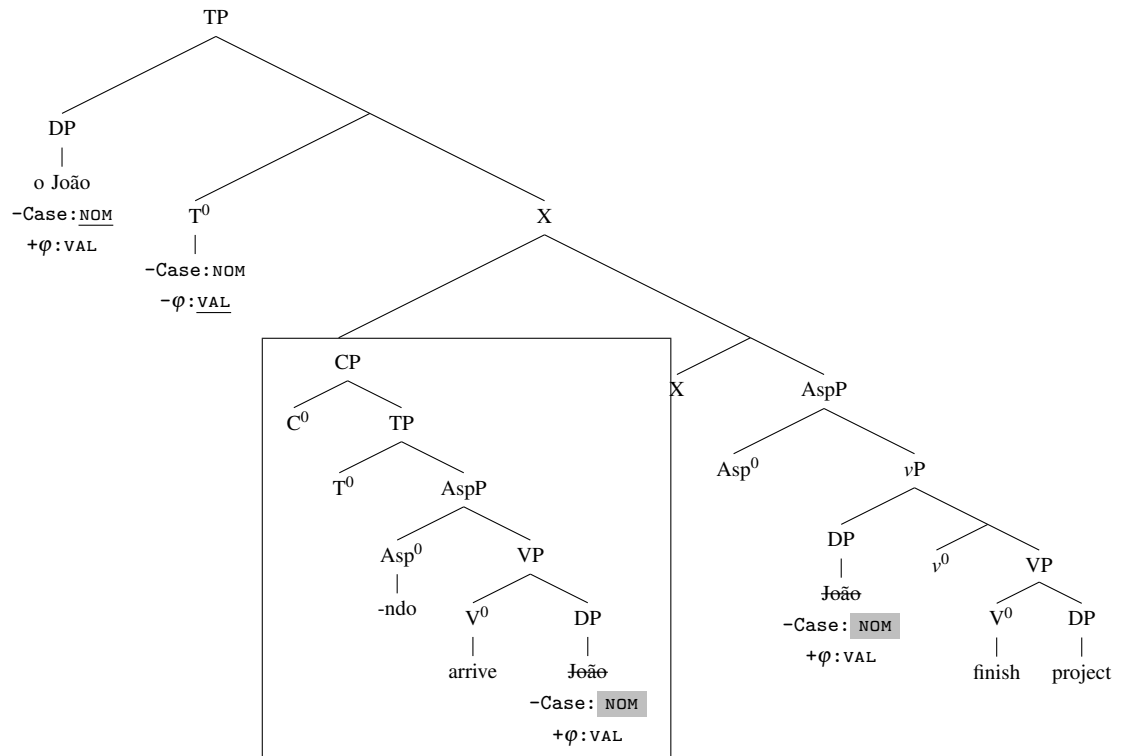
are inherited by T.

(48)

```
                                    CP
                          ┌──────────┴──────────┐
                         C⁰                      TP
                                     ┌───────────┴────────────┐
                                    DP                         │
                                    │                          │
                                 o João              ┌─────────┴──────────┐
                              -Case: NOM            T⁰                     X
                               +φ:VAL          ┌─────────────┐   ┌─────────┴─────────┐
                                           -Case:NOM      CP        X           vP
                                            -φ: VAL   ┌────┴────┐         ┌──────┴──────┐
                                                     C⁰       TP         DP           ...
                                                          ┌────┴────┐    │    v⁰      VP
                                                         T⁰       AspP  João      ┌────┴────┐
                                                             ┌──────┴──────┐ -Case:_  V⁰   DP
                                                           Asp⁰           VP       │      │
                                                            │        ┌─────┴─────┐ finish project
                                                          -ndo      V⁰          DP
                                                                    │            │
                                                                 arrive        João
                                                                             -Case:_
                                                                             +φ:VAL
```

For LF purposes, the higher copy of *o João* deletes the uninterpretable features of the lower copies. This is possible because the highest copy of this DP c-commands each of its lower copies and thus can form a chain with each of them. (The matrix CP was not represented for simplification purposes.)

(49)

```
                              TP
              ┌───────────────┴───────────────┐
             DP                                X
              │                ┌───────────────┴───────────────┐
           o João            T⁰                                 X
         -Case:NOM            │              ┌─────────────────┐
          +φ:VAL           -Case:NOM         X              AspP
                            -φ:VAL                    ┌───────┴───────┐
                                                    Asp⁰              vP
          ┌──────────────────────────┐                        ┌───────┴───────┐
          │           CP             │                       DP               vP
          │      ┌─────┴─────┐       │                        │         ┌──────┴──────┐
          │    C⁰            TP      │                       João      v⁰            VP
          │           ┌──────┴────┐  │                    -Case:NOM          ┌──────┴──────┐
          │          T⁰          AspP│                     +φ:VAL           V⁰            DP
          │                 ┌─────┴──┐                                       │             │
          │               Asp⁰       VP                                    finish       project
          │                │    ┌────┴────┐
          │              -ndo  V⁰         DP
          │                     │          │
          │                  arrive      João
          │                            -Case:NOM
          │                             +φ:VAL
          └──────────────────────────────────┘
```

Finally, the high adverbial moves to the higher position where it is pronounced.

That is how the derivation of a sentence containing a *PRO* high adverbial proceeds. The high adverbial ends up without an overt subject because the subject that is base-generated inside the GC moves away from it to fulfill a thematic requirement inside the matrix clause.

6.6.1 Consequences of the analysis

6.6.1.1 How come control is a possibility in a GC self-sufficient for Case?

According to the analysis proposed, the high adverbial just derived is self-sufficient for Case. This means that it has a CP, from which there is inheritance of a valued Case feature. This feature can be the goal to the unvalued Case features inside the GC, namely, that of the GC subject and the one I propose the gerund morpheme to have. Since the GC subject can have its Case feature valued within the GC itself and since I incorporate the MTC into the analysis, a question is immediately raised: if the GC subject can be Case-valued inside the GC, it becomes inactive inside this domain and therefore should not be able to move into a thematic position in the matrix clause. Control, as a result, should not arise. Does the analysis not predict that control should not emerge high adverbial, contrary to fact?

No: the subject of a GC self-sufficient for Case *can* have its Case feature valued inside the GC, but it does not *have to*. There is a moment in the derivation of GCs self-sufficient for Case where the subject is still active and therefore movement is possible. This movement is represented in (46), where the Case feature of the DP *o João* has not been valued yet, since only lexical projections have been assembled so far. The movement of this DP is triggered by

thematic requirements inside the matrix clause, thereby yielding control. The subject vacates the high adverbial *before* it becomes inactive in the derivation.[9]

Furthermore, the absence of a DP (which would become the GC subject) does not cause problems later on in the derivation, given the feature composition I assume the C/T of a GC self-sufficient for Case to have. The only feature C/T would have is an uninterpretable, but valued Case feature [-Case:VAL], which can be checked against that of the gerund morpheme. In the feature valuation system assumed, features that have a value, but which are uninterpretable, must undergo Agree in order to delete. However, they are parasitic on a corresponding unvalued feature (a probe) to trigger Agree, as they cannot trigger Agree themselves, for economy reasons. The unvalued Case feature in the gerund morpheme guarantees that the Case feature of the C/T of a GC self-sufficient for Case take part in an Agree relation even in the absence of a DP.[10]

In addition, recall that I proposed that the C/T of a GC does not have φ-features, based on an extension of the analysis in Ferreira (2010). It is generally a DP that values and deletes these features in the C/T of a finite class, for example. In the absence of a DP, these C/T features could not be valued and the derivation would crash. However, in a GC, C/T does not have these features in the first place. As a consequence, if a DP vacates it (due to thematic requirements in the matrix clause), no problem is caused.

In contrast, this is not the case for prepositional adverbials (section 6.5 above). These constructions are an instance of *class 2* GCs, the T of which remains feature-less throughout the derivation. The absence of a DP should not cause any C/T-related problem. Yet, control is not a possibility for prepositional adverbials.

(50) a. O João conseguiu estudar com os irmãos   gritando.
          the João managed   to-study with the brothers shouting
          'João managed to study with his brothers shouting.'

      b. *Os irmãos   conseguiram estudar com *PRO* gritando.
          the brothers managed   to-study with *PRO* shouting

What is at stake here is the presence of a preposition with a full set of φ-features to be valued. In the absence of a DP, because it moved into a further thematic position, these features cannot be valued and deleted and the derivation crashes. Because there is no movement picking up more than one θ-role, according to MTC, there is no control. Such a requirement is absent in high adverbials, which lack a preposition like *sem* 'without' or *com* 'with'. This is why prepositional adverbials obligatorily have an overt subject, but high adverbials can alternate between an overt

---

[9]The gist of the proposal here is reminiscent of that in Pires (2007), reviewed in appendix A. In both analyses, the *PRO*–overt DP alternation results from different numerations, coupled with different derivational paths that can ultimately converge, both in the case where the GC subject moves away from it (yielding control) and in the case where it stays inside the GC (yielding and overt DP subject GC). Despite the similarities, as mentioned in section A, I think Pires's analysis resorts to ad hoc strategies.

[10]I acknowledge this argument is very analysis-internal. Even so, I think it is reasonable to claim that the Case features that "Case assigners" (e.g., T and transitive *v*) must also be deleted for the computation to meet bare output conditions. (See however Bošković 2007, fn. 58.)

subject variant and a *PRO* variant.

The subject of low adverbials does not allow for this alternation either and is necessarily *PRO*:

(51)   a.   *O João caminha a   Maria ouvindo música.
             the João walks   the Maria listening music

        b.   O João caminha *PRO* ouvindo música.
             the João walks   *PRO* listening music
             'João walks listening to music.'

In the derivation of low adverbials, there is also a moment where the subject can move away from the GC and into the matrix clause through a thematic door. This possibility yields the control possibility. However, the possibility of the subject staying inside the GC leads to grammaticality only in high adverbials. In low adverbials, if the subject stays inside the GC, it cannot have its Case feature valued, nor can the gerund morpheme. Because high adverbials are self-sufficient for Case, no such problem arises.

In sum, the analysis provided can predict that control is a possibility for high adverbials because their derivation implies a moment in the derivation where the subject is still active and therefore is a candidate for a movement operation that targets a thematic position. Furthermore, the absence of a DP inside the GC does not cause problems later on in the derivation because there is still the Case feature of the gerund morpheme to allow the corresponding feature in T to be marked for deletion. At the same time, if the GC subject remains inside this domain (section 6.3), the derivation can also converge, as it will be Case-valued inside this domain, which is self-sufficient for Case anyway. Both possibilities are equally legitimate because they depend first of all on the content of the numeration (i.e., is there material enough for all thematic requirements to be satisfied via external merge or is movement into further thematic positions required?) and then on how the derivation proceeds accordingly. A GC self-sufficient for Case can license its subject or fare just as well in the absence of one.

6.6.1.2   Restrictions on control: subject GCs

In the control GCs considered above, the matrix clause can be derived partially and be left in stand-by while it awaits an appropriate phrase to enter the workspace to fulfill a thematic requirement in the absence of enough material to do so via external merge. This particular ordering for the derivation to proceed plays an important role in obtaining control in high adverbials, since the movement of the subject is only possible while it is still active. Hence, it must be triggered by a thematic position inside a structure that is present simultaneously in the same workspace. If the matrix clause was derived only *after* the end of the assembling of the GC (or vice-versa), the subject would always be Case-valued inside the GC, ruling out all possibilities of control. However, if there is more than one structure in the same workspace, there is room for this movement.

Because sentences containing a subject GC (section 5.2) also imply a moment in the deriva-
tion when the matrix clause and the subject GC are active in the same workspace, there should
be a moment in the derivation where movement of the subject of the subject GC into a thematic
role inside the matrix clause is legitimate. The prediction is that control should be a possibility
for subject GCs. This prediction is not borne out by facts.

(52)   a.   Crianças correndo no   estacionamento incomodou/orgulhou o   porteiro.
            children running in.the parking-lot   annoyed/made-proud the janitor
            'Children running in the parking lot annoyed the janitor/made the janitor proud.'

       b.   *PRO Correndo no   estacionamento incomodou/orgulhou crianças.
            PRO running   in.the parking-lot   annoyed/made-proud children

Control in GCs does not have to be stipulated. It is a consequence of the properties I assume
GCs to have, along with MTC and sideward movement, which can be said to be independently
motivated. As a consequence, the sideward movement into a further thematic position in (52)
cannot be barred by brute force. This leads us to hypothesize that there is an independent factor
that excludes the ungrammatical constructions in (52). To identify this factor, let us look at the
schematic representation of (52-b).

(53)
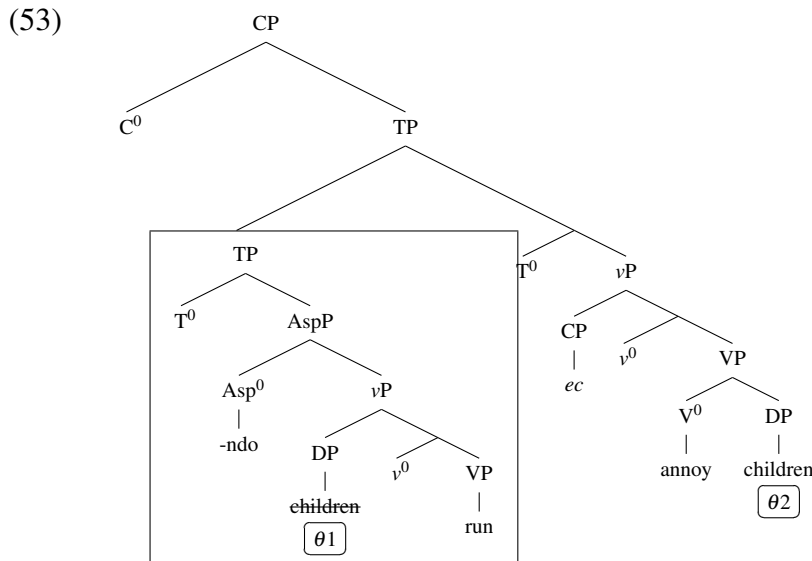
The problem in (53) is that the copies of *children*, the syntactic object moving sidewards, cannot
form a legitimate chain. As a consequence, Chain Reduction cannot apply, so that both copies
of *children* will remain undeleted. As a result, the asymmetry and anti-reflexivity requirements
imposed on linearization cannot be complied with (see section 6.2). The independent factor
to explain the ungrammaticality of (52) is the impossibility of forming a legitimate chain as
a result of sideward movement passing through more than one thematic position in sentences
containing a GC subject.[11]

In contrast, in (48), an example of high adverbial GC, the copy of *o João* in the [Spec, TP]

of the matrix clause can form a chain both with the copy inside the GC and with the copy inside the matrix clause. Chain Reduction can go through as required, so that only one copy of the DP remains, allowing the derivation to converge at PF.
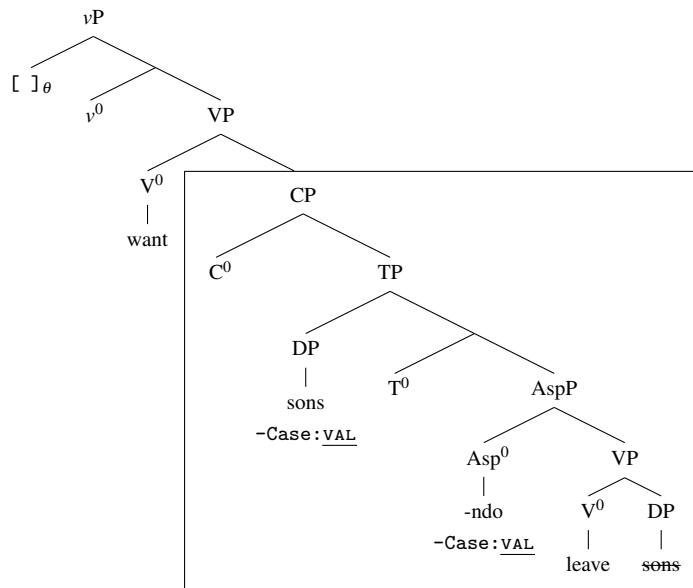
6.6.1.3 Restrictions on control: complement GCs

Besides subject GCs, control is also not possible in complement GCs, as in the desiderative – (54) – and perceptual – (55) – subtypes.

(54) a. O   João quis   os filhos saindo da   escola mais cedo.
        the João wanted the sons leaving of.the school more early
        'João wanted his children to leave school earlier.'

    b. *Os filhos quiseram *PRO* saindo da   escola mais cedo.
        the sons   wanted   *PRO* leaving of.the school more early

(55) a. O   João flagrou os filhos saindo da   escola mais cedo.
        the João caught the sons leaving of.the school more early
        'João caught his children leaving school earlier.'

    b. *Os filhos flagraram *PRO* saindo da   escola mais cedo.
        the sons   caught   *PRO* leaving of.the school more early

Unlike what happens in the derivation of high adverbials, in the derivation of sentences with desiderative GCs, there is no moment where the structures of both the GC and of the matrix clause are simultaneously in the same workspace. Thus, there is no moment where both the GC subject is active and where there is a thematic position to be filled via movement. The reason is that the derivation of a sentence containing a desiderative GC is upward only: first, the desiderative GC, a complement, is derived and only afterwards does the desiderative verb merge with it. Because desiderative GCs are self-sufficient for Case, the matrix predicate will enter the derivation only after the GC subject has been Case-valued. As a consequence, it is no longer active when the external argument position of the desiderative verb is finally introduced in the derivation. In the absence of movement passing through more than one thematic position, control cannot obtain. Schematically:
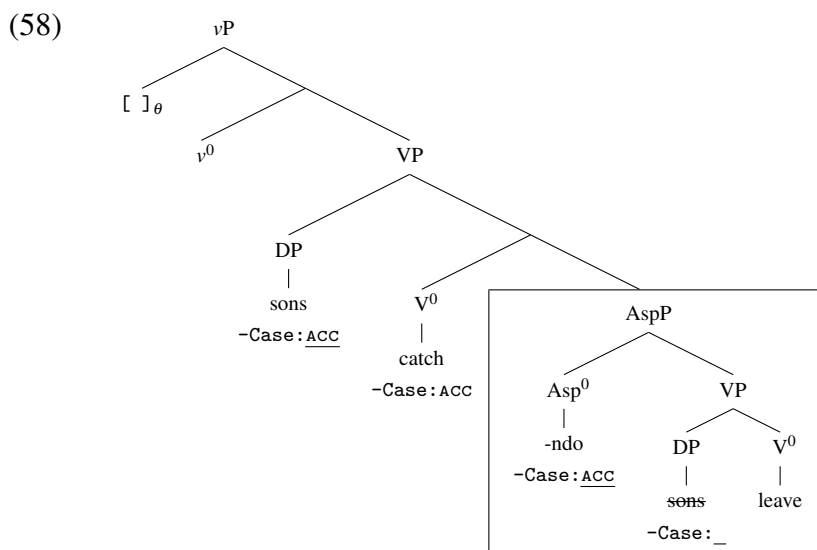
(56)

```
                    vP
              ┌──────┴──────┐
           [ ]_θ            
              ┌──────┴──────┐
             v⁰            VP
                    ┌────────┴────────┐
                   V⁰                CP
                    |         ┌────────┴────────┐
                  want       C⁰               TP
                                      ┌─────────┴─────────┐
                                     DP                  
                                      |           ┌────────┴────────┐
                                    sons         T⁰              AspP
                                -Case:VAL                 ┌────────┴────────┐
                                                        Asp⁰              VP
                                                          |         ┌──────┴──────┐
                                                        -ndo       V⁰           DP
                                                    -Case:VAL       |            |
                                                                  leave        sons
```

The [ ]_θ position above cannot the filled by *sons*, the subject of the GC, because this DP has already been Case-valued.

A similar account can be provided for perceptual GCs. Its subject is dependent on an external Case-valuer and, until one is introduced in the derivation, the perceptual GC subject is still active. Why then can it not move into a thematic position inside the matrix clause? The reason lies in the order the derivation proceeds. Specifically, I assume the following economy condition (repeated from (14), p. 56):

(57)   If a given syntactic head H^0 triggers the operations OP_i and OP_j, such that OP_i can result in the deletion of imperfections, while OP_j results in introducing new imperfections in the workspace, OP_i is effected before OP_j ('imperfections' = features that must be deleted because they are not legible at the interfaces).

A transitive and phasal head *v* triggers both the introduction of an external argument and *v*-to-V feature inheritance. According to (57), the latter should precede the former because feature inheritance can potentially lead to feature deletion, while the introduction of an external argument adds to the imperfections already present in the computation. As a consequence, when it is time to fill the external argument position of the matrix perceptual verb in (55-b), the embedded, GC subject will already have been Case-valued.

(58)

```
                          vP
                       ╱      ╲
                   [ ]θ        ╲
                     v⁰         VP
                            ╱       ╲
                         DP          ╲
                          │           ╲
                        sons           V⁰        ┌─────────────────────────┐
                     -Case:ACC          │        │          AspP           │
                                      catch       │       ╱      ╲          │
                                   -Case:ACC      │    Asp⁰        VP       │
                                                  │     │       ╱    ╲      │
                                                  │   -ndo    DP      V⁰    │
                                                  │ -Case:ACC  │       │    │
                                                  │          s̶o̶n̶s̶   leave  │
                                                  │         -Case:_         │
                                                  └─────────────────────────┘
```

Because all instances of movement must comply with economy, movement of a DP that has no imperfections to be corrected, like a DP that has already had its Case feature valued, is ruled out. Because there is no movement into a further θ-position, there is no control. This expectation is borne out by facts, as seen in (55-b).[12,13]

In summary, the analysis proposed has enough room to accommodate the *PRO*–non-null subject alternation in high adverbials and, at the same time, is restricted enough to rule out control in complement and subject GCs.

6.7 Conclusion

In this chapter, I derived the intriguing control contrasts in adverbials GCs. Low adverbials are necessarily control structures, while prepositional adverbials have a subject that is necessarily an overt DP. In contrast to both, high adverbials can have either a *PRO* or an overt DP as the subject. These possibilities do not have to be stipulated; rather, they fall out from the way the derivation proceeds for each of these GC subtypes, in conjunction with the MTC and sideward movement.

Low adverbials can have only a *PRO* subject because, if the subject remains inside the GC, it will not be Case-marked. In turn, this is a consequence of low adverbials being *class 3* GCs and hence GCs that are not self-sufficient for Case. In other words, the impossibility of an overt subject variant for low adverbials reduces to a violation of the principle of Full Interpretation: undeleted Case features arrive at the interfaces in the derivation of a low adverbial where the subject remains inside the GC.

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[12]The same can be said of propositional GCs, a complement GC that is also not self-sufficiente for Case, just like perceptual GCs.

[13]Perceptual GC complements can be usefully compared with object control GCs (see section 4.3). In the latter structure, control obtains because the movement to a further thematic position inside the matrix clause is triggered before accusative Case assignment due to the second *internal* argument position I proposed for verbs like *deixar* 'let' and *manter* 'keep'. The GC subject is not to move to the *external* argument position, as in (58), which is forcibly introduced after accusative Case assignment, according to (57).

Something along these lines can be said of prepositional adverbials. Now, it is the φ-features I proposed the prepositions *sem* 'without' and *com* 'with' that are to blame. The presence of these features require the presence of a DP inside the GC, otherwise they cannot be valued and deleted. Again, if the subject vacates the prepositional GC, although this is in principle possible as long as the subject is still active, ultimately this causes the derivation to crash due to a violation of the principle of Full Interpretation: the φ-features of the preposition reach the interfaces undeleted. Despite the differences, the subject realization possibilities in low and in prepositional adverbials do not have to be stipulated: they fall out from independent conditions in the syntax. However, because I assume, following Nunes (2004), that copies should have the same status of the moved element, a copy left in the prepositional adverbial by the movement of its subject should suffice to value the features in the preposition. I am unable to tackle this issue now, so I leave it for future research.

The most interesting case was the high adverbial, which has a *PRO* variant and an overt subject variant. Again, this alternation does not have to be stipulated. If the subject remains inside the GC, it can have its Case feature value by the valued Case feature inherited by T – high adverbials are *class 1* GCs. Nevertheless, there is a moment in the derivation of sentences modified by a high adverbial where both the matrix clause and the GC are available in the workspace. At this moment, the subject of the GC can A-move into the matrix clause through a thematic door. This is a possibility if there is not enough material in the numeration to fulfill all thematic requirements via external merge and if the GC subject is still active. Both these requirements can be met, so that the *PRO* variant of a high adverbial converges as well. Yet again, no stipulation was made: the *PRO*–overt subject alternation in high adverbials falls out from independent possibilities available in the computational system.

The analysis proposed is flexible enough to allow these options for high adverbials, but is also constrained enough to rule them out from subject and complement GCs. The derivation of sentences where the subject is a GC also implies a moment where the matrix clause and the GC are derived in parallel in the same workspace. This is one of the ingredients necessary for control to obtain in both low and high adverbials. The problem comes up only later in the derivation: the overall architecture of a sentence with a GC subject does not allow for the subject of the GC to c-command its lower copies. The result is that the derivation crashes at PF due to linearization problems. In contrast, for sentences with a complement GC, the derivation is upwards only and the GC subject is Case-valued before a thematic position inside the matrix clause must be fulfilled.

Chapter 7

Sketch of an analysis for the temporal properties of GCs

In this chapter, I attempt to describe and analyze temporal properties in complement, in adnominal and in adverbial GCs as a first step towards accounting for the temporal properties in these nonfinite domains. Complement GCs, inspected in section 7.2, were again picked out as the prototypes of the GC classes proposed here because it seems to be easier to control for the factors that determine their behavior. My hypothesis is that what is said in this chapter about complement GCs will carry over to the other GC subtypes in the same class, as long as we identify the extra factors that regulate their behavior. Provided that the temporal analysis sketched here is successful, it will lend support to the overall analysis put forth in this dissertation. Specifically, the ingredients that were instrumental in derivation of GCs and which will be important in this temporal chapter are feature inheritance (see section 2.1) and the proposal that there are three GC classes, such that they differ in their structural make-up. It is this difference in size that determines whether or not a given GC has its own tense features (via inheritance of features) as well as the way it interacts with the temporal properties in the matrix clause.

In section 7.3, we inspect adnominal GCs in subject position. They are temporally interesting because they are ambiguous between an utterance time reading and an event time reading. Based on Thompson (2001, 2005), I will account for this ambiguity relying on the assumption that any copy of a moved element is appropriate for interpretation, the null hypothesis of the copy theory of moment. The utterance time reading will be shown to be derived when the copy of the adnominal GC that is interpreted is that in [Spec, TP], the pronounced position. When it is the base-generation copy in [Spec, *vP*] that feeds interpretation, the result is an event time reading.

In section 7.4, I try to provide a description and account for temporal properties in high adverbial GCs. These GCs pose an interesting challenge to systems of temporal interpretation because the temporal ordering is obtained in the absence of an overt instruction to relate the matrix clause and the GC. I will try to show that my analysis is consistent with the data and that it does not rely on the postulation of covert connectives. In addition, in section 7.4.2, I point out

an empirical challenge that high adverbials pose to theories of temporal interpretation, namely, that it allows for an instance of aspectual recursion that is unattested elsewhere. Although I have no solution to this puzzle, I think it is important to point it out for future research.

There is a third ingredient that will be important in trying to provide an account of temporal properties in GCs, namely an overarching system of temporal interpretation. This is what we turn to in the next section.

7.1 Demirdache & Uribe-Etxebarria's system of temporal interpretation

In this section, I describe the system of temporal computation assumed in the analysis, namely, that in Demirdache and Uribe-Etxebarria (2000, 2004, 2007). I first outline the basic workings of the system and then draw attention to components that will be of particular importance in the description and analysis of the temporal properties of GCs. Finally, I make some proposals concerning temporal properties in nonfinite clauses.

7.1.1 The basic workings of D&UE's theory

Demirdache and Uribe-Etxebarria (2000, 2004, 2007) (henceforth, D&UE) put forth a theory of temporal interpretation where tense and aspect are reduced to the same set of semantic and syntactic primitives.

From a semantic point of view, tense and aspect are predicates of temporal ordering which take temporal interval-denoting elements as arguments. These temporal predicates order their arguments by determining relations of temporal coincidence or lack thereof among them, such that lack of coincidence can be precedence or subsequence. The lexical meanings that tense and aspect range over are: *after*, *within* and *before*. The table below summarizes what the basic instances of tense and aspect are translated into in D&UE's theory.

Predicate	Tense	Aspect
AFTER	*past*	*perfect*
WITHIN	*present*	*progressive*
BEFORE	*future*	*prospective*

Table 7.1: The uniform semantics of tense and aspect

From a syntactic point of view, tense and aspect each head their own maximal projection, TP and AspP, respectively. They are two-place predicates that project their argument structure syntactically as in (1). D&UE also propose that the configuration of the syntactic projection of tense and aspect is such that TP dominates AspP and AspP, in turn, dominates VP.

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(1)   *The uniform syntax of tense and aspect*

```
                        TP
            ┌───────────┴───────────┐
         UT-T                       │
        anchor      ┌───────────────┴───────┐
         time      T⁰                      AspP
                    |             ┌──────────┴──────────┐
                  after        AST-T                    │
                  within              ┌─────────────────┴──────┐
                  before            Asp⁰                       VP
                                     |                 ┌────────┴────────┐
                                   after             EV-T              V⁰
                                   within
                                   before
```
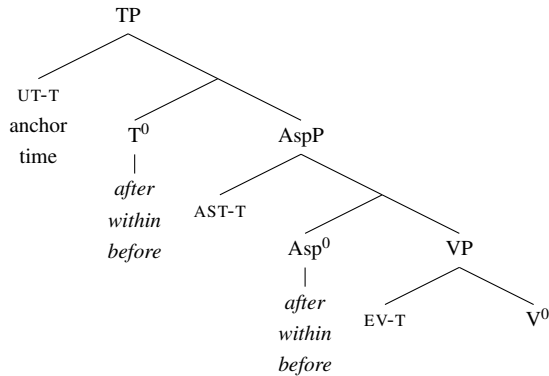
Recall from section 1.3 that I propose that the gerund morpheme $\{-ndo\}$ is the head of AspP and that it contributes some progressive meaning to the clause. In D&UE's terms, this is translated as $\{-ndo\}$ having the meaning *within*. Hence, under D&UE's system, the minimum temporal structure of a GC is as follows:

(2)
```
              AspP
          ┌────┴────┐
        Asp⁰        vP
         |       ┌──┴──┐
       -ndo     v⁰     VP
       within
```
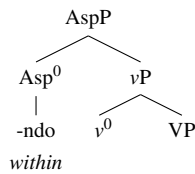
In the full structure (1), tense (T) selects as its external argument an *anchor time*. In matrix and root clauses, *anchor time* generally denotes the utterance time (UT-T).[1] In finite embedded clauses, *anchor time* can denote either UT-T or it can be bound by some matrix temporal interval (see comments in section 7.1.3 below). T's internal argument is an assertion time (AST-T).[2] Tense orders the *anchor time* prior to, inside or following the AST-T, depending on its meaning, respectively, *after*, *within* or *before* (see table 7.1). Aspect (Asp) orders AST-T, its external argument, with respect to the event time (EV-T), its internal argument. The semantic role of aspect is to pick out a subinterval of EV-T, the assertion time, AST-T. According to D&UE, aspect plays an important role in temporal interpretation, since only the AST-T part of EV-T is interpreted.

(3)   [T]he role of Aspect is to focus (pick out) an interval in the temporal contour of the event described by a sentence. Only the time interval focused by Aspect is visible to semantic interpretation. We call the time interval in the event time of the VP that Aspect focuses the *Assertion Time* (AST-T).

(Demirdache and Uribe-Etxebarria, 2000, 161)

Aspect plays this role by ordering AST-T after, within or before EV-T.

The basic workings of D&UE's system of temporal interpretation is illustrated by the sen-

---

[1] Provided that the appropriate context is provided, *anchor time* can be reoriented to some other time, like the historical present. See, discussion in Hornstein (1990).

[2] D&UE adopt specific definitions of 'internal argument'. I refer the reader to the original works for clarification.

tence (4). (4) can mean either that the writing event is completely finished, that is, it culminates before UT-T, as in (5-a), or that it is still ongoing, as in (5-b).

(4)   Mary was writing a book.

(5)   a.   *Mary was writing a book and she is already done with it.*
        b.   *Mary was writing a book and, in fact, she still is now.*

D&UE's theory of temporal interpretation can capture this temporal ambiguity quite well. The temporal ordering relations this sentence expresses are represented in hierarchical form in (6). As seen in table 7.1, in D&UE's theory, past tense is a temporal predicate with the meaning *after*, while progressive aspect is a temporal predicate with the meaning *within*.

(6)

```
                TP
        ┌────────┴──────────┐
     UT-T                   │
              ┌─────────────┴──────┐
             T⁰                  AspP
              │          ┌─────────┴────────┐
            after      AST-T                │
                        ┌──────────┬────────┐
                      Asp⁰                 VP
                        │           ┌───────┴───────┐
                     within       EV-T            V⁰
                                                   │
                                                 write
```
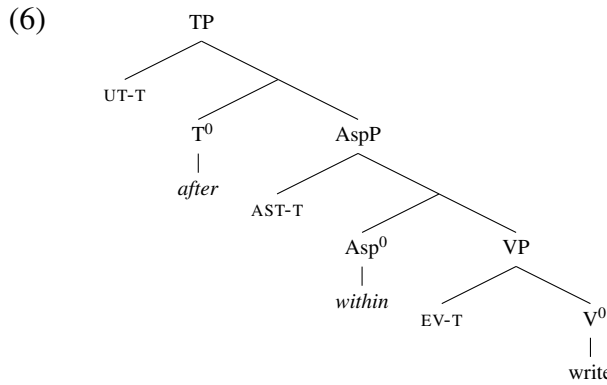
Proceeding bottom-up, the temporal computation of (6) is as follows. Progressive aspect picks out a subinterval of EV-T by ordering AST-T with respect to it. In the case at hand, the meaning of Asp is *within*. Thus, a proper subpart within EV-T is picked out, as represented below, in (7-a).[3] Since it is a subinterval inside the EV-T that is picked out, nothing is asserted about the beginning or ending points of the event: these points in EV-T are not picked out by AST-T when these time intervals are ordered by a *within* Asp and thus, by (3), they are not accessible for interpretation. Past tense orders UT-T after AST-T, as represented in (7-b). Bringing together (7-a) and (7-b), there are two possible resulting orderings, (7-c-i) and (7-c-ii).

(7)   a. $-[$EV-T $[$AST-T$]]\rightarrow$
        b. $-[$AST-T$]-[$UT-T$]\rightarrow$
        c.   (i) $-[$EV-T $[$AST-T$]]-[$UT-T$]\rightarrow$
              (ii) $-[$EV-T $[$AST-T$]-[$UT-T$]]\rightarrow$

---

[3]Notation used: the discontinuous arrow represents the time axis along which temporal intervals are ordered. Temporal intervals are represented between '[]'. When a time interval α is *after* a time interval β, α is represented at the right of β and they are separated by '–', as in (i-a). When α is ordered *within* β, α is represented inside the '[]' that enclose β, as in (i-b). Finally, when α is *before* β, α is represented at the left of β and they are separated by '–'.

(i)   a. $-[\beta]-[\alpha]\rightarrow$
        b. $-[\beta\ [\alpha]]\rightarrow$
        c. $-[\alpha]-[\beta]\rightarrow$

While aspect orders AST-T with respect to EV-T, tense orders UT-T with respect to AST-T. Consequently, EV-T and UT-T are not directly ordered with respect to each other. They can only be ordered through the mediation of AST-T. Given (7-a) and (7-b), UT-T can be after both EV-T and AST-T, such that the former includes the latter. This is possible because this ordering satisfies the requirements imposed both by tense and by aspect in (6): in (7-c-i), AST-T is included in EV-T, as required by progressive aspect, and UT-T is after AST-T, as required by past tense. This is the reading (5-a). But it can also be the case that EV-T includes not only AST-T, but also UT-T, as represented in (7-c-ii). This is legitimate, since this ordering also satisfies the requirements imposed by tense and aspect in the case at hand. In this ordering, even if UT-T is included in EV-T, it can still be after AST-T. This is the reading in (5-b).

Because two legitimate orderings result from the temporal computation, D&UE's theory of temporal interpretation successfully accounts for the ambiguity of a past progressive sentence like (4).

7.1.2 Morphologically null and absent tense and aspect

D&UE assume that TP and AspP are always syntactically projected, even if morphologically null. If they are morphologically null, their time-denoting arguments are ordered via anaphora. Anaphora, in turn, can be established either via binding or via covaluation.

(8) a. TP and AspP are always projected.
     b. When either T^0 or Asp^0 lacks morphological content, its external temporal argument binds its internal temporal argument.
         (from Demirdache and Uribe-Etxebarria 2004, 149, (8))

Simple tenses (in English) have no morphological aspect (annotated as '$\oslash$' in (9-b)). Nevertheless, AspP is projected in the syntax, as required by (8-b), and the ordering between AST-T and EV-T is achieved via binding.[4] This is illustrated by the simple past sentence (9-a), represented structurally in (9-b).

(9) a. Mary wrote a book.
     b.
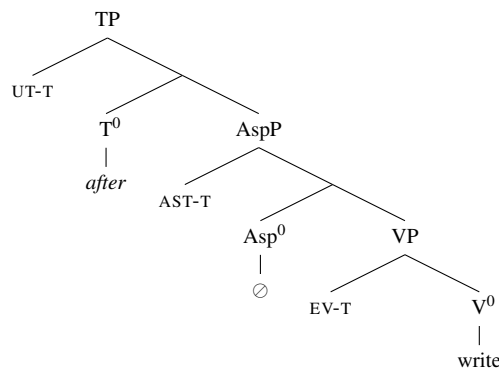
     c. $-[\text{AST-T} = \text{EV-T}]-[\text{UT-T}]\rightarrow$

---

[4]Notation used: temporal correference is represented as '='.

Unlike (4), (9-a) is unambiguous and the only reading available is one where the event of writing a book culminates before UT-T, as in (5-a). Because Asp in (9-b) is null, its external argument, AST-T, binds its external argument, EV-T. The result is that AST-T and EV-T end up exhaustively coincidental. A byproduct of AST-T and EV-T being coincidental and of only the subinterval of EV-T picked out by AST-T being accessible for temporal interpretation is that, when aspect is null, the EV-T as a whole, including its beginning and endpoint, is accessible for interpretation. In (9-a), past tense orders UT-T after AST-T. EV-T, being exhaustively coincidental with AST-T, can also be ordered with respect to UT-T, that is, UT-T is also after EV-T, as shown in (9-c). This would be why (9-a) can only mean that the writing event is over before the UT-T.

7.1.3 Hypotheses about temporal properties in nonfinite clauses

7.1.3.1 Temporal make-up of nonfinite domains

The assumption in (8-a) raises a problem for the analysis advanced here, as I propose that there is a class of GCs that project only up to AspP, lacking TP. In fact, the issue is likely to be a lot broader, encompassing not only GCs, but nonfinite clauses in general.[5] Although I am unable to provide a full account, I hypothesize that the proposal that TP and AspP are always projected – (8-a) – is restricted to finite clauses. The occurrence of TP and of AspP in nonfinite clauses may be variable. In other words, I propose that nonfinite clauses can be tense- and/or aspect-defective.

(10)   *Hypothesis: defectiveness in the temporal make-up of nonfinite clauses*
         In nonfinite clauses, TP or AspP are not always projected. It could be the case that both
         are projected, only one of them is projected or neither of them is.

The temporal structure of the three classes of GCs proposed are in (11), according to the proposal put forth here that these classes differ in relative structural size:[6]

(11)   a.   *Class 1*

---
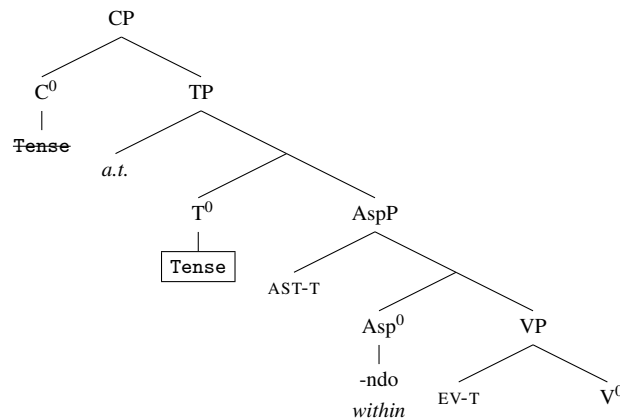
[5]See, for example, Wurmbrand (2014b), where tense in infinitive clauses is analyzed.

[6]*a.t.* = anchor time.

b. *Class 2*

```
                          TP
                         /  \
                  a.t.  /    \
                       T⁰    AspP
                       |    /    \
                       ∅  AST-T   \
                              /      \
                           Asp⁰       VP
                            |        /   \
                          -ndo   EV-T    V⁰
                          within
```

c. *Class 3*

```
                    AspP
                   /    \
                AST-T    \
                     /      \
                  Asp⁰       VP
                   |        /   \
                 -ndo   EV-T    V⁰
                 within
```
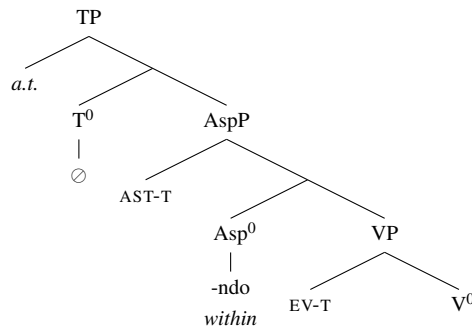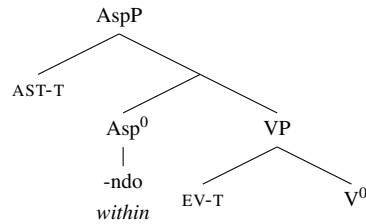
Class 1 – (11-a) – and *class 2* GCs – (11-b) – happen to project a full temporal structure because they both include TP and AspP. *Class 3* GCs – (11-c) – have the most defective temporal structure, for they contain only AspP.

I assume here feature inheritance (see section 2.1), according to which, the features traditionally associated with T are not its lexical specifications; rather, they are lexical specifications of C and become T specifications only derivatively, through a mechanism of C-to-T feature inheritance. Interestingly, Chomsky (2004, 2008) proposes that even tense features in T are inherited from C. If we couple feature inheritance with the proposal that there are three classes of GCs that differ in size, we expect that the content in the temporal layers in GC temporal structures should differ too. The distinguishing structural property of *class 1* GCs – (11-a) – is that they contain a CP layer. Assuming feature inheritance, this means that only the GCs that belong to this class can potentially contain a tense specification of their own. *Class 2* GCs – (11-b) – eschew feature inheritance because, even though they contain a potential repository of C features (i.e., T), they lack the source of these features (i.e., C). Because it cannot inherit any features, the T in a *class 2* GC remains empty throughout the derivation. Due to the emptiness of T in *class 2* GCs, *anchor time* and AST-T in these structures end up correferent (see principle (8-a) above). In sum, even though both *class 1* and *2* GCs contain a full temporal structure, they differ in the content of this structure. Finally, *class 3* GCs – (11-c) –, having the simplest GC structure, lack even TP.

Besides their temporal make-up, there is another temporal issue GCs pose, namely the integration between the computation in the GC and that in the subordinating clause. This is what we turn to in the next section.

7.1.3.2 Temporal integration between matrix and nonfinite clause

Broadly speaking, there are two ways for a finite embedded clause to be temporally interpreted relatively to the embedding clause. Its *anchor time* (*a.t.*) can denote UT-T and the event it

describes (EV-T$_1$) is ordered with respect to it. Because the matrix event (EV-T$_2$) is also ordered with respect to an *anchor time* denoting UT-T, the embedded and matrix events can be ordered as well, as a byproduct. This is illustrated in (12), the simplified temporal computation of which is in (13).

(12)   John said that Mary will leave tomorrow.

(13)   a.   –[*a.t.* = UT-T]–[EV-T$_2$]→   *embedded clause*

         b.   –[EV-T$_1$]–[UT-T]→   *matrix clause*

         c.   –[EV-T$_1$]–[UT-T]–[EV-T$_2$]→   *embedded + matrix*

Alternatively, it is possible that the *anchor time (a.t.)* in the embedded clause does not denote UT-T. Rather, it can be correferent with the matrix event (EV-T$_2$). This is illusttrated in (14), the simplified temporal computation of which is in (15).

(14)   John said that Mary was sick.

(15)   a.   –[EV-T$_1$]–[*a.t.* = EV-T$_2$]→   *embedded clause*

         b.   –[EV-T$_2$]–[UT-T]→   *matrix clause*

         c.   –[EV-T$_1$]–[EV-T$_2$]–[UT-T]→   *embedded + matrix*

Regarding GCs, the question that arises is, how is the result of their temporal computation integrated into the overall sentence? It is a general assumption that nonfinite clauses are temporally dependent on the subordinating clause (see e.g., Stowell 1982, 563). This would rule out a temporal computation such as that in (13), where the embedded *anchor time* denotes UT-T directly. How could we rule out this possibility in a more principled way? I propose that there are two instances of *anchor time*, a pronominal and an anaphoric one; pronominal *anchor time* occurs in finite clauses and anaphoric *anchor time*, in nonfinite clauses like GCs.[7]

(16)   *Interpretation of* anchor time

         a.   The external argument of T is *anchor time*.

         b.   *Hypothesis*: there are two instances of *anchor time*:

               (i)   Pronominal *anchor time*;

               (ii)   Anaphoric *anchor time*.

(17)   *Hypothesis:* anchor time *in finite and in nonfinite clauses*

         a.   *Anchor time* in finite clauses is pronominal.

         b.   *Anchor time* in nonfinite clauses is anaphoric.

Given (17-a), *anchor time* in a finite clause can be bound by another c-commanding temporal interval in the same sentence or it can denote an element salient in discourse. Binding by another

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[7]I have to say that I have not done a review of the vast literature on tense. Thus, I admit I am unaware whether or not the hypothesis (17) is comparable to a proposal that has been put forth previously.

temporal interval yields the temporal dependent reading witnessed in (14), while denoting an element salient in discourse yields the UT-T reading in (12). In both cases, the embedded event can be integrated into the temporal structure of the overall sentence.[8]

Given (17-b), the *anchor time* in *class 1* and in *class 2* GCs must be bound by the closest temporal interval in the structure, in compliance with Principle A of the Binding Theory. *Class 3* GCs fall outside of the domain of (17-b) because it does not contain an *anchor time*.

Nevertheless, the temporal intervals that are included in the defective structure in *class 3* GCs must be integrated into the temporal computation of the overall sentence. Following Hornstein (1990),[9] I assume that the need of all temporal intervals to be integrated into the temporal computation of the overall sentence follows from the Principle of Full Interpretation applied to temporal structures:

(18)   *Principle of Full Interpretation*
        All syntactic objects that arrive at the interfaces must be interpretable there.

(19)   *Full Interpretation in temporal structures*
        a.   All temporal intervals must be interpretable, in compliance with (18).
        b.   For a temporal interval β to be interpretable, it must be ordered with respect to the first temporal interval α that c-commands it.
        c.   (i)   When all temporal predicates are projected, temporal ordering is determined by the temporal predicate P, which orders its external argument with respect to its internal argument. P is T or Asp and its meaning ranges over *after*, *within* and *before*.[10,11]
              (ii)   In the absence of a P, β is bound by the closest c-commanding temporal interval α, so that β and α end up correferent.

(19-c-i) is schematically represented in (20)-a, where PP is the phrase projected from a temporal predicate P and XP the phrase where β is base-generated. β is ordered with respect to α according to the meaning of P (*after*, *within* or *before*). (19-c-ii) is schematically represented in (20)-b, where Y is not a temporal predicate. In the absence of a temporal predicate to order β and α, the former is bound by the latter because α is the closest temporal interval that c-

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[8]It is necessary to define the domain of this "temporal binding". The null hypothesis is that the domain for nominal binding should be used here too (see section 2.3.1). For now, I have nothing to say about this. I note only that it may be the case that the null hypothesis is not empirical tenable because temporal interpretation may require the whole sentence (rather than just a phase) to be computed. This seems to be the case for sequence of tense constructions, for example, where it seems to be necessary that both the embedded and the matrix clause be taken into account. For analyses of SOT, see e.g. Hornstein (1990) and Wurmbrand (2014b).

[9]D&UE reach the same results by assuming a notion of semantic economy, according to which no element can be semantically idle – it has to be interpreted (see (76) below). Here, I assume Hornstein (1990)'s formulation in terms of the Principle of Full Interpretation because I think it is more straightforward and easier to present. I make no comparison between the two systems here.

[10]This principle, for the sake of completeness, simply spells out the basic workings of D&UE's system.

[11]Again, by (8-a), if *P* is null, P's external argument binds P's internal argument, so that they end up temporally correferent.

commands β. The result is that β and α end up correferential. (19-c-ii) could be taken as an optimal way of complying with (18) because it prevents β from being semantically idle and does so in local fashion.

(20) a. [PP tree: PP dominating α and P^0 (after/within/before) and XP; XP dominating β and X^0 ...]   b. [YP tree: YP dominating α and Y^0 and ZP; ZP dominating β and Z^0 ...]
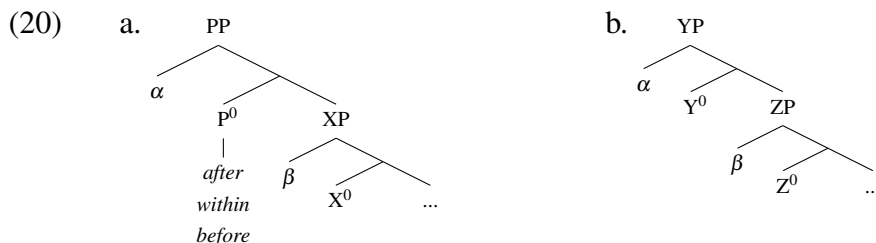
The finite constructions (12) and (14) comply with (19) as a byproduct of there being a pronominal *anchor time* in both clauses. This instance of *anchor time* relates the embedded temporal structure with the matrix either by denoting the UT-T, which is also included in the matrix clause, or by being directly correferent with the matrix EV-T, as a consequence of binding. Something along these lines applies to *class 1* and *class 2*, except that *anchor time* is anaphoric, according to the proposal made in (17-b). Finally, *class 3* GCs have to resort to (19-c-ii) in order for their temporal intervals to be integrated into the overall sentence.

Relying on the system of temporal interpretation summarized above, along with the additions I make regarding the temporal make-up in nonfinite clauses and the nature of *anchor time* in finite and in nonfinite clauses, I try to derive some of the temporal properties in GCs.

7.2 Temporal properties of complement GCs

In this section, I present the temporal structure and interpretation of complement desiderative, propositional and perceptual GCs.

(21) a. O João quis a Maria cantando.
          the João wanted the Maria singing
          'João wanted Maria singing.'

     b. O João adorou a Maria cantando.
          the João loved the Maria singing
          'João enjoyed Maria singing'

     c. O João ouviu a Maria cantando.
          the João heard the Maria singing
          'João heard Maria singing.'

I take them to be the prototypes of *class 1*, *class 2* and *class 3* GCs, respectively. I singled them out as representatives of their class because, as seen in the previous chapters, they are more "well behaved", that is, there seem to be fewer factors to control for when studying their behavior. Furthermore, I think it is premature to attempt to provide a detailed analysis of the temporal properties of all GC subtypes investigated here. Thus, I start with more straightforward instances of these constructions. In any case, if the analysis to be provided below proves to be

tenable, it will presumably carry over to the other GCs.

One of the facts I will try to explain is the contrast below:

(22)   a.   Ontem,   o João quis   a   Maria cantando amanhã.
                yesterday the João wanted the Maria singing   tomorrow
                'Yesterday, João wanted Maria singing tomorrow.'

        b.   *Ontem,   o João adorou a   Maria cantando amanhã.
                yesterday the João loved   the Maria singing   tomorrow
                'Yesterday, João enjoyed Maria singing tomorrow.'

        c.   *Ontem,   o João ouviu a   Maria cantando amanhã.
                yesterday the João heard the Maria singing   tomorrow
                'Yesterday, João heard Maria singing tomorrow.'

In (22), there are two mismatching temporal adverbs, one modifying the matrix clause (*ontem* 'yesterday') and the other, the embedded clause, a GC (*amanhã* 'tomorrow'). On the one hand, this is a possibility for desiderative GCs – (22-a). On the other, it is not if the GC is propositional – (22-b) – or perceptual – (22-c). The questions I will try to answer are, why do desiderative GCs allow for such a mismatch and why do propositional and perceptual GCs cluster together in not allowing it? The similarity between *class 2* and *class 3* GCs will be shown to be a collateral effect of their structural make-up, combined with the theory of temporal interpretation assumed here (D&UE).

7.2.1   Temporal computation in *class 1* GCs

Let us start with *class 1* GCs, represented by desiderative GCs. A challenge these constructions pose is identifying the temporal predicate that T inherits from C, since a gerund clause has no overt temporal specification.[12] As a way of getting around this problem, I take the possibility of licensing a future-oriented adverb like *amanhã* 'tomorrow' – (22-a) – to indicate that the predicate that heads TP in a desiderative GC is *before*.[13,14] Under this assumption, the temporal structure of a sentence like (23-a) is as (23-b):

(23)   a.   O João quis   a   Maria cantando.
                the João wanted the Maria singing
                'João wanted Maria singing.'

---

[12]Except for progressive perfect high adverbials, mentioned in section 7.4.2 below.

[13]This does not mean that the tense in all *class 1* GCs is future (*before*, in D&UE's terms). The null hypothesis is that any of the temporal predicates (*after*, *within* and *before*) could be a C specification to be inherited by T in *class 1* GCs. As a matter of fact, I propose in section 7.4 that these logical possibilities are indeed realized in high adverbials. I argue that these tense specifications help give rise to their causal and conditional readings in the absence of a(n overt) connective.

[14]The proposal that tense is generated in C and inherited by T in desiderative GCs can perhaps be taken to be compatible with the irrealis interpretation generally ascribed to the complement of desiderative predicates.

b.

```
                        TP
               ┌─────────┴──────────┐
             UT-T                   │
                          ┌─────────┴──────────┐
                         T⁰                   AspP
                          |          ┌─────────┴──────────┐
                        after      AST-T₂                 │
                                    ┌────────┴────────┐
                                  Asp⁰               VP
                                    |        ┌────────┴────────┐
                                    ∅      EV-T₂              │
                                             ┌──────┴──────┐
                                            V⁰            CP
                                             |     ┌───────┴────────┐
                                          wanted  C⁰              TP
                                                   |      ┌────────┴────────┐
                                                  a.t.    │                 │
                                                         T⁰               AspP
                                                          |      ┌──────────┴──────┐
                                                      [before] AST-T₁            │
                                                                      ┌──────────┴──────┐
                                                                    Asp⁰              VP
                                                                      |       ┌────────┴──────┐
                                                                    -ndo    EV-T₁          V⁰
                                                                   within                    |
                                                                                           sing
```
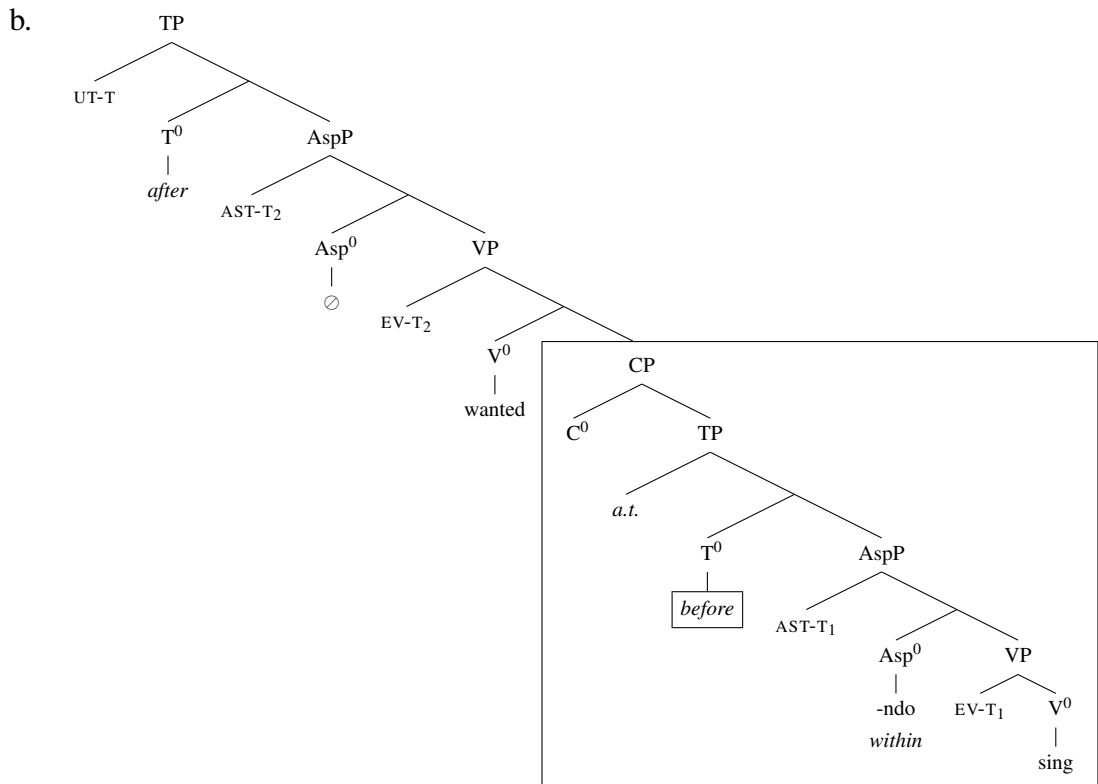
As mentioned, I assume that there is just a single gerund morpheme, which uniformly contributes progressive aspect to the clause. In D&UE's terms, this means that the temporal meaning of $\{-ndo\}$ is uniformly *within*. This predicates orders AST-T$_1$ within EV-T$_1$ – (24-a). Going up in the structure, the tense predicate *before* orders the *anchor time* before AST-T$_1$ – (24-b). Bringing together (24-a) and (24-b), because there is no direct ordering between *anchor time* and EV-T$_1$, there are two possible orderings resulting from the computation of the desiderative GC, (24-c-i) and (24-c-ii).

(24)   *Temporal computation: GC*

    a. $-[\text{EV-T}_1\ [\text{AST-T}_1]]\rightarrow$

    b. $-[\textit{anchor time}]-[\text{AST-T}_1]\rightarrow$

    c.   (i) $-[\textit{anchor time}]-[\text{EV-T}_1\ [\text{AST-T}_1]]\rightarrow$

           (ii) $-[\text{EV-T}_1\ [\textit{anchor time}]-[\text{AST-T}_1]]\rightarrow$

Having computed the embedded GC, we turn to the matrix clause. There, aspect is morphologically null. Under D&UE's system, this means that AST-T should bind EV-T (see (8-b)). Thus, in the matrix clause of (23-b), AST-T$_2$ and EV-T$_2$ end up equivalent – (25-a). The temporal predicate, however, is not null. Rather, it is the temporal predicate *after*, so that UT-T is ordered after AST-T$_2$ – (25-b). The final output is (25-c).[15]

---

[15]For simplification purposes, whenever AST-T and EV-T are correferent, I omit the former and represent only the latter.

(25)   *Temporal computation: matrix*

    a.   AST-T_2 = EV-T_2

    b.   –[AST-T_2]–[UT-T]→

    c.   –[EV-T_2]–[UT-T]→

We now have to integrate the GC and the matrix clause. Recall (from (17-b)) that I hypothesize that there are two instances of *anchor time*, a finite and a nonfinite one, such that the nonfinite one is anaphoric. As a consequence of its anaphoric nature, the *anchor time* in nonfinite clauses must be bound by the closest c-commanding temporal interval. In (23-b), the closest temporal interval that c-commands the *anchor time* of the desiderative clause is the matrix EV-T. Thus, *anchor time* and EV-T_2 end up equivalent – (26-a). Given the final computations of the GC and of the matrix clause, six different temporal orderings result – (26-b-i)-(26-b-vi).

(26)   *Temporal computation: GC + matrix*

    a.   *anchor time* = EV-T_2, by (17-b)

    b.   (i)   –[EV-T_2]–[UT-T]–[EV-T_1 [AST-T_1]]→

           (ii)   –[EV-T_2]–[EV-T_1 [AST-T_1]]–[UT-T]→

           (iii)   –[EV-T_2]–[EV-T_1 [AST-T_1]–[UT-T]]→

           (iv)   –[EV-T_1 [EV-T_2]–[UT-T]–[AST-T_1]]→

           (v)   –[EV-T_1 [EV-T_2]–[AST-T_1]]–[UT-T]→

           (vi)   –[EV-T_1 [EV-T_2]–[AST-T_1]–[UT-T]]→

In all of them, EV-T_2 precedes UT-T, as required by (25-c). In addition, in (26-b-i), (26-b-ii) and (26-b-iii), EV-T_1 includes AST-T_1 and, at the same time, *anchor time* (= EV-T_2) precedes EV-T_1, as required by (24-c-i). In turn, in (26-b-iv), (26-b-v) and (26-b-vi), *anchor time* (= EV-T_2) precedes AST-T_1 and both are included in EV-T_1, as required by (24-c-ii).

Recall that in D&UE's system (see (3)), only AST-T is available for temporal interpretation. Bearing this is mind, the six temporal orderings in (26-b-i)-(26-b-vi) reduce to the two interpretations below:

(27)   a.   –[*wanted*]–[UT-T]–[*singing*]→

     b.   –[*wanted*]–[*singing*]–[UT-T]→

Given that only AST-T is relevant for the ordering with respect to UT-T, (26-b-i) and (26-b-iv) are reduced to (27-a) because in both EV-T_2 (= *wanted*) precedes UT-T, which in turn precedes AST-T_1 (= *singing*). This could be argued to be the ordering that allows for the temporal mismatch seen in (22-a), repeated below.

(28)   Ontem, o João quis   a Maria cantando amanhã.
        yesterday the João wanted the Maria singing   tomorrow
        'Yesterday, João wanted Maria singing tomorrow.'

A plausible assumption seems to be that the past-oriented adverb *ontem* 'yesterday' in the matrix clause is licensed by the precedence ordering between *wanted* and UT-T in (27-a) (the former precedes the latter). In turn, the future-oriented adverb *amanhã* 'tomorrow' would be licensed by the subsequence ordering between *singing* and UT-T (the former follows the latter).

Keeping the assumption that only AST-T is relevant for the ordering with respect to UT-T, the temporal orderings (26-b-ii), (26-b-iii), (26-b-v) and (26-b-vi) could be taken to be collapsed into (27-b). Despite superficially quite dissimilar, in all these orderings, EV-T$_2$ (= *wanted*) precedes AST-T$_1$ (= *singing*), which in turn precedes UT-T. That it is also available can be taken to be shown in the following sentence:

(29)   Na   terça,   o   João quis   a   Maria cantando ontem.
       in.the Tuesday the João wanted the Maria singing   yesterday
       'On Tuesday, João wanted Mary to sing yesterday.'

Suppose (29) is uttered on a Thursday. The singing event is to take place on the day prior to the utterance time (Wednesday), while the wanting event is located before both the singing and the utterance time (Tuesday). In this scenario, (29) is a true sentence.

A question that now comes to mind is, what difference does the progressive morpheme make? In D&UE's terms, what the aspectual temporal predicate *within* does is pick out a subinterval of EV-T which does not include neither its inception nor its endpoint. In (26-b-i) and (26-b-ii), this does not make much difference to temporal interpretation. In (26-b-i), EV-T$_1$ exhaustively follows UT-T; in (26-b-ii), it exhaustively follows and is preceded by *wanted* and UT-T, respectively. In (26-b-iii), (26-b-iv) and (26-b-vi), in contrast, EV-T$_1$ ends up including UT-T. This relation could perhaps be taken to be what underlies a sentence like (30), where the GC is modified by the utterance time-oriented adverbial *agora* 'now':

(30)   O   João quis   a   Maria cantando agora.
       the João wanted the Maria singing   now
       'João wanted Maria to (be) sing(ing) now.'

Speculatively, *now* is licensed by an overlapping relation between EV-T and UT-T.

Something along these lines can be said about (26-b-v), where EV-T$_1$ (*singing*) overlaps not UT-T, but EV-T$_2$ (*wanted*). The relevant diagnostic may be provided by the licensing of *então* 'then'. When it occurs in a clause where the verb is in gerund form, the resulting sentence seems to yield a reading where the event is simultaneous with the past event described in the matrix clause.

Recall from section 4.5[16] that an adnominal GC is ambiguous between a reading where the event denoted by the GC is simultaneous with the utterance time and a reading where the gerund event is simultaneous with the matrix event:

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[16]See also section 7.3 below, where these temporal properties are analyzed.

(31) O   passageiro esperando pelo   vôo 307 reclamou   com o   comissário de bordo.
      the passenger   waiting   for.the flight 307 complained with the commissary of board
      'The passenger waiting for flight 307 complained to the flight attendant.'

    a. *Utterance time reading*: 'the passenger who is now waiting for flight 307 complained to the flight attendant'.

    b. *Event time reading*: 'the passenger complained to the flight attendant while he was waiting for flight 307'.

However, when we add *então* 'then' to the GC, only the event time reading is available.

(32) O   passageiro então esperando pelo   vôo 307 reclamou   com o   comissário de
      the passenger then   waiting   for.the flight 307 complained with the commissary of
      bordo.
      board
      'The passenger then waiting for flight 307 complained to the flight attendant.'

    a. **Utterance time reading*: 'the passenger who is now waiting for flight 307 complained to the flight attendant'.

    b. *Event time reading*: 'the passenger complained to the flight attendant while he was waiting for flight 307'.

When we add *então* to a sentence where the complement is a desiderative GC, a reading where the GC event and the matrix wanting event also seems to be available:

(33) O João quis   a Maria cantando então.
      the João wanted the Maria singing   then
      'João wanted Maria to be singing then.'

What I argue here is that this reading, brought out by *then*, is made available due to the availability of the temporal ordering (26-b-v), where the singing and the wanting event overlap, but both precede UT-T.

    Bottom line, we could say that a sentence like (23-a), repeated below, is multiply temporally ambiguous.

(34) O João quis   a Maria cantando.
      the João wanted the Maria singing
      'João wanted Maria singing.'

It could be used to describe states-of-affairs where the singing event is always unrealized with respect to the wanting event, but the singing can either follow – (27-a) – or precede – (27-b) – the utterance time. The underlying temporal ordering that explains the former possibility can also be taken to be behind the adverbial mismatch in (22-a). Another reading available is one where the singing event is to take place simultaneously with the utterance time – (30). Finally, the sentence above can also describe a state-of-affairs where it is the singing and the wanting events that overlap – (33).

To recap, the ingredients resorted to to attain these results were (i) feature inheritance; (ii) the proposal that there are three classes of GCs, such that they differ in their structural make-up (specifically, *class 1* GCs are CPs); (iii) the hypothesis that there is an anaphoric *anchor time*, which occurs in nonfinite clauses; (iv) D&UE's system of temporal interpretation (specially the proposal that only AST-T is available for temporal ordering).

Let us see if the same ingredients can also account for the temporal properties in the other two GC classes proposed. Next we turn to the temporal properties in propositional GCs, a representative of *class 2* GCs.

7.2.2 Temporal computation in *class 2* GCs

The temporal structure of a sentence like (35-a), where the complement is a propositional GC, is represented in (35-b). Because this is a *class 2* GC, the topmost projection in the embedded clause is TP. Within the present system, in the absence of CP, there can be no feature inheritance and as a consequence the T in a *class 2* GC remains empty throughout the derivation.

(35)   a.   O João adorou a Maria cantando.
           the João loved the Maria singing
           'João enjoyed Maria singing.'
     b.
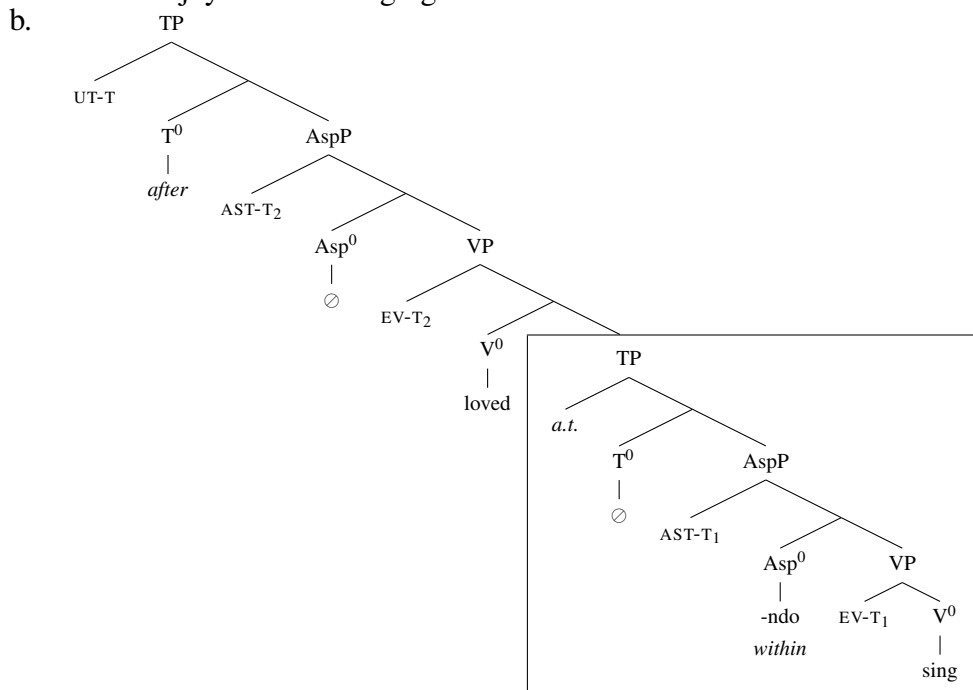
Nevertheless, the gerund morpheme is still present and it introduces an aspectual temporal predicate of meaning *within*. It orders AST-T_1 inside EV-T_1 – (36-a). Because T is empty, *anchor time* and AST-T_1 end up correferent – (36-b). The result is (36-c), where *anchor time*, which is equivalent to AST-T_1, by (36-b), is within EV-T_1, as required by (36-a).

(36)   *Temporal computation: GC*

     a. $-[\text{EV-}T_1\ [\text{AST-}T_1]]\rightarrow$

b. *anchor time* = AST-T_1

c. $-[\text{EV-}T_1\ [\textit{anchor time}]]\rightarrow$

The temporal computation of the matrix propositional clause is exactly the same as that in the matrix desiderative clause (see (25)) – in both cases the matrix verb is in the past and there is no overt aspectual marker. The result of the matrix temporal computation is repeated below:

(37) *Temporal computation: matrix*
      $-[\text{EV-}T_2]-[\text{UT-}T]\rightarrow$

Now we have to integrate (36-c) and (37). This is done by hypothesis (17-b), according to which there are two instances of *anchor time*, one of which occurs in nonfinite clauses and which is anaphoric. As a consequence of these properties, *anchor time* in GCs has to be bound by the closest c-commanding temporal argument. In (35-b), EV-T_2 is what fulfills these requirements – (38-a). The possible results are (38-b-i) and (38-b-i). These are the two possibilities, given the requirements that EV-T_2 precedes UT-T – (37) – and that EV-T_1 includes EV-T_2 – (36-c) –, EV-T_2 equivalent to *anchor time*, by (38-a). Because there is no direct ordering between EV-T_1 and UT-T, the former can include – (38-b-i) – or not include – (38-b-ii) – the latter.

(38) *Temporal computation: GC + matrix*

a. *anchor time* = EV-T_2, by (17-b)

b. (i) $-[\text{EV-}T_1\ [\text{EV-}T_2]-[\text{UT-}T]]\rightarrow$

    (ii) $-[\text{EV-}T_1\ [\text{EV-}T_2]]-[\text{UT-}T]\rightarrow$

In both (38-b-i) and (38-b-ii), the embedded *singing* event (EV-T_1) and the matrix *loving* event (EV-T_2) overlap, as a consequence of the former including the latter. A sentence like (39) does not seem to be contradictory:

(39) Eu adorei que você cantou, mas não adorei você cantando.
      I   loved that you sang   but NEG loved you singing
      'I loved (the fact) that you sang, but I did not enjoy you singing.'

When the complement to *adorar* 'love' is a finite clause, there is no implication that the loving event/state and the event described in the finite complement clause are simultaneous. If the same meaning were conveyed by a GC selected for by this verb, (39) should be contradictory. Since there does not seem to be contradiction, we conclude that the GC complement to *adorar* does not require lack of simultaneity. That there is a positive requirement of simultaneity is suggested by the fact that *então* 'then' can be licensed in the propositional GC. Recall from the discussion in (32) that *então* favors an overlapping reading.

(40) O João adorou a   Maria cantando então.
      the João loved the Maria singing   then
      'João enjoyed Maria singing then.'

We may conclude that the analysis proposed for propositional GCs is consistent with the facts, as far as the simultaneity expressed in (38-b-i) and (38-b-ii) is concerned.

The difference between (38-b-i) and (38-b-ii) lies in whether or not the *singing* event also overlaps the utterance time. The ordering in (47-b-i) could be said to underlie the possibility of a propositional GC to be modified by an adverbial that is UT-T-oriented, like *now*.

(41) O João adorou a   Maria cantando agora.
       the João loved   the Maria singing   now
       'João enjoyed Maria signing now.'

As mentioned above, a plausible assumption seems to be that what underlies the licensing of *now* is overlap between EV-T and UT-T.

Recall from (22-b), repeated below, that propositional GCs do not allow for a temporal mismatch formed with a matrix past adverb and an embedded future adverb.

(42) *Ontem,   o João adorou a   Maria cantando amanhã.
       yesterday the João loved   the Maria singing   tomorrow
       'Yesterday, João enjoyed Maria singing tomorrow.'

The analysis proposed is compatible with this fact as well. Recall that I assume that, for a future-oriented adverb to be licensed, a temporal relation where the event follows the utterance time is required. In none of the temporal orderings obtained – (38-b-i) and (38-b-ii) – does this ordering hold.

Next we turn to *class 3* GCs, represented by the perceptual subtype. As mentioned above, these GCs seem to have a temporal interpretation that is quite similar to the interpretation displayed by the propositional GCs just considered. In other words, so far as temporal properties are concerned, *class 2* and *class 3* GCs cluster together. At first glance, this fact seems to be contrary to what the analysis proposed predicts. This is so because the analysis is based on different structures for each GC class and on the syntactic representation of tense relations. If *class 2* and *class 3* differ in structure, we would expect them to differ temporally as well. Does the analysis make an empirically wrong prediction? I will show below that it does not. Before getting to this, first we derive the temporal properties of perceptual GCs.

7.2.3   Temporal computation in *class 3* GCs

The temporal structure of a sentence like (43-a), where the complement is a perceptual GC, is (43-b). According to the analysis put forth here, *class 3* GCs like the perceptual one project only the minimal structure that a GC can have, namely, an AspP.

(43) a. O João ouviu a   Maria cantando.
           the João heard the Maria singing
           'João heard Maria singing.'

b.

```
                    TP
            ╱────────────╲
        UT-T             ╲
              T⁰          AspP
              │      ╱──────────╲
            after  AST-T₂        ╲
                   Asp⁰           VP
                    │      ╱──────────╲
                    ⊘    EV-T₂         ╲
                          V⁰            AspP
                          │      ╱──────────╲
                        heard  AST-T₁        ╲
                                  Asp⁰        VP
                                   │      ╱────────╲
                                 -ndo  EV-T₁       V⁰
                                within              │
                                                   sing
```
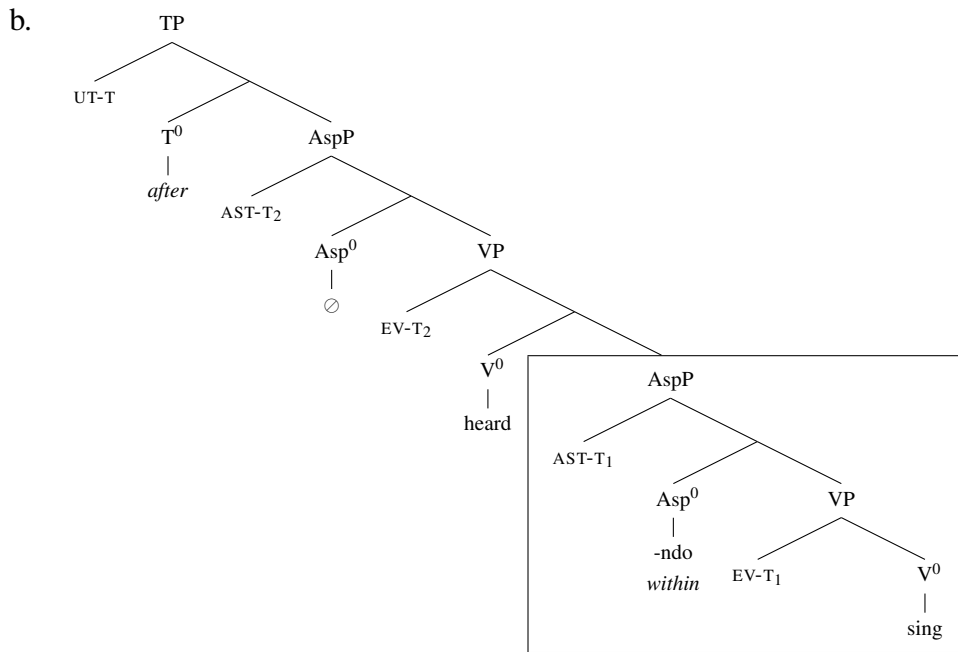
Given this simplicity, the only temporal computation effected in the perceptual GC is to order AST-T$_1$ within EV-T$_1$ – (44).

(44)   *Temporal computation: GC*
        $-$[EV-T$_1$ [AST-T$_1$]]$\rightarrow$

The temporal computation in the matrix clause is that same as that in (25), (37), where the complement is a desiderative and a propositional GC, respectively. The result of this computation is repeated in (45) below.

(45)   *Temporal computation: matrix*
        $-$[EV-T$_2$]$-$[UT-T]$\rightarrow$

Now we have to integrate the computation in the GC and that in the matrix clause. For the desiderative and propositional GCs, this was done by the "anaphoric *anchor time* hypothesis" (see (17-b)). For these GCs, this was the (hypothesized) principle resorted to because they both contain T and therefore *anchor time* too. For *class 3* GCs like the perceptual one, this principle is inapplicable, given that these structures do not contain T nor *anchor time*. Nevertheless, I assume that Full Interpretation should apply to temporal computation as well (as is the null hypothesis). The temporal interpreted principles I assume are repeated below:

(46)   a.   All temporal intervals must be interpretable, in compliance with the Principle of Full Interpretation.
        b.   For a temporal interval β to be interpretable, it must be ordered with respect to the first temporal interval α that c-commands it.
        c.   (i)   When all temporal predicates are projected, temporal ordering is determined by the temporal predicate *P*, which orders its external argument with respect

to its internal argument. *P* is T or Asp and its meaning ranges over *after*, *within* and *before*.

(ii)   In the absence of a *P*, β is bound by the closest c-commanding temporal interval α, so that β and α end up correferent.

The principle that can apply to perceptual GCs is (46-c-ii). In (43-b), the closest temporal argument that c-commands AST-T_1 is EV-T_2. By (46-c-ii), AST-T_1 and EV-T_2 end up correferential – (47-a).

(47)   *Temporal computation: GC + matrix*

a.   AST-T_1 = EV-T_2, by (46-c-ii)

b.   (i) $-$[EV-T_1 [EV-T_2]]$-$[UT-T]$\rightarrow$

(ii) $-$[EV-T_1 [EV-T_2]$-$[UT-T]]$\rightarrow$

As a consequence of the temporal computation in the GC – (44) –, EV-T_1 must include EV-T_2 (= AST-T_1, by (47-a)); as a consequence of the temporal computation in the matrix clause, EV-T_2 must precede UT-T – (45). These requirements are both satisfied in (47-b-i) and (47-b-ii). Because there is no direct instruction as to the ordering between EV-T_1 and UT-T, the former can optionally include the latter.

Notice that these are exactly the temporal orderings that result in the computation of the sentence where the complement is a propositional GC, repeated below:

(48)   a.   O   João adorou a   Maria cantando.
the João loved   the Maria singing
'João enjoyed Maria singing.'

b.   (i) $-$[EV-T_1 [EV-T_2]$-$[UT-T]]$\rightarrow$

(ii) $-$[EV-T_1 [EV-T_2]]$-$[UT-T]$\rightarrow$

Is the temporal similarity between *class 2* and *class 3* GCs contrary to the expectations yielded by the analysis? I propose three different classes of GCs, each of which bears a different clause structure. Given that I assume the structural representation of tense and aspect, as proposed by D&UE, should it not be the prediction that the temporal properties of *class 2* and *class 3* GCs are different?

I claim here that this prediction is correct, but that the temporal orderings that result in the sentences containing propositional (*class 2*) and perceptual (*class 3*) GCs end up similar, as a *byproduct* of the way these temporal properties are computed. I repeat below the relevant steps in the temporal computation of a sentence containing a propositional GC:

(49)   a. $-$[EV-T_1 [*anchor time*]]$\rightarrow$ *propositional GC*

b. $-$[EV-T_2]$-$[UT-T]$\rightarrow$ *matrix clause*

c.   *anchor time* = EV-T_2, by (17-b)

d.   (i) $-$[EV-T_1 [EV-T_2]$-$[UT-T]]$\rightarrow$ *GC + matrix*

(ii) $-[\text{EV-T}_1\ [\text{EV-T}_2]]-[\text{UT-T}]\rightarrow$

In propositional GCs, AST-T_1 and *anchor time* are correferent because T, although present in *class 2* GCs, remains empty throughout the derivation, since there is no C it could inherit features from. *Anchor time*, in turn, is bound by the matrix EV-T – (49-c) –, as a consequence of the hypothesis that the *anchor time* in a nonfinite clause is of anaphoric nature. Taking into account the temporal ordering that results in the matrix clause – (49-b) –, the outcome is that the GC's EV-T_1 ends up including the matrix EV-T_2 and may or may not include UT-T as well, given the lack of direct temporal ordering between EV-T_1 and UT-T.

The relevant steps in the temporal computation of a sentence containing a perceptual GC are repeated below for ease of comparison:

(50) a. $-[\text{EV-T}_1\ [\text{AST-T}_1]]\rightarrow$ *perceptual GC*

  b. $-[\text{EV-T}_2]-[\text{UT-T}]\rightarrow$ *matrix clause*

  c. $\text{AST-T}_1 = \text{EV-T}_2$, by (46-c-ii)

  d. (i) $-[\text{EV-T}_1\ [\text{EV-T}_2]]-[\text{UT-T}]\rightarrow$ *GC + matrix*

    (ii) $-[\text{EV-T}_1\ [\text{EV-T}_2]-[\text{UT-T}]]\rightarrow$

Now there is no *anchor time* to speak of because *class 3* GCs do not project TP. The top-most temporal argument in a perceptual GC is therefore AST-T. It also ends up correferent with the matrix EV-T – (50-c) –, just as in propositional GCs. However, the reason for this linking in sentences where the complement is a perceptual GC is Full Interpretation: all temporal intervals must be interpretable (otherwise, FI is violated) and, in the absence of a temporal predicate, this is done through binding by the closest c-commanding temporal interval. Ultimately, the result is again that the GC EV-T_1 ends up including the matrix EV-T_2, the inclusion optionally reaching UT-T. Nevertheless, the reasons behind those outputs differ. The temporal make-up in propositional GCs and in perceptual GCs differ (TP vs. AspP) and so does the principle of temporal interpretation responsible for the temporal relation between the matrix and the embedded GC (the need of anaphors to be bound vs. full interpretation).

In sum, the tripartite analysis provided seems to be consistent with temporal properties in complement GCs, contrary to prima facie impressions.

7.3 Temporal properties of adnominal GCs

A remarkable property of adnominal GCs (see section 4.5) is their temporal interpretation. As observed by Thompson (2001, 2005), a sentence like (51)[17] is ambiguous. It can mean either that the waiting event overlaps with the utterance time and they are both preceded by the complaining event – (51-a) – or that the waiting event overlaps the complaining event – (51-b).

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[17](51) is based on Thompson (2001, 290, (6)). Thompson's work is on English adnominal GCs, but as far as I can tell, the core of her description apply to BP as well.

(51)   [O passageiro esperando pelo   vôo   307] reclamou   com o   comissário de
             the passenger   waiting   for.the flight 307   complained with the commissary of
             bordo.
             board
             'The passenger waiting for flight 307 complained to the flight attendant.'

        a.   *Utterance time reading*: 'the passenger who is now waiting for flight 307 complained to the flight attendant'.

        b.   *Event time reading*: 'the passenger complained to the flight attendant while he was waiting for flight 307'.

In order to account for this temporal ambiguity, I follow Thompson (2001, 2005), who proposes that a subject[18] adnominal GC like that in (51) can be interpreted either in its base-generation position inside *v*P or in the position where it is pronounced, [Spec, TP]. From a conceptual point of view, that either of the copies of the adnominal GC is appropriate for interpretation falls out from the assumption that all copies of a moved element should be as good as any for interpretation.[19]

    Assuming D&UE's theory of temporal interpretation,[20] the temporal structure of (51) when the adnominal GC is in its moved position is that in (52). I assume that the moved position of the adnominal is below the *anchor time* argument of T (i.e., UT-T). I also assume that, in principle, the position of the adnominal GC with respect to UT-T is free. However, when the adnominal GC is above UT-T, no valid temporal interpretation results, so that this option is independently excluded.[21]

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[18]The proposal does not extend easily to adnominal GCs sitting in an object position, which are nevertheless also temporally ambiguous:

(i)   a.   O   comissário   de bordo reclamou   com [o   passageiro esperando pelo   vôo   307].
               the commissioner of board complained with the passenger   waiting   for.the flight 307
               'The flight attendant complained to the passenger waiting for the flight 307.'
        b.   1)   *The flight attendant complained to the passenger who is now waiting for flight 307.*
               2)   *The flight attendant complained to the passenger who was waiting for flight 307 at the time of the complaint.*

I have no explanation to this fact, which undermines the analysis I put forth here.

[19]See Thompson (2001, 2005) for a series of empirical arguments for the claim that the position where the adnominal GC is interpreted is relevant for its temporal interpretation. Her data includes coordination, existential *there*, scope of quantificational and cardinality adverbials, extraposition, presuppositionality and binding effects.

[20]Thompson (2001, 2005) is a neo-Reichenbachian analysis based on Hornstein (1990). I assume D&UE here for uniformity reasons and because it proves to be an adequate theory to account for temporal properties in GCs. Nonetheless, I make no comparison between a Reichenbachian system of temporal interpretation and that in D&UE. For some comments, see Demirdache and Uribe-Etxebarria (2000, 2004, 2007).

[21]This is so because, if the adnominal GC is above all time intervals, its temporal structure cannot be integrated with that in the matrix clause, because no matrix time interval c-commands it.

(52)

```
                              TP
                  ╱────────────────────────╲
              UT-T                          ╲
                        ╱─────────────────────────╲
                    ┌─────────────────┐      ╱         ╲
                    │   AspP          │    T⁰          AspP
                    │  ╱────╲         │    │        ╱─────────╲
                    │ AST-T₁  ╲       │  after   AST-T₂        ╲
                    │      Asp⁰  VP   │        ╱──────╲      ╱────────╲
                    │       │  ╱──╲   │     Asp⁰       VP  
                    │     -ndo EV-T₁ V⁰│      │      ╱────────╲
                    │    within    │  │      ⊘   EV-T₂        ╲
                    │            wait │          ╱────╲        V⁰
                    └─────────────────┘        A̶s̶p̶P̶    V⁰       │
                                                              complained
```

The temporal computation of the adnominal GC is that of *class 3* GCs, as just seen in section 7.2.3 above. I proposed that the gerund morpheme uniformly contributes progressive meaning, which is translated as the temporal predicate *within*, under D&UE's system. This predicate orders AST-T$_1$ inside EV-T$_1$ – (53).

(53)   *Temporal computation: GC*
        –[EV-T$_1$ [AST-T$_1$]]→

In the matrix clause, the aspectual head is morphologically null, so that the temporal intervals that are its arguments end up correferent – (54-a). The matrix tense is past, so that UT-T follows AST-T$_2$ – (54-b). The ultimate result of this temporal computation is (54-c), where EV-T$_2$ precedes UT-T.

(54)   *Temporal computation: matrix*

        a.   AST-T$_2$ = EV-T$_2$
        b.   –[AST-T$_2$]–[UT-T]→
        c.   –[EV-T$_2$]–[UT-T]→

In order to bring together the GC and the matrix temporal computations, the appropriate principle is that governing time intervals that are not c-commanded by a temporal predicate, (46-c-ii). The closest time interval that c-commands AST-T$_1$ in (52) is the matrix UT-T. By (46-c-ii), these time intervals end up correferent – (55-a). As a consequence, two temporal orderings result, (55-b-i) and (55-b-ii). In (55-b-i), EV-T$_1$ immediately includes AST-T$_1$ (and UT-T), in accordance with (53). EV-T$_2$ in turn precedes UT-T (and AST-T$_1$), in accordance with (54-c). Because there is no specific instruction as to the order between EV-T$_1$ and EV-T$_2$, the former can also include the latter, as in (55-b-ii), where the aforementioned temporal ordering requirements are also complied with.

(55) *Temporal computation: GC + matrix*

    a. $\text{AST-T}_1 = \text{UT-T}$, by (46-c-ii)

    b.   (i) $-[\text{EV-T}_2]-[\text{EV-T}_1 \ [\text{AST-T}_1 = \text{UT-T}]]\rightarrow$

          (ii) $-[\text{EV-T}_1 \ [\text{EV-T}_2]-[\text{AST-T}_1 = \text{UT-T}]]\rightarrow$

In both (55-b-i) and (55-b-ii), the GC EV-T_1 includes the UT-T. This may capture the reading (51-a) of (51), where the GC event of waiting overlaps with the utterance time.

    This is one of the readings available for (51), but not the only one. In order to derive the reading where the adnominal GC event overlaps with the matrix event, it is the base-generation copy inside the matrix vP that is relevant for temporal interpretation. The structure is that in (56). I assume that the adnominal GC is below the highest time interval of the layer where the adnominal GC sits.

(56)
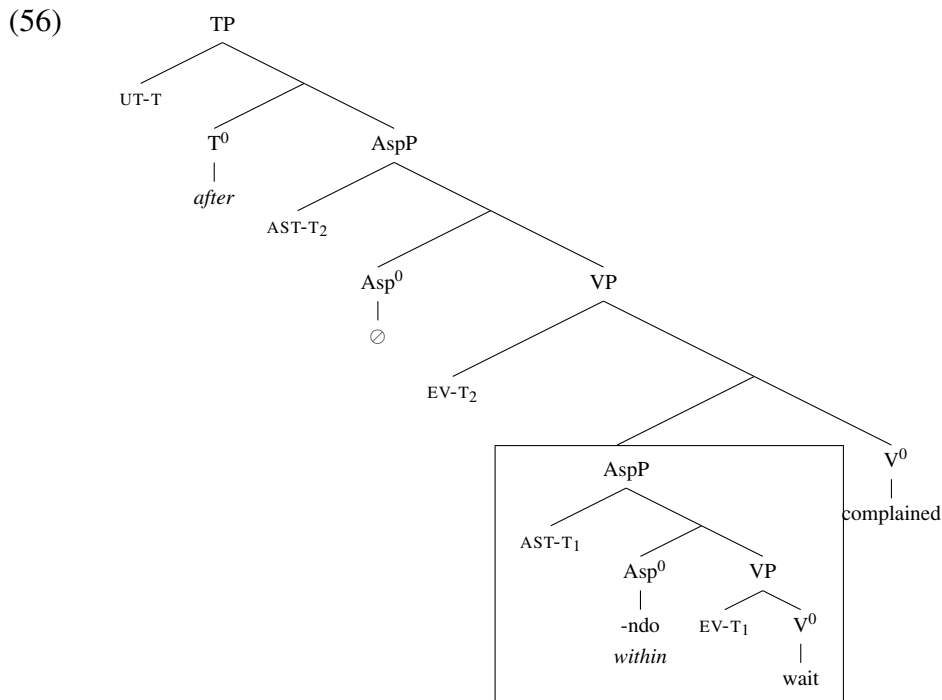
Because only the position of the adnominal GC changed, the temporal computation of the GC is exactly the same as that in (53) and so is that in the matrix clause – (54-c). The difference lies in what binds the AST-T of the GC. In (56), the closest time interval that c-commands AST-T_1 is the matrix EV-T_2. Two temporal orderings result, (57-b-i) and (57-b-ii). In both, EV-T_1 includes AST-T_1 (and EV-T_2), as required by (53) and EV-_2 precedes UT-T, as required by (54-c). The difference between (57-b-i) and (57-b-ii) is that, in the latter, but not in the former, EV-T_1 also includes UT-T. This is a possibility because there is no direct instruction that relates them.

(57) *Temporal computation: GC + matrix*

    a. $\text{AST-T}_1 = \text{EV-T}_2$, by (46-c-ii)

    b.   (i) $-[\text{EV-T}_1 \ [\text{EV-T}_2]]-[\text{UT-T}]\rightarrow$

          (ii) $-[\text{EV-T}_1 \ [\text{EV-T}_2]-[\text{UT-T}]]\rightarrow$

In both (57-b-i) and (57-b-ii), the GC event of waiting and the matrix event of complaining are simultaneous because the former includes the latter. This is the reading (51-b) of (51).

The analysis put forth here seems to account for the temporal ambiguity of a sentence the subject of which is an adnominal GC. The ingredients necessary to derive this fact were: (i) the null hypothesis that all copies of a moved element are legitimate objects for interpretation; (ii) the position of adnominal GCs is below the highest time interval of the layer where it is interpreted; (iii) the system of temporal interpretation in D&UE.

In the next section, we turn to the temporal properties of another adjunct GC, namely, high adverbials.

7.4 Temporal properties of high adverbials

High adverbial GCs (see section 3.3) pose two challenges to accounts of temporal interpretation. Firstly, there is no overt indication (in the form of a connective, for example) as to how the event in the matrix clause and that in the GC should be ordered. How does this ordering come to be? Secondly, it is possible for high adverbials to be in the progressive of the perfect form, which seems to be unavailable elsewhere. Why is this "exception" possible? We turn to each of these questions in the next sections.

7.4.1 Temporal ordering in the absence of connectives

Instances of sentences containing high adverbial GCs are below. These GCs can convey a causal or a conditional reading.[22]

(58) *Causal high adverbial*

   a. O   João trabalhando com mais afinco, a   firma   terminou o   trabalho.
       the João working   with more earnest the company finished   the job
       'Because João worked more earnestly, the company finished the job.'

   b. Trabalhando com mais afinco, o   João terminou o   trabalho.
       working   with more earnest the João finished   the job
       'Because he worked more earnestly, João finished the job.'

(59) *Conditional high adverbial*

   a. O   João trabalhando com mais afinco, a   firma   vai   terminar o   trabalho.
       the João working   with more earnest the company goes to-finish the job
       'If João works more earnestly, the company will finish the job.'

   b. Trabalhando com mais afinco, o   João vai   terminar o   trabalho.
       working   with more earnest the João goes to-finish the job
       'If he works more earnestly, João will finish the job.'

---

[22]In the (a) examples, the subject of the GC is overt (*o João*); in the (b) examples, it is empty. As far as I can tell, this property of the subject does not change the interpretation of the overall sentence.

There is no overt indication of how the events described in each clause (matrix clause and GC) should be ordered and yet they seem to be unambiguously ordered. For both causal and conditional GCs, the GC event (*work-more-earnestly*) precedes the matrix event (*finish-the-job*).

Given these data, two questions spring to mind: how does this ordering come about? Why are the high adverbial GCs above interpreted causally or conditionally when there is no overt instruction for such interpretations? I claim that a building block in the answer for both questions can be provided by the analysis here, which relies on two ingredients. First, high adverbials are *class 1* GCs (see 3.3 above). These GCs project CP and can thus have their own tense specification via C-to-T feature inheritance. Secondly, I assume D&UE's system of temporal interpretation, modified with some hypothesis concerning temporal interpretation in nonfinite clauses.

7.4.1.1 Causal high adverbial

First we take up high adverbials interpreted causally. In order to identify the tense in these structures, I rely on the distribution of temporal adverbs like *yesterday*, *now* and *tomorrow*, under the assumption that they are licensed by an appropriate tense predicate – *after* (past), *within* (present) and *before* (future), respectively.

(60)   a.   O   João trabalhando com mais afinco ontem/*agora/*amanhã, a   firma
             the João working   with more earnest yesterday/now/tomorrow the company
             terminou o   trabalho.
             finished   the job
             'Because João worked more earnestly yesterday, the company finished the job.'

        b.   Trabalhando com mais afinco   ontem/*agora/*amanhã,   o   João terminou o
             working   with more earnest yesterday/now/tomorrow the João finished   the
             trabalho.
             job
             'Because he worked more earnestly yesterday, João finished the job.'

As seen in the contrasts above, only the past-oriented adverb *yesterday* is possible. I take this to mean that the tense the T in a causal high adverbial inherits from C is *after*. This is consistent with the distribution of temporal adverbials in root clauses such as (61) below, where the tense is overtly past.

(61)   John worked more earnestly yesterday/*now/*tomorrow.

Hence, the temporal structure of a sentence like those in (60) is as in (62). Recall from section 3.3 that I assume that high adverbials, although pronounced in the position annotated as *P*, are interpreted in the position immediately dominated by X, which is between AspP and the verbal projections. Since temporal ordering is also a matter of interpretation, I assume that temporal computation also depends on this lower position.

(62) *Temporal structure of a causal high adverbial*
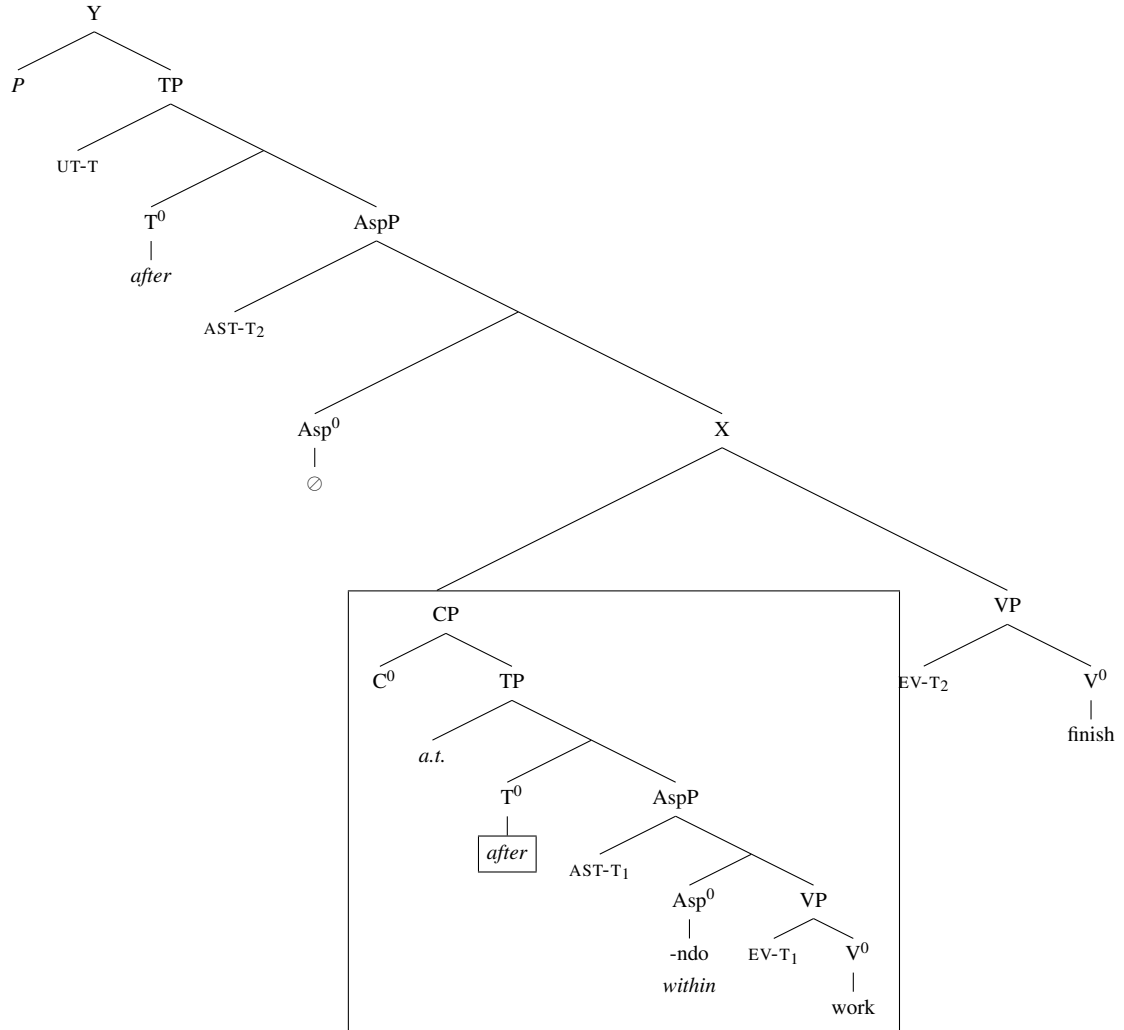
In the temporal computation of the causal high adverbial, the temporal contribution of the gerund morpheme, which I take to be uniformly *within*, orders AST-T_1 inside EV-T_1 – (63-a). Then tense, which we found out to be past, orders the *anchor time* after AST-T_1 – (63-b). Bringing together these two instructions, there are two possible outcomes, (63-c-i) and (63-c-ii). In both, EV-T_1 includes AST-T_1 and the latter precedes *anchor time*, as required. The difference lies in whether or not EV-T_1 also includes *anchor time*, since there is no direct instruction to order these time intervals.

(63) *Temporal computation: GC*

    a. $-$[EV-T_1 [AST-T_1]]$\rightarrow$

    b. $-$[AST-T_1]$-$[*anchor time*]$\rightarrow$

    c.   (i) $-$[EV-T_1 [AST-T_1]]$-$[*anchor time*]$\rightarrow$

            (ii) $-$[EV-T_1 [AST-T_1]$-$[*anchor time*]]$\rightarrow$

In the matrix clause, because Asp is morphologically empty, its external argument binds the internal argument, so that AST-T_2 and EV-T_2 end up correferential – (64-a). Past tense then orders UT-T after AST-T_2 – (64-b). The final ordering is (64-c), where EV-T_2 precedes UT-T.

(64)   *Temporal computation: matrix*

    a.   AST-T_2 = EV-T_2

    b.   –[AST-T_2]–[UT-T]$\rightarrow$

    c.   –[EV-T_2]–[UT-T]$\rightarrow$

In order to integrate the temporal computation in the GC and in the matrix clause, because *anchor time* is present in the GC structure, I rely on hypothesis (17), repeated below:

(65)   *Anchor time* in nonfinite clauses is anaphoric.

In the structure in (62), the closest time interval that c-commands *anchor time* is AST-T_2, hence (66-a). Recall that AST-T_2 is itself correferent with EV-T_2 – (64-a). Three temporal orderings result, (66-b-i)–(66-b-iii). In all of them, EV-T_1 includes AST-T_1 – (63-a), the latter of which precedes EV-T_2, as a consequence of (63-b), in combination with (66-a) and (64-a). Finally, in all three resulting temporal orderings, EV-T_2 also precedes UT-T – (64-c). The difference between the orderings consists in whether or not EV-T_1 also includes EV-T_2 and UT-T.

(66)   a.   *anchor time* = AST-T_2, by (65)

    b.   (i)   –[EV-T_1 [AST-T_1]]–[EV-T_2]–[UT-T]$\rightarrow$

        (ii)   –[EV-T_1 [AST-T_1]–[EV-T_2]]–[UT-T]$\rightarrow$

        (iii) –[EV-T_1 [AST-T_1]–[EV-T_2]–[UT-T]]$\rightarrow$

Now what are these orderings telling us? Recall that, under D&UE's system of temporal interpretation, only the AST-T portion of an EV-T is accessible for temporal interpretation. In (66-b-i)–(66-b-iii), despite the differences, AST-T_1 always precedes EV-T_2, which in turn always precedes UT-T. The three orderings can be collapsed into a single one:

(67)   –[*working*]–[*finished*]–[UT-T]$\rightarrow$

The resulting ordering seems to be consistent with the interpretation of sentences such as (60). We arrived at this ordering without making any reference to a covert connective relating the matrix clause and the GC. This ordering obtained as a consequence of the temporal make-up of a *class 1* GC like the high adverbial, along to the hypothesis that *anchor time* in nonfinite clauses is anaphoric.

This accounts for the ordering between the matrix and the GC events, but not for the causal reading. To this puzzle, I do not have an answer. Wildly guessing though, it may be the case that the causal reading somehow is contingent on the ordering in (67). In *cause-consequence* relations, the cause precedes the consequence logically and probably chronologically too. Given that the latter comes for free in the structure in (62), given appropriate ingredients to be identified, the causal reading could fall out as well.

7.4.1.2 Conditional high adverbial

We now turn to high adverbials which are interpreted conditionally. I rely again on the distribution of temporal adverbials in order to identify the tense the high adverbial T inherits from C.

(68)   a.   O João trabalhando com mais afinco *ontem/agora/amanhã,   a   firma
the João working   with more earnest yesterday/now/tomorrow the company
vai   terminar o   trabalho.
goes to-finish the job
'If João works more earnestly now/tomorrow, the company will finish the job.'

       b.   Trabalhando com mais afinco *ontem/agora/amanhã,   o   João vai   terminar
working   with more earnest yesterday/now/tomorrow the João goes to-finish
o   trabalho.
the job
'If he works more earnestly now/tomorrow, João will finish the job.'

Now the past-oriented adverb *yesterday* is ruled out, but the present- and future-oriented ones are possible. Should we conclude that a high adverbial can inherit either present (*within*) or future (*before*) tense from C? Maybe not. The same behavior witnessed in the conditional high adverbials in (68) is found in present root clauses (69-a), where both *now* and *tomorrow* can be licensed. In future root clauses – (69-b) –, in contrast, only *tomorrow* is possible.

(69)   a.   John works more earnestly *yesterday/now/tomorrow[23].

       b.   John will work more earnestly *yesterday/*now[24]/tomorrow.

Based on these contrasts, I assume that the tense in conditional high adverbials is present, *within*, in D&UE's terms. The temporal structure of the sentences in (68) is thus (70).

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[23]For a neo-Reichenbachian explanation as to why *tomorrow* can modify a present tense sentence, see Hornstein (1990). The gist of the proposal is that temporal modification should preserve ordering between temporal points and should also not create associations between them that are not previously existing. Modification of a present tense structure by *tomorrow* complies with both requirements.

[24]*John will work more earnestly now* is a well-formed sequence, but the relation between the future tense and *now* does not seem to be one of temporal modification, that is, the sentence does not seem to convey the meaning that the event of John working earnestly takes place at some point after the utterance time. Rather the whole sentence seems to convey the promise that John will presently start working more earnestly.

(70)   *Temporal structure of a conditional high adverbial*
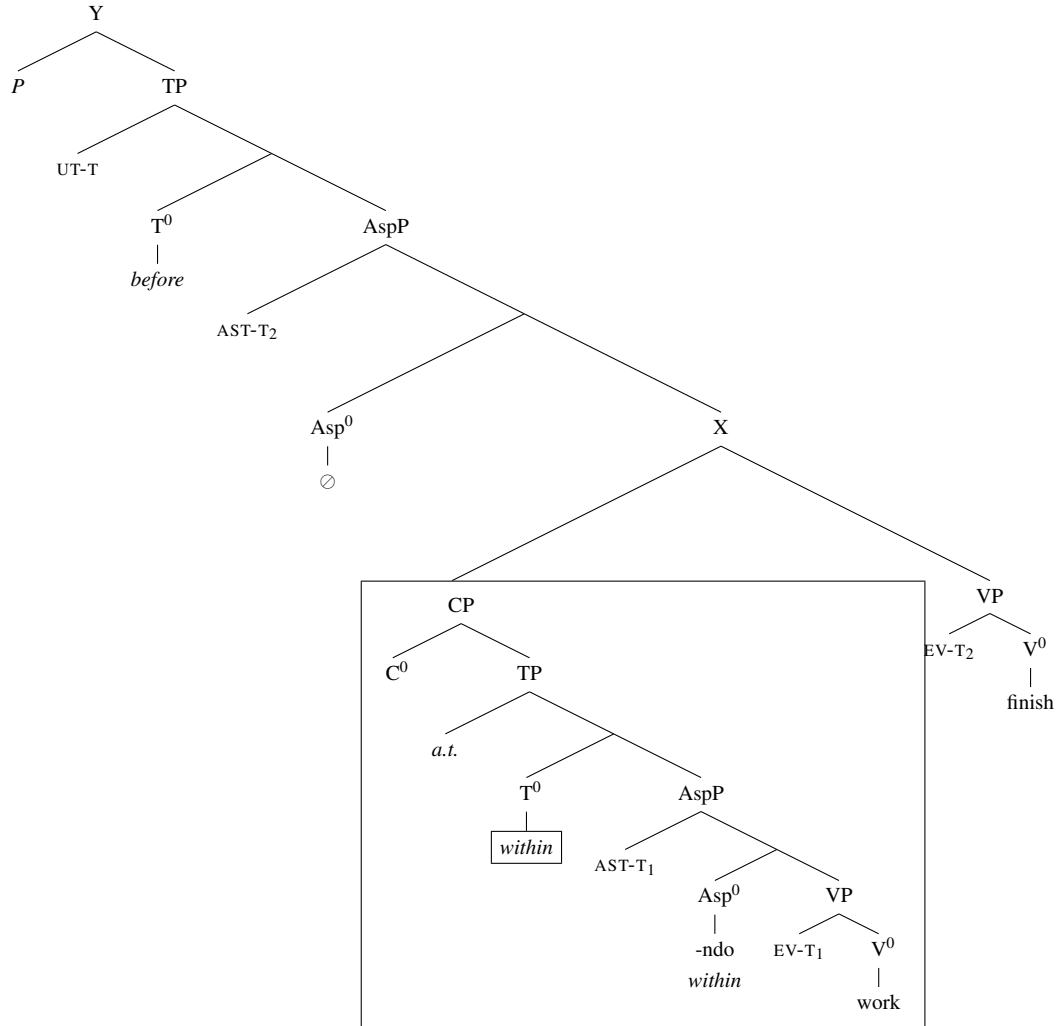
In the GC, the gerund morpheme orders AST-T_1 within EV-T_1 – (71-a). Present tense then orders *anchor time* within AST-T_1 – (71-b). The unambiguous final result is (71-c), where EV-T_1 includes AST-T_1, which in turn includes *anchor time*.

(71)   *Temporal computation: GC*

    a. $-$[EV-T_1 [AST-T_1]]$\rightarrow$

    b. $-$[AST-T_1 [*anchor time*]]$\rightarrow$

    c. $-$[EV-T_1 [AST-T_1 [*anchor time*]]]$\rightarrow$

In the matrix clause, AST-T_2 and EV-T_2 are correferent – (72-a) – because Asp is morphologically null. Future tense then orders UT-T before AST-T_2 – (72-b). The result is (72-c), where UT-T precedes EV-T_2.

(72)   *Temporal computation: matrix*

    a.   AST-T_2 = EV-T_2

    b. $-$[UT-T]$-$[AST-T_2]$\rightarrow$

    c. $-$[UT-T]$-$[EV-T_2]$\rightarrow$

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Because *anchor time* is present in the structure of a high adverbial, what is relevant to integrate the matrix clause and the GC is the hypothesis that the *anchor time* in a nonfinite clause is anaphoric. The closest time interval that c-commands *anchor time* in (70) is AST-T_2 – (73-a). Three temporal orderings can result, (73-b-i)–(73-b-iii). In all of them, UT-T precedes EV-T_2 – (72-c). In addition, in all of these orderings, it is also the case that AST-T_1 includes EV-T_2, as a consequence of (71-b), in combination with (72-a) and (73-a). Since there is no direct ordering between AST-T_1 and UT-T, the former can optionally, but not necessarily, include the latter too. Finally, in all the three resulting orderings, EV-T_1 also includes AST-T_1 – (71-a). Because there is no direct ordering between EV-T_1 and with UT-T, nor between EV-T_1 and EV-T_2, EV-T_1 can optionally, but not necessarily, include the latter two as well.

(73)   *Temporal computation: GC + matrix*

    a.   *anchor time* = AST-T_2, by (65)

    b.   (i) $-[\text{UT-T}]-[\text{EV-}T_1\ [\text{AST-}T_1\ [\text{EV-}T_2]]]\rightarrow$

        (ii) $-[\text{EV-}T_1\ [\text{AST-}T_1\ [\text{UT-T}]-[\text{EV-}T_2]]]\rightarrow$

        (iii) $-[\text{EV-}T_1\ [\text{UT-T}]-[\text{AST-}T_1\ [\text{EV-}T_2]]]\rightarrow$

Bearing in mind that only the AST-T subinterval of EV-T is accessible for interpretation, the three temporal orderings in (73-b-i)-(73-b-iii) reduce to the two schemas below:

(74)   a. $-[\text{UT-T}]-[\textit{working}\ [\textit{will finish}]]\rightarrow$

    b. $-[\textit{working}\ [\text{UT-T}]-[\textit{will finish}]]\rightarrow$

These orderings seem to correspond to facts. In the sentences in (68), the finishing of the job is a potential event that is to take place in the future. In both schemas (74-a) and (74-b) this ordering obtains. The difference between them lies in whether the working event also starts somewhere in the future and is still going on by the time the finishing event takes place or the working event starts at some indeterminate point in the past and stretches in such a way that it overlaps not only the utterance time, but also the finishing event. In any case, it seems to be the case that the starting point of the working event is before the starting point of the finishing.

These two orderings (finishing after utterance time and working before finishing) are obtained in the absence of any overt connective. It suffices that the high adverbial contains an anaphoric *anchor time*, which has to be bound by a matrix time interval, thereby providing a temporal relation between the matrix clause and the GC. Again, these orderings may not be enough to account for the conditional reading of sentences such as (68). Nevertheless, the speculations I formulated concerning causal high adverbials may also apply here. These orderings may be one of the ingredients to arrive at a conditional reading. In fact, in "full" conditional sentences, it is also the case that the conditional logically precedes the potential consequent, analogously to the chronological precedence between the GC event and the matrix event.

Next, I turn to the second temporal puzzle posed by high adverbials, namely, the fact that they allow for progressive and perfect aspectual combination, which seems to be otherwise

unattested.

7.4.2 A challenge to theories of temporal interpretation: progressive of the perfect in high adverbials

In this section, I describe an empirical challenge that high adverbials seem to pose to theories of temporal interpretation, namely, the fact that they seem to allow for an instance of aspectual recursion that is unattested elsewhere. I have no solution to this problem, but I think it is worth to raise awareness to it.

In D&UE's system of temporal interpretation, there are three aspectual predicates, *after*, *within* and *before*. Although it is possible to combine those predicates, not all logically possible combinations yield well-formed constructions. For example, the combination between perfect (*after*) and progressive (*within*) aspect is well-formed, as we can see in (75-a). In contrast, if the combination is the other way around, the result is ill-formed, as we can see in (75-b).

(75) a. Kim has/had been working.   ✓*perfect of progressive*
      b. *Kim is/was having worked.   **progressive of perfect*
          (from Demirdache and Uribe-Etxebarria 2007, 349, (36))

In order to explain the possibilities and impossibilities of aspectual recursion, D&UE propose that temporal computation must be semantically optimal:

(76) *Temporal Computation Economy*
      A given temporal construal must be achieved in an optimal manner. That is, no step in
      the temporal derivation may be semantically vacuous, temporally uninformative. Each
      step must yield a temporally distinct construal.
      (from Demirdache and Uribe-Etxebarria 2007, 349, (34))

The relevant parts of the temporal structures of (75-a) and (75-b) and the resulting temporal computation are below.

(77) a. Kim has/had been working.
      b. $[_{AspP2}$ AST-T$_2$ *after* $[_{AspP1}$ AST-T$_1$ *within* $[_{VP}$ EV-T $]]]$
      c. (i) $-$[AST-T$_2$]$-$[EV-T [AST-T$_1$]]$\rightarrow$
          (ii) $-$[EV-T [AST-T$_2$]$-$[AST-T$_1$]]$\rightarrow$

(78) a. *Kim is/was being working.
      b. $[_{AspP2}$ AST-T$_2$ *within* $[_{AspP1}$ AST-T$_1$ *after* $[_{VP}$ EV-T $]]]$
      c. $-$[EV-T]$-$[AST-T$_1$ [AST-T$_2$]]$\rightarrow$

Both orderings (77-c-i) and (77-c-ii) are legitimate according to the principle of temporal economy (76) because each of the two instances of AST-T picks out a different portion of the EV-T.

In (77-c-i), AST-T$_1$ picks out a subinterval inside EV-T, while AST-T$_2$, a subinterval before EV-T. In (77-c-ii), each instance of AST-T picks out a different subinterval inside EV-T. Because AST-T$_1$ and AST-T$_2$ are unambiguously ordered with respect to each other, they pick out different subintervals.

In contrast, in (78-c), AST-T$_2$ picks out a subinterval inside AST-T$_1$, so that there is no new information added to the computation of temporal ordering: AST-T$_2$ picks out a subinterval within the subinterval of EV-T that has already been picked out by AST-T$_1$. This amounts to a violation of (76).

Bearing these data and discussion in mind, let us consider the following high adverbial GCs:

(79) a. O João tendo trabalhado ontem/*agora/*amanhã   com afinco, a   firma
          the João having worked   yesterday/now/tomorrow with earnest the company
          terminou o   trabalho.
          finished   the job
          'Because João had worked earnestly yesterday, the company finished the job.'
      b. Tendo trabalhado ontem/*agora/*amanhã   com afinco, o   João terminou o
          having worked   yesterday/now/tomorrow with earnest the João finished   the
          trabalho.
          job
          'Because he had worked earnestly yesterday, João finished the job.'

The high adverbials above seem to include an instance of the progressive of perfect aspectual recursion, which, as we saw in (75-b), is ungrammatical. If this is indeed the case, we must inquire why it is possible for this GC subtype to contain a type of aspect iteration that is otherwise prohibited.

First though, we must determine whether or not *tendo trabalhado* 'having worked' in (79) really is a case of progressive of perfect recursion. The temporal structure of the sentences in (79) is (80) below. By the assumptions I make here, the pattern of adverbial modification in (79) suggests that the tense in the high adverbial is past. Consistent with this is the causal interpretation of these adverbials (see section 7.4.1.1 above).

(80)

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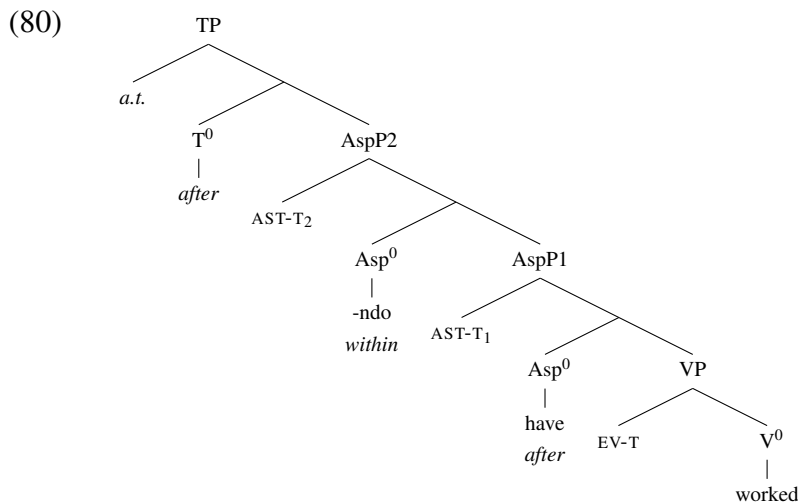
Assuming that an auxiliar determines the form of a verb locally,[25] (80) also seems to be an adequate structure, since the lower aspectual predicate, the morphological realization of which is *ter* 'have', is close[26] to the lexical verb *trabalhado* 'worked', thereby capturing the participial morphology in *worked*. Later on in the derivation *have* raises to $\{-ndo\}$, as is usual the case in BP, so that the verbal cluster is realized ad *tendo* 'having'. In sum, the structure in (80) seems to be consistent with the morphological properties of the high adverbials in (79).

However, if (80) is the right configuration, it is identical to (78-b), the temporal structure that was instrumental for D&UE to provide an account for the ill-formedness of (75-b). Why does it not cause the derivation to crash due to a violation of the principle of semantic economy in (76)? I have no solution to this puzzle, but I think it is important to point it out, for, as far as I am aware, there is yet no account for this contrast. Regardless of the theory of temporal interpretation assumed, the ill-formedness of (75-b), as opposed to the well-formedness of (79), is an empirical fact and as such a theory of temporal interpretation must account for it.

7.5 Conclusion

In this chapter, I tried to show that the analysis advanced for GCs in BP is consistent with the temporal properties of these constructions. According to this analysis, there are three classes of GCs, such that they differ in the complexity of their structural make-up. *Class 1* GCs project the richest structure, the topmost projection of which is CP. *Class 3* GCs, on the other hand, are the simplest structures, projecting only up to AspP. *Class 2* GCs, in turn have a structure of intermediate size: they project TP, so that they are smaller than *class 1*, but bigger than *class 3*. Assuming feature inheritance, the consequence of these different structures is that only *class 1* GCs will have a tense specification of their own. The other two classes lack at least one ingredient for feature inheritance to take place.

The *class 1* GCs considered here displayed each one of the temporal predicates listed in the restricted inventory in D&UE: desiderative GCs inherit future tense (*before*, in D&UE's terms), causal high adverbials, past (*after*) and conditional high adverbials, present (*within*). These two ingredients – inheritance of tense and D&UE's system of temporal interpretation – taken together seem to help us account for the temporal interpretation possibilities displayed by sentences containing complement desiderative GCs and high adverbials. Speculatively, the temporal orderings that result in the latter may be what is behind the fact that high adverbials can be interpreted causally or conditionally in the absence of an overt connective. This speculation must obviously be verified.

The similarities between propositional and perceptual GCs, representatives of *class 2* and *class 3*, respectively, were also discussed. In view of the ingredients of the analysis, the pre-

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[25] See, for example, Lunguinho (2011).

[26] I will not define precisely 'closeness' here. Suffice it to say that *have* c-commands the lexical verb *worked* and there is no intervening element between them.

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diction is that these GCs should behave differently, since their structures are different. However, they proved to be temporally identical. What I tried to show is that the analysis provided does indeed make the right prediction, only the temporal computation of the sentences containing propositional and perceptual GCs end up similar as a collateral effect of their temporal structure, in conjunction with the different principles that act in order to integrate the temporal computation in the GC and that in the matrix clause.

In this chapter, we also saw the analysis, based on Thompson (2001, 2005), of adnominal GCs in subject position, which can have either an utterance time reading or an event time reading. In order to derive these readings, I resorted to an assumption that is important throughout this dissertation, namely, the assumption that any copy is as good as any for interpretation. The UT-T reading of the adnominal GC results when it is interpreted in [Spec, TP], the position where it is pronounced. The event time reading results when the adnominal GCs is interpreted in its base-generation position inside *v*P.

Finally, I pointed out that high adverbials may introduce a challenge for theories of temporal interpretation because they seem to allow for an instance of aspectual recursion (i.e., the progressive of the perfect) that is unavailable elsewhere. I was unable to provide a solution to this puzzle, but thought it worthwhile to keep track of it.

Chapter 8

Concluding remarks

The major claims I make in this dissertation are the following. Firstly, I proposed that there are three classes of GCs in BP, such that they differ in the size of their structure. Secondly, despite the seemingly wide range of GC subtypes, it is possible to provide a uniform account for their particular properties. There is no need to stipulate neither the three classes nor these particular properties; they just fall out from the independent resources and restrictions of the computational system, coupled with specific characteristics of certain lexical items.

In the next sections, I list aspects of the analysis I am dissatisfied with, but which I was unable to correct in time. I also mention some ways the investigation of GCs can continue.

8.1   Inconsistencies and problems in the analysis

What I tried to do in this dissertation was to derive the properties of each GC subtype from the way their computation proceeds. In chapter 2, I tried to provide conceptual arguments in favor of the computational system I assume. However, even though most of the arguments were consistent with independent minimalist assumptions, I think the arguments could go in any other direction; I just conveniently chose the direction that seemed to best fit the data. Clearer conceptual arguments and independent empirical motivation are necessary to improve the analysis.

Still in the subject of the computational system, although I assumed minimalist desiderata of economy, efficiency and elegance, I think the system is overly complicated and even unclear at times. I admit the proposal that the extended projection of a given lexical item can participate in syntactic operations like Agree is strange. And maybe so is the Bare Phrase Structure-based proposal that any projection is visible for these operations. Even though I tried to rely on the independent basis of Bare Phrase Structure and of extended projections, I made these proposals specifically to accommodate the derivation of *class 2* GCs. The gerund morpheme to be Case-marked by an external valuer is in Asp, but between them is the TP layer characteristic of this class. I take this TP to be an extended projection, so that it could allow Case valuation to go

through. On the one hand, the proposal of an intermediate GC class was important to capture the behavior of some GCs that display some properties of *class 1* and some properties of *class 3* GCs without being reducible to either. On the other hand, I had to introduce a complication in the system in order to account for this intermediate class.

Another rather strange strategy was the proposal that the highest copy of a moved element probes the structure in order to value the unvalued features of the lower copies. I think something along these lines has to be resorted to if we assume the copy theory of movement because otherwise the unvalued features of the lower copies would cause the derivation to crash at LF. Yet, the technical implementation I assume fits badly with the rest of the system because the highest copy, having had all its features valued, should not act as a probe. From an empirical point of view, this proposal was important to account for the valuation of the Case feature I ascribed to the gerund morpheme. On the one hand, I tried to provide empirical support for this claim. In addition, this feature was important in the derivation of the definiteness effects in existential GCs and of the *PRO* variant of high adverbials. On the other hand, in raising constructions where the subject of the GC is moved all the way to the matrix subject position and in low adverbials, there is no source for the valuation of the Case. I tried to solve this problem by resorting to probing of lower copies by the higher copy. The success of this attempt remains to be evaluated.

A more specific problem concerns *class 1* GCs. If they are self-sufficient for Case, why is it not the case that they occur in more syntactic environments? Crucially, why do we not find *class 1* GCs as root clauses, given that they are self-sufficient for Case? Maybe the hypothesis that the *anchor time* in nonfinite clauses is anaphoric (see section 7.1.3) can help restrict the distribution of *class 1* GCs: because one of its components is anaphoric, it cannot occur independently, that is, as a root clause because this would amount to *anchor time* not being appropriately licensed.

On the more empirical side, there is a basic problem in the description of the data, specially concerning inverse scope readings. Judgments are far from uncontroversial. Nevertheless, there seems to be some scope distinction, so that the description has to be refined. Furthermore, inverse scope was one of the empirical properties I based the analysis on, so that it is of undeniable relevance to improve this part of the description.

Finally, one of the major empirical problems of the dissertation concerns what I grouped under the heading 'propositional GCs'. This included rather diverse selecting predicates, namely, *adorar* 'love', *gostar* 'love', *imaginar* 'imagine' and *considerar* 'consider'. The GCs subcategorized for by these verbs do not behave exactly alike along the properties that I used to describe GCs here. I failed to provide a thorough description of these GC subtypes and also an explanation of these differences. Instead, I emphasized what seemed to be a necessary maneuver, namely, that there were an intermediate class which behaved like *class 1* GCs with respect to TP-dependent properties, but like *class 3* GCs with respect to phase-dependent properties. With this in mind, I glossed over the individual "deviances" of the GC subtypes that I clustered together as propositional GCs. In the future, it is necessary to provide proper description and

analysis for each of them.

Despite these problems, I think this dissertation at least provides a way of identifying some of the questions GCs in BP raise. In the next section, I mention some avenues the research can take.

8.2 Some ways of continuing the investigation

I list here a few questions future investigations can ask. First of all, there are possibilities of comparison within BP, both with other nonfinite domains and with progressive constructions.

(1)   a.   What are the similarities and differences between GCs and infinitival clauses in BP? What about participial clauses? What underlies these similarities and differences?

        b.   Is there any relation between GCs and the gerund morpheme used in progressive aspectual constructions? Is the latter built from the same $\{-ndo\}$ morpheme with an unvalued Case feature I proposed for GCs?

Comparisons are also possible with analogous constructions in other Romance languages and in English.

(2)   a.   How can BP GCs compare with gerund constructions in other Romance languages?

        b.   Why are there similarities between GCs in BP and GCs in English? What causes the differences in distribution?

From a diachronic point of view, a question that GCs raise is how they evolved in the language.

(3)   It seems to be the case that what is a gerund clause today in BP started out as an adjunct clause like the low adverbials we looked at in sections 4.4 and 6.4 (see Mattos e Silva 2006, 141). How did the gerund in BP come to form so many types of clauses? Wildly speculating, it could be the case that the unvalued Case feature I propose the gerund morpheme to bear played some role in the expansion of GC in Portuguese. Maybe, GCs freely combines with other structures and the availability of a Case goal in these structures allows for the GC to be licensed; in the environments where there is no Case goal, the combination is independently prohibited because an uninterpretable feature (Case in $\{-ndo\}$) arrives at the interfaces.

Finally, there are also more far-reaching questions that GCs could have something to say about.

(4)   a.   Which predicates can and cannot combine with a GC? What explains the possibilities? This question bears on a wider puzzle concerning the existence and nature of selection requirements (semantic and/or categorial).

        b.   Could GCs provide crucial empirical arguments in favor of a given control theory over the others? Assuming that the description in chapter 6 is correct, the control

possibilities in adverbial GCs, specially the *PRO*–overt DP alternation of high adverbials pose an intriguing challenge to accounts of control. The movement theory of control, along with some ancillary assumptions, provided a relatively successful analysis, but I could not provide a comparison with other control theories available.

In sum, there are quite a few interesting research questions that GCs open up.

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Appendix A

Appendix: A review of Pires's analysis

In this section, we turn to Pires (2001, 2006, 2007)'s analysis of GCs in English that allow for a *PRO*–overt DP subject alternation (CGs 'clausal gerunds' in his terminology[1]):

(1)   a.   Sue prefers John/him swimming.

        b.   John prefers *PRO* swimming.[2]

            (adapted from Pires 2007, 182, (47))

Pires's analysis may be relevant to the data investigated here because there is one GC subtype that seems to allow for precisely this kind of alternation, namely, high adverbials (see section 3.3 and chapter 6):

(2)   a.   O João chegando mais cedo, a firma   conseguiu terminar o   trabalho.

            the João arriving   more early the company managed to-finish the job

            'Because João arrived earlier, the company managed to finish the job.'

        b.   *PRO* Chegando mais cedo, o   João conseguiu terminar o   trabalho.

            PRO arriving   more early the João managed to-finish the job

            'Because he arrived earlier, João managed to finish the job.'

The analysis could potentially apply to (2), therefore I outline Pires's analysis here, as it is instantiated in Pires (2007), since it focuses precisely on CGs. I then go on to review this analysis.[3]

    According to Pires, apart from the difference in the realization of the subject, an overt DP in (1-a) and a null category in (1-b), these two kinds of constructions share a series of syntactic properties, such as occurring only in Case-marked positions, the possibility of being modified

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[1]CGs are not to be mistaken with the GCs I investigate here. Pires's *CG* is a term that refers exclusively to gerund constructions where a *PRO*–overt DP subject alternation is possible, as in (1-a)–(1-b). My *GC* is an umbrella term for a series of gerund constructions in BP, which include, but is not restricted, to constructions where this alternation is possible. In this section, I use Pires's *CG* in order to make exposition simpler.

[2]Pires 2007, section 3.2 provides empirical arguments for the claim that sentences like (1-b) are instances of obligatory control (see especially his (31–38)).

[3]I am aware of two previous reviews of Pires (2006), namely, Barbosa (2008) and Galves and Andrade (2009). Most of the arguments raised here are not present in either of these reviews – when they are, I will refer to the previous review in the main text.

by adverbs such as *quickly* and *probably*, the possibility of raising to the subject position of unaccusative predicates, bearing a tense specification that is different from the matrix one etc (see Pires 2007, sections 2 and 3). As a consequence, he tries to provide a unified account for (1-a)–(1-b), that is, he ascribes them the same inner structure, that is, they are TPs, and tries to derive the alternation in their subject realization from the way the derivation of each proceeds. The gist of Pires's analysis is that different numerations underlie (1-a) and (1-b) and that the CG subject can be licensed both in the cases where it stays inside the CG and where it moves into a thematic position in the main clause – Pires incorporates the movement theory of control (Hornstein, 1999, 2003; Boeckx et al., 2010).

Below are listed the ingredients that are important assets in Pires's analysis. In (3) are the properties that he ascribes to *Agr*, the label he uses to refer to the features of the CG's T; in (4) are the relevant assumptions he makes regarding the functioning of the computational system.

(3)   *Features of a CG's T (= Agr)*

    a.   Agr is nominal (its feature matrix is simply [N]).   (p. 171, (18d))

    b.   *[Agr]* has an EPP feature that needs to be checked.   (p. 184, (49a))

    c.   *[Agr]* enters the numeration as ϕ-defective.   (p. 184, (49b))

    d.   The Tense (T^0) head of a CG *[= Agr]* carries an uninterpretable Case feature that needs to be valued.   (p. 183, (48a))

    e.   *-Ing* in CGs is a nominal agreement marker appearing in Infl that realizes the properties usually associated with Agr.   (p. 171, (18f))

(3-a) spells-out a common intuition in the literature on gerunds (see, e.g., Reuland 1983) according to which gerunds have some nominal character. I comment on this feature below when I review an important step in Pires's proposal for the derivation of CGs. (3-b) is the common assumption that T bears a feature that is checked off by an an appropriate phrase filling T's Spec position. (3-c) is another common assumption, one that concerns T in nonfinite clauses. Under the assumption that only φ-complete probes can value, by reflex, the Case feature of their goals, φ-defectiveness captures the need of the subject of some nonfinite clauses to rely on an alternative Case-valuation source (which ultimately yields, e.g., raising or ECM constructions). CGs pose a challenge to this assumption in that they allow for an overt DP subject variant (see (1-a) above). As we will see below, Pires provides a rather ingenious solution to this conundrum. (3-d) is a proposal he makes in order to capture what seems to be a fact about the external distribution of CGs, namely, that they seem to occur only in positions that can be Case-marked: CGs can occur in the complement position of transitive verbs and of prepositions and in subject position, but they seem to be prohibited from the complement position of unaccusative verbs (see Pires (2007)'s section 2, specially the data in (11–17)).[4] As we will see below, this Case

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    [4]The main focus in Pires (2007)'s analysis is CGs in the complement position of verbs like *prefer*, but he also deals with what he dubs 'absolute gerunds', CGs in adjunct position (see Pires 2007, section 4.2):

feature plays a crucial role in Pires's account of the *PRO*–overt DP subject alternation.

(4)   *Properties of the computational sytem*

      a.   The functional heads v and T carry uninterpretable/unvalued ϕ-features. *[They]* probe the derivation for matching active goals that can check *[their]* uninterpretable/unvalued ϕ-features.

      b.   A DP has interpretable ϕ-features and enters the derivation with an uninterpretable/unvalued Case feature that makes it active to induce Agree with a probe.

      c.   The Case feature of the DP is valued after that DP enters into Match/Agree with a functional head that is ϕ-complete.

      d.   *[Activation Condition:]* Both the head (probe) and the matching DP (goal) have to be active to enter into a Match/Agree relation.

      e.   *[Reflex valution:]* The current analysis explores an approach to Case checking/valuation that is related to agreement (ϕ-feature) checking/valuation in the Minimalist Program. (p. 181)

      f.   Equidistance.

      g.   The movement theory of control (MTC) – Hornstein (1999)[5]

      h.   A probe cannot value an uninterpretable/unvalued feature of its goal while the probe itself has an uninterpretable/unvalued feature of the same kind.
(p. 183, (48b))

      i.   *[V]*aluation of the ϕ-set of Agr by the DP eliminates its defectiveness. (p. 185)

(4-a)–(4-d) (from Pires 2007, 184) are straightforward assumptions taken from the original probe–goal system in Chomsky (2001). From the quote in (4-e), we infer that valuation of Case in a DP as a reflex of valuation of a complete φ-set from Chomsky (2001) carries over to Pires's system as well (see discussion in Bošković 2007). (4-f) is the also a traditional minimalist assumption. The relevant equidistance relation will be that between T (Agr) and the CG subject in the Spec position of this T (Pires, 2007, 187). (4-g) is one of the crucial ingredients in Pires's

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(i)   [He/him/*PRO* being the best athlete in the school], Mike expected to win the game.
      (from Pires 2007, 196, (59b))

(These constructions are maximally similar to the high adverbials mentioned above in (2)). These are CGs, as they also allow for the *PRO*–overt DP alternation in their subject position. As a consequence, Pires also proposes that they bear a Case feature to be valued. The question that arises is, how this feature could be valued, for these CGs are adjuncts and moreover, given their position in the linear order of the overall sentence, they seem to be in a position that is too high to be reached by a probe.

    Pires (2007, 196)'s solution is to say that whatever Case-marking mechanism that is available for DPs in topic position (*this book* in (ii) below) should also be available for absolute CGs.

(ii)   This book, John told me it is interesting.
      (from Pires 2007, 197, (60a))

Pires does not go into detail as to how this Case-marking should take place. In the present analysis, high adverbials – (2) – have their own Case-marking resources (what I will later dub 'self-sufficiency for Case' – see section 3.1).
    [5]For a summary of MTC, which I also rely on here, see section 4.3.1 below.

analysis: the control structure in (1-b) above is derived by A-movement passing through more than one thematic position. Finally, (4-h) and (4-i) are novel proposals Pires makes in order to account for the behavior of CGs. (4-h) is a stipulation according to which a probe *P* cannot value a feature *f* in its goal if *P* itself bears an *f* to be valued. According to (4-i) when the defective set of φ-features in the T of a CG (Agr, in Pires's terms) agrees with a DP, which by definition bears a complete set of φ-features, T's set *becomes* φ-complete.

Having outlined the ingredients of Pires's analysis, let us see how it works. First, we see the derivation of the overt DP subject variant of a CG, (1-a), repeated below. The derivation is schematized in (6) (adapted from Pires 2007, (51)).

(5)   Sue prefers John/him swimming.

(6-a) depicts the assembling of the CG's *v*P. *John* enters the derivation as the external argument of *swimming*. It has a complete set of valued φ-features and an unvalued Case feature (annotated as '?'). In (6-b), the CG's TP is formed. T (Pires's Agr) bears an EPP – (3-b) –, a defective set of φ-features – (3-c) – and a Case feature to be valued – (3-d). T probes its c-command domain and finds *John* as an appropriate goal. The complete φ-set of the DP can not only value the defective set in T, but also render it φ-complete – (4-i). Nevertheless, due to the stipulation (4-h), no Case valuation takes place at this point of the derivation.[6] Finally, *John* moves to [Spec, TP] in order to check EPP off. This movement and φ-agreement are represented in (6-c). In (6-d), the verbal layers of the matrix predicate *prefers* are formed. *v* contains a complete set of φ-features to be valued. In (6-e), it probes the structure and finds the CG's T as an appropriate goal. First of all, T contains the features *v* are looking for, as a consequence of T having previously agreed with *John* and, crucially, by (4-i), this Agree relation turned T into a φ-complete goal. Secondly, by Equidistance – (4-f) –, the subject *John* in [Spec, TP] does not block Agree between the matrix *v* and the CG's T because T and *John* are in the same minimal domain. As a reflex of having valued a φ-complete probe, T has its Case feature valued as accusative. Now, because T has had its own Case valued, (4-h) no longer applies, so that T is free to value the Case feature in *John*, as depicted in (6-f). Because *John* does not have any more unvalued features, it becomes inactive and therefore unavailable for further computations – (4-d). That is why the external argument position opened up by *prefers* cannot be fulfilled by movement of *John*; the derivation can only converge if a DP from the numeration merges there. This is what *Sue* does in (6-g). The derivation proceeds in the "trivial" way: formation of the matrix TP – (6-h) –, Agree and feature valuation between *Sue* and T and movement of *Sue* to check the EPP off – (6-i).

(6)   a.   [$_{vP}$ John$_{+\varphi:val;-Case:?}$ swimming]
        b.   [$_{TP}$ T$_{EPP;-\varphi(def):?;-Case:?}$ [$_{vP}$ John$_{+\varphi:val;-Case:?}$ swimming]]

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[6]Actually, the impossibility of Agr to Case-value the subject *John* could be derived from (4-c), which implies that only φ-complete functional heads are Case-valuers. This renders (4-e) redundant. This adds up to the problem that (4-e) is stipulative.

c.   [$_{TP}$ John$_{+\varphi:val;-Case:?}$ T$_{-\varphi(compl):val;-Case:?}$ [$_v$P ~~John~~ swimming]]

d.   [$_{vP}$ $v_{-\varphi:?}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:?}$ T$_{-\varphi(compl):val;-Case:?}$ [$_v$P ~~John~~ swimming]]]]

e.   [$_{vP}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:?}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]

f.   [$_{vP}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:acc}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]

g.   [$_{vP}$ Sue$_{+\varphi:val;-Case:?}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:acc}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]

h.   [$_{TP}$ T$_{EPP;-\varphi:?}$ [$_{vP}$ Sue$_{+\varphi:val;-Case:?}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:acc}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]]

i.   [$_{TP}$ Sue$_{+\varphi:val;-Case:nom}$ T$_{-\varphi:val}$ [$_{vP}$ ~~Sue~~ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:acc}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]]

We now turn to the *PRO* variant of CGs, (1-b), repeated below. The derivation is in (8) (adapted from Pires 2007, (50)).

(7)   John prefers *PRO* swimming.

The derivation of the *PRO* variant is exactly as that of the overt DP variant above up to the point (6-e), repeated below as (8-a). To recap, at this point, the matrix v and the CG's T (= Agr) agree in φ-features and, as a reflex, T can have its Case feature valued as well. In (6), the derivation proceeded by T valuing the Case feature in the CG's subject, *John*. In (8), though, the derivation proceeds by *John* moving to [Spec, vP] in order to pick up the external θ-role of *prefer*, as represented in (8-b). According to Pires, this is possible both because *John* is still active (its Case feature has not been valued yet) and because T and *John* are equidistant, so that v can access *John* to trigger its movement in order to discharge a θ-role. In addition, the numeration for the *PRO* variant of CGs and the numeration for the overt DP subject variant are different. The latter contains enough material for all θ-roles to be fulfilled by external merge, while the former does not, thereby triggering the movement (i.e., internal merge) of a syntactic object that had previously been introduced in the derivation. The derivation continues in (8-c), where the matrix TP is formed. The derivation is concluded in the trivial way, via Agree between the matrix T and *John* and movement of the latter to [Spec, TP] – (8-d). Because *John* passed through more than one thematic position, the result is a control structure where the CG subject is a *PRO*, interpreted as a trace of A-movement, under the MTC.

(8)   a.   [$_{vP}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ John$_{+\varphi:val;-Case:?}$ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]

      b.   [$_{vP}$ John$_{+\varphi:val;-Case:?}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ ~~John~~ T$_{-\varphi(compl):val;-Case:acc}$ [$_v$P ~~John~~ swimming]]]]

      c.   [$_{TP}$ T$_{EPP;-\varphi:?}$ [$_{vP}$ John$_{+\varphi:val;-Case:?}$ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ ~~John~~

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$\text{T}_{-\varphi(compl):val;-Case:acc}$ [$_{v}$P ~~John~~ swimming]]]]]

d.   [$_{TP}$ John$_{+\varphi:val;-Case:nom}$ T$_{-\varphi:val}$ [$_{vP}$ ~~John~~ $v_{-\varphi:val}$ [$_{VP}$ prefers [$_{TP}$ ~~John~~

$\text{T}_{-\varphi(compl):val;-Case:acc}$ [$_{v}$P ~~John~~ swimming]]]]]

Notice that the derivations in (6) – overt DP subject variant – and in (8) – *PRO* variant – rely on the same resources (those outlined in (3)–(4)) and crucially on a possibility that is independently available, namely, that different derivations depart from different numerations. I think these are virtues in Pires's analysis, for it deals with an intricate phenomenon in natural languages, the alternation between *PRO* and an overt DP in the subject position of a nonfinite clause, and moreover does so in uniform fashion.[7] Nonetheless, I think Pires's approach to CGs is problematic for a number of reasons.

A minor problem has to do with the properties of a CG's T, more precisely, the status of the Case feature to be valued that Pires ascribes to the T (Agr) in CGs. In order to account for different types of gerunds, which do not allow for a *PRO*–overt DP subject alternation, Pires proposes that this Case feature is restricted to CGs (i.e., to gerunds that do allow for this alternation) (see section 4.3 of Pires (2007)). However, he also assumes that the gerund morpheme is the morphological realization of T/Agr – (3-e). As mentioned above (see section 1.3), the null hypothesis seems to be that all gerunds are formed from the same gerund morpheme. Under this assumption, the same gerund morpheme that bears a Case feature to be valued in CGs should be a building block in other gerunds as well, so that all of them should bear this extra Case feature to be valued too. I think departing from the null hypothesis without providing substantial empirical evidence is a weak spot in Pires's system. In contrast, in the analysis I am going to put forth here, I keep the null hypothesis and try to derive the differences between the gerund subtypes from independently supported properties of particular lexical items or from the general workings of the computational system.

More serious problems arise when we inspect the details of Pires's assumptions regarding the functioning of the computational system and particularly the computation of CGs. First of all, consider (4-h), a stipulation that allows T/Agr to have its φ-features valued by the CG subject (*John* in (8)) without valuing the subject's Case. The subject is thus free to move on into the matrix clause. Therefore, (4-h) is instrumental in deriving the alternation witnessed in (1-a)–(1-b). Nevertheless, it is still stipulative and construction-specific – where else would (4-h) be applicable? Moreover, this condition may also be redundant if we assume, following the insight in Bošković (2007), that reflex valuation fits badly in the system, so that we are better off considering Case- and φ-feature valuation as independent of each other. This independence

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[7]It is an intricate fact under diverse theories of control. In the GB theory of control and the early minimalist account, *PRO* and overt DPs should be mutually exclusive, given that *PRO* requires licensing conditions of its own, regardless of them being stated in terms of the Binding Theory or in terms of null Case. According to the MTC, for a DP to move into a further thematic position, it has to be active, activation being an independent condition that holds of movement and of syntactic operations at large. Thus, also under MTC, are DPs and '*PRO*' expected to be in complementary distribution: DPs are frozen in the position where they are Case-marked and *PRO* or, more generally, traces of A-movement, should be found in Case-less positions.

makes even more sense if the same head (T/Agr) is both a probe (because it bears unvalued φ-features) and a goal (because it bears a Case feature to be valued). Under the assumption that there is no reflex valuation, which is conceptually superior, there is no need to stipulate that Agree between Agr and the CG subject does not result in the Case-valuation of the latter.

Another problem has to do with equidistance – (4-f). As mentioned, Pires (2007, 187) relies on equidistance in order to allow the matrix v in (8) to reach the embedded, CG subject, *John* in the case at hand. I think there are two problems in relying on equidistance in order to allow for the CG subject to move and fulfill the external θ-role of the matrix verb (*prefer*). First of all, I think there is no need to resort to equidistance. There does not seem to be any intervention issue in the derivation outlined in (8), in particular, the step (8-b). At that point in the derivation, there is no other appropriate candidate to satisfy *prefer*'s external argument requirement. Significantly, the CG's T could not play this role, so that equidistance of the matrix v with respect to the CG's subject and with respect to T is immaterial.

Secondly, although Pires resorts to equidistance where it is not really called for, he fails to recognize that there is a moment in the derivation where this notion is indeed applicable. When the matrix v probes the structure in the search for a complete set of valued φ-features (step (6-d), shared by the derivation of both the overt DP – (6) – and *PRO* variants – (8)), both the subject (*John*) and T/Agr should be valid goal candidates, for (i) they are both in the c-command domain of the matrix v probe, (ii) they both have a complete set of valued φ-features (DP as a lexical specification, T/Agr, as a consequence of stipulation (4-i)) and (iii) they are in the same minimal domain, as emphasized by Pires himself. Thus, the matrix v should be able to Agree with both at the same time, after the fashion of multiple Agree in Hornstein et al. (2008) and either could value v's φ-features. No intervention issue arises because there is equidistance and both *John* and Agr can have their respective Case feature valued costlessly, under the reasonable assumption that the computation system computes equidistance blindly. After the CG subject is Case-valued, it should freeze in place, so that movement into a thematic position in the matrix clause is prohibited. In sum, a major problem in Pires's analysis is that, contrary to its primary goal, it undergenerates because the *PRO* variant should be underivable in his system.

Suppose this equidistance issue did not arise; there are still some problems in Pires's system. Another minor problem is the structural relation necessary for Agree to take place. In Chomsky (2001)'s original system, a goal G must be in the c-command domain of the probe P. At step (6-f) of the derivation of the overt DP subject variant, Agr, having had its own Case feature valued as accusative by the matrix v – (6-e) – values the Case of the subject *John*, which has previously moved to [Spec, TP] for EPP reasons – (6-c). Because *John* is in the Spec position of T, this DP is not in the c-command domain of Agr and therefore, no Agree relation between them is possible.[8] Thus, there is no room in the system for "Case transmission" from Agr to the CG subject. This problem could be overcome by the matrix v directly valuing the Case of

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[8]In Chomsky (2001), verbal agreement and movement to the subject position are independent. The latter is a consequence of an EPP feature, while the former, of φ-feature valuation.

the embedded subject (a possibility opened up by equidistance, as mentioned above), but then again a *PRO* variant could not be derived.

A related problem has to do with the activation condition, (4-d), according to which both probe and goal must be active in order for them to undergo Agree. This cannot be said of Agr at the point of the derivation when it is to act as a probe and value the Case of the subject – (6-f). Previously in the derivation, Agr has already had its φ- and Case features valued – respectively, at steps (6-c) and (6-e). Because Agr no longer has unvalued features, it is no longer active in the derivation, so that it cannot act as a probe (or as a goal for that matter).

Yet another problem surfaces when we consider the ordering of syntactic computations in the derivation of CGs. In the derivation of the overt DP variant – (6) –, first Agr has its Case valued by the matrix v – (6-f) – and only then is the CG subject (*John*) Case-valued by Agr – (6-g). *John* then freezes in place, in accordance with the activation condition. Later on in the derivation, a nominal (*Sue*) is taken from the numeration and inserted in the matrix [Spec, vP] in order to fulfill *prefer*'s need for an external argument. Conversely, in the derivation of the *PRO* variant – (8) –, valuation of the Case feature of the CG subject does not take place immediately after Agr is Case-valued. Rather, the subject, before it is Case-valued and therefore before it is frozen in place, moves to [Spec, vP], *prefer*'s external argument position. That the CG subject moves before Case-valuation is crucial in Pires's analysis to derive the control variant. However, a question arises: how does the computational system "know" when *John* should be Case-valued first or move first? The most plausible answer to this question is that it simply *cannot* know. Under minimalist assumptions, the computational system just blindly effects syntactic operations based on what there is in the workspace and on economy desiderata. At the point of the derivation where an uninterpretable feature can be eliminated, namely, the Case feature of the CG subject, the computation system just blindly effects the necessary operations. Delay would render the system more complex and therefore is undesirable. Thus, holding up Case-valuation of *John* just so it can move to a further thematic position should not be a possibility in an optimal system. However, if it is, then there is a look-ahed problem in Pires's system: at a given step in the derivation, an operation (Case-valuation of the CG subject) is delayed so that a requirement in a *later* step (movement to a θ-position) can be fulfilled.

Finally, we turn to what I consider to be the major problem in Pires's analysis. By (4-i), when the defective set of φ-features in T/Agr agrees with the, by definition, complete φ-set of a DP, T's set *becomes* φ-complete too. On the one hand, Pires has to assume that Agr is defective – (3-c) – because, otherwise, it would freeze the CG subject inside the CG. This is so because, if a DP agrees with a probe with a complete set of φ-features, by reflex – (4-e) – the Case feature of the DP is valued. As a consequence, the DP is no longer active for further syntactic computations – (4-d). Under the assumption that control is a byproduct of A-movement – (4-g) –, this would lead to the prediction that control is never a possibility for CGs. Since this prediction is contrary to fact ((1-b) is grammatical), Pires has to assume that Agr is φ-defective. On the other hand, at some point in the derivation, Agr has to be φ-complete so that it can be an

appropriate goal for the matrix probe *v* an thus have its Case feature valued – (3-d). As we saw above, the valuation of the Case feature assigned to Agr was crucial to derive the alternation in (1-a)–(1-b). Thus, the proposal in (4-i) is an instrumental ingredient in Pires's analysis.

Nevertheless, I think it is misguided. First of all, feature valuation in Chomsky (2001)'s system consists in providing a value for a given uninterpretable/unvalued feature (e.g., Case in DPs) or a given set of features (e.g., φ-features in T and *v*). Crucially, Agree does not affect the *content* of the features. If a given defective probe (e.g., infinitival T or unaccusative *v*) agrees with a DP, which by assumption is always φ-complete, the probe remains defective; whatever subset of φ-features the defective probe bears, these features are provided with a value via Agree, but no new feature is created. Thus, Pires's proposal is a significant departure from Chomsky (2001)'s original approach.

By no means that is to say that Chomsky's proposals should be taken as unbreakable laws. What I mean is that, given the conceptual basis of such proposals, departing from them requires robust argumentation. What then is the problem in (4-i)? (3-c) states that, as a lexical specification, Agr contains a proper subset of φ-features. As a consequence, if it becomes φ-complete as a consequence of Agree, by (4-i), it must be the case that features that were not in the numeration are introduced during the course of the derivation. This is a clear violation of the Inclusiveness Condition:

(9)   *Inclusiveness Condition*
       Any structure formed by the computation is constituted of elements already present in
       the lexical items selected for N*[umeration]*; no new objects are added in the course of
       computation, apart from rearrangements of lexical properties.
       (Chomsky, 1995b, 228)

Besides being conceptually untenable (due to the violation of the Inclusiveness Condition), (4-i) also leads to a prediction that is empirically wrong. We saw above that it is Agr that values the φ-features in the matrix *v* – (6-e). Crucially, the value of the φ-features in Agr were previously provided by Agree with the CG subject – (6-c). In the case at hand, the subject is *John*, so that Agr ends up specified as *3rd person singular*. When the matrix *v* and Agr undergo Agree, *v* should also end up specified as *3rd person singular*. This is how the derivation proceeds if the sentence is active. If the sentence is passive, the matrix probe is not *v*, but T, so that Agr values T's φ-features and, as a reflex, is assigned nominative Case. The CG also moves to the matrix subject position, as in (10).

(10)   Bill swimming was preferred.
        (from Pires 2007, 193, (53))

According to this proposal, the auxiliary in (10) surfaces as a *3rd person singular* form (*was*) because Agr's φ-features were valued by *Bill* and later on Agr valued the corresponding feature in the matrix T. As already pointed out by Galves and Andrade (2009, 513), this leads to the

prediction that, if the CG subject is, say, *3rd person plural*, the auxiliary should surface in the corresponding verbal form. This prediction, however, is contrary to fact, as we see in the contrast in (11).

(11)   a.   The boys swimming was preferred.
         b.   *The boys swimming were preferred.
               (from Galves and Andrade 2009, 513, (6))

In a nutshell, Pires's analysis, although quite appealing at first glance, faces a series of problems, both in the conceptual and in the empirical side. As a consequence, it is not possible to analyze high adverbials – (2) – according to this proposal. In chapter 6, I present an alternative analysis to the *PRO*–overt DP subject alternation.