

A gradient typology of gerund clauses: revisiting the internal and external syntax of Portuguese gerund clauses

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Abstract

Focusing mostly on European Portuguese, this paper proposes that the internal syntax of Portuguese gerund clauses and the gradience in their degree of defectiveness may be explained by an interplay between their external syntax (locus of merge), agreement relations between embedded Tense and matrix Tense and the presence/absence of an intervening head. We first revisit the distinction between peripheral adverbial gerund clauses and central adverbial gerund clauses and show that their internal syntax correlates with their external syntax: central adverbial gerund clauses are merged in lower positions and appear to be more defective. We derive their defectiveness from the Agree relation established between embedded T and matrix T. We then consider predicative gerund clauses and show that they are even more defective and restricted in their aspectual value, lacking a T head. Finally, we consider predicative gerund clauses introduced by *como* ‘as’ and show that, although they are merged in a low position, they are less defective than central adverbial gerund clauses. We attribute this mismatch between the internal and external syntax of this specific type of gerund clause to the presence of the Predicate head *como*, which intervenes between matrix T and embedded T and blocks the agreement relation.

200 words

Key words

gerund clauses, internal and external syntax, tense dependency

1. Introduction

This paper focuses on the syntax of gerund clauses, considering their external and their internal syntax. We will propose that the gradience in the degree of defectiveness of different types of gerund clauses may be explained by an interplay between their external syntax (locus of merge), agreement relations between embedded Tense and matrix Tense and the presence/absence of an intervening head. Overall, this study illustrates how empirical data may help us refine theoretical analyses. Although we consider mostly data from European Portuguese, we believe that the analysis may be extended to other languages in which the gerund has a similar distribution.²

Gerund clauses are non-finite clauses that differ from infinitival clauses in their morphology and in their distribution. In Portuguese, the suffix *-r* marks the infinitival form of

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² This may be the case of the gerund clauses with *-ndo* of Spanish, which, as EP, is a null subject language and in which GC have a similar distribution.

verbs (1), whereas the suffix *-ndo* marks the gerund form of verbs, and they both attach to the verbal theme (stem + thematic vowel):

(1) a. *cant+a+r*
sing+TV+INF³
'to sing'

b. *com+e+r*
eat+TV+INF
'to eat'

c. *part+i+r*
leave+TV+INF
'to leave'

(2) a. *cant+a+ndo*
sing+TV+GER
'singing'

b. *com+e+ndo*
eat+TV+GER
'eating'

c. *part+i+ndo*
leave+TV+GER
'leaving'

Gerunds do not inflect for tense, nor for person, in the standard variety,⁴ but depending on the context we may find a simple gerund (SG) or a compound gerund (CG), with the auxiliary *ter* 'have' (or more rarely *haver* 'have')⁵:

(3) a. *cantando*
singing

b. *tendo cantado*
having sung

Some gerunds occur in non-clausal domains, selected by a semi-auxiliary verb (4), others project their own clausal domain (5)-(6):

(4) *Vou andando.*
go.1sg walking
'I am leaving'

³ TV = Thematic Vowel; INF = infinitival morpheme; GER = gerund morpheme.

⁴ Some dialectal varieties of European Portuguese (including southern and insular varieties) may display person agreement morphology on the gerund, similarly to the inflected infinitive (see Lobo, 2001, 2016).

⁵ For the semantic differences between simple and compound gerunds, see Leal (2002) and López (2018a). Depending on the type of gerund clause, the CG may force an anteriority reading or not.

- (5) *Chegou a casa tremendo de frio.*
 arrived.3sg to home shaking of cold
 ‘He arrived home shaking with cold’
- (6) *Chovendo torrencialmente, cancelámos o piquenique.*
 raining heavily, cancelled.1pl the picnic
 ‘As it was raining heavily, we cancelled the picnic.’

In Romance languages such as Portuguese, Spanish and French, gerunds have a syntactic distribution that differs from the one of gerund forms in English. While there are contexts in which English gerund forms and Portuguese, Spanish and French gerund forms overlap (see, for instance (7), after a perceptive verb, and (8), in an adjunct clause), there are also contexts where English gerunds show a distribution that differs from these Romance languages (see (9), in complement position, and (10), after a preposition, for instance).⁶

- (7) a. *Vi as crianças brincando na rua.*
 b. *Vi los niños jugando en la calle.*
 c. *J’ai vu les enfants jouant dans la rue.*
 d. I saw the children playing in the street.
- (8) a. *Tendo dito isto, o presidente saiu.*
 b. *Habiendo dicho esto, el presidente se marchó.*
 c. *Ceci étant dit, le président est sorti.*
 d. Having said that, the president left.
- (9) a. **Apreciei escrevendo o livro.*
 b. **Me encantó escribiendo el libro.*
 c. **J’ai aimé écrivant le livre.*
 d. I enjoyed writing the book.
- (10) a. **Após lavando o carro, o João leu o jornal.*
 b. **Después de lavando el auto, Juan leyó el periódico.*
 c. **Après lavant/ayant lavé la voiture, Jean a lu le journal.*
 d. After washing his car, John read his newspaper.

Gerund forms in Portuguese do not occur in the same contexts as most types of infinitival clauses.⁷

⁶ Even in contexts where it seems that the English gerund is similar to the Spanish one, as with perception verbs (*I saw Pedro dancing a mazurka* vs. *Vi a Pedro bailando una mazurka*), Borgonovo (1996) argues that the similarity is only apparent and that Spanish only allows for a depictive gerund clause, whereas English allows two different structural configurations.

⁷ See Gallego (2010) for an account of the syntactic distribution of infinitives, gerunds and past participles in Spanish, relying on the idea that both gerunds and past participles incorporate a Preposition. Although interesting, this analysis runs into problems when we consider data from some non-standard varieties of European Portuguese, where the gerund may display person agreement morphology and where gerund clauses may be introduced by a preposition-like complementizer, such as *em* ‘in’ (Lobo, 2001; Fiéis and Lobo, 2018). Furthermore, as we show, gerund constructions do not have a homogeneous behaviour, some gerund clauses being more defective than others.

- (11) a. *Prefiro telefonar-lhe amanhã.*
 prefer.1sg call.INF-him tomorrow
 b. **Prefiro telefonando-lhe amanhã.*
 prefer.1sg calling-him tomorrow
 ‘I prefer calling him tomorrow’
- (12) a. *É proibido fumar.*
 is forbidden smoke.INF
 b. **É proibido fumando.*
 is forbidden smoking
 ‘Smoking is forbidden’
- (13) *O Gil {cantando /*cantar} o fado era um belo espetáculo.*
 the Gil {singing / sing.INF} the fado was a beautiful show
 ‘Gil singing fado was a beautiful show’
- (14) *A Ana tirou esta fotografia {subindo /*subir} para cima do muro.*
 the Ana took this picture {climbing / climb.INF} for top of.the wall
 ‘Ana took this picture by climbing on top of the wall’
- (15) *{Sendo /*Ser} já muito tarde, é melhor regressarmos a casa.*
 {being / be.INF} already very late, is better return.INF.1pl to home
 ‘As it is already late, it is better to go back home’
- (16) *Este produto foi classificado como {sendo/*ser} altamente tóxico.*
 this product was classified as {being / be.INF} highly toxic
 ‘This product was classified as being highly toxic’

Following Lonzi (1988, 1991), for Italian, Fernández Lagunilla (1999), for Spanish, and Lobo (2002, 2003, 2006) and Leal et al. (2023), for Portuguese, we may identify different types of gerund clauses, with at least the following subtypes: aspectual gerunds, predicative gerund clauses, adnominal gerund clauses, peripheral adverbial gerund clauses, central adverbial gerund clauses and *como*-gerund clauses.

Aspectual gerunds are selected by semi-auxiliary verbs (including *estar* ‘be’, *vir* ‘come’, *ir* ‘go’, *andar* ‘walking’, *começar* ‘begin’, *acabar* ‘finish’, *continuar* ‘continue’, *ficar* ‘stay’ ...), and they are more productive in Brazilian Portuguese than in European Portuguese (cf. Gonçalves, 1992; Oliveira et al., 2004). In some cases, they alternate with a prepositional infinitival in the European variety:

- (17)a. *O menino está {dormindo/a dormir}.*
 the boy is sleeping/PREP sleep
 ‘The boy is sleeping’

- b. *O mar vai {desgastando/#a desgastar} a rocha.*
 the sea goes eroding/PREP erode the rock
 ‘The sea erodes the rock progressively’

Predicative gerund clauses are equivalent to the Prepositional Infinitival Construction (PIC), but the PIC is the preferred variant in the standard European Portuguese variety (Duarte, 1993):

- (18) *A Ana chegou a casa {coxeando/a coxear}.*
 the Ana arrived to home limping/PREP limp
 ‘Ana came home limping’

Adnominal gerund clauses, which we will not discuss in this paper, modify a nominal constituent and are equivalent to a relative clause (see Móia and Viotti, 2004; Móia, 2023):

- (19) *A caixa contendo explosivos está num outro armazém.*
 the box containing explosives is in.an other store
 ‘The box containing explosives is in another store’

Adverbial gerund clauses may be subdivided in central adverbial clauses (also called integrated or non-peripheral adverbial clauses) (20), which are adjoined to lower positions in the clause, and peripheral adverbial clauses, which are adjoined to higher positions in the clause (21):

- (20) *A Ana conseguiu tirar esta fotografia subindo para cima do muro.*
 the Ana managed to.take this picture climbing for top of.the wall
 ‘Ana was able to take this picture by climbing on top of the wall’
- (21) *Sendo já muito tarde, é melhor regressarmos a casa.*
 being already very late, is better return.INF.1pl to home
 ‘As it is already late, it is better to go back home’

Finally, Leal et al. (2023) have identified another kind of gerund clauses introduced by the connective *como* ‘as’, that the authors name *COMO*-gerund clauses:⁸

- (22) *Este produto foi classificado como sendo altamente tóxico.*
 this product was classified as being highly toxic
 ‘This product was classified as being highly toxic’

We will discuss the properties of some of these gerund clauses, considering both their internal syntax (the functional architecture of the clause) and their external syntax (the locus of merge). In section 2, we describe the main properties of the two subtypes of adverbial gerund clauses and revise previous analyses for finite adverbial clauses that may be problematic to account for adverbial gerund clauses, that usually lack a connective, and we advance the

⁸ As far as we know, these clauses were first noticed in a footnote in Raposo (2013) and Silvano et al. (2019) for European Portuguese, and they are analysed in more detail in Leal et al. (2023).

hypothesis that the difference between central and adverbial gerund clauses is driven by the Tense relation between matrix T and embedded T; in section 3, we describe the main properties of predicative gerund clauses and, following other authors, we propose that they lack a T node; in section 4, we consider *como*-gerund clauses and propose that their properties may be explained partially by the fact that the functional head *como* ‘as’ blocks the Agree relation between embedded T and matrix T; and in section 5, we conclude by putting together the different types of gerund clauses, showing that there is a gradience in their complexity, some gerund clauses being more defective than others, and we attribute this to the properties of the inflectional domain of gerund clauses and the relation between the embedded domain and the main clause domain.

2. Peripheral vs. Central Adverbial Gerund Clauses

Adverbial gerund clauses differ from finite and infinitival adverbial clauses in the fact that in most cases they are not introduced by a connective. Unlike finite and infinitival adverbial clauses, in which the semantic value is determined at least partially by their connective, the semantic value of gerund clauses is inferred taking into account several linguistic clues (presence of simple or compound gerund, aspectual type of predicate of main and subordinate clause, tense of main clause, among other factors), as well as world knowledge. To illustrate this variable semantic interpretation of adverbial gerund clauses, we can see that the same gerund clause *estando doente* ‘being sick’, may be interpreted as specifying a reason (23a), a condition (23b) or a concession (23c), depending on the information given in the main clause, the tense of the main clause verb, the type of predicate and the presence of adverbial elements:

- (23) a. *Estando doente, a Ana ficou em casa.*
 being sick, the Ana stayed at home
 ‘As she was sick, Ana stayed home’
- b. *Estando doente, a Ana ficaria em casa.*
 being sick, the Ana would.stay at home
 ‘If she was sick, Ana would stay home’
- c. *Estando doente, a Ana ainda assim foi trabalhar.*
 being sick, the Ana even so went to.work
 ‘Even though she was sick, Ana went to work’

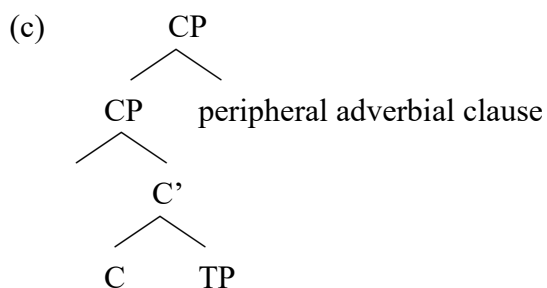
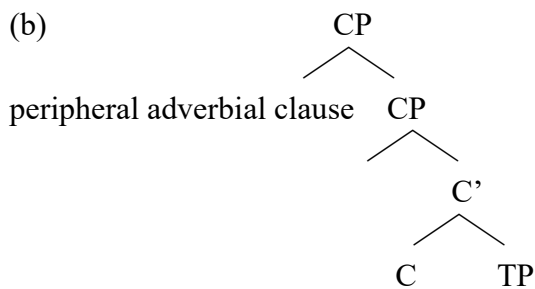
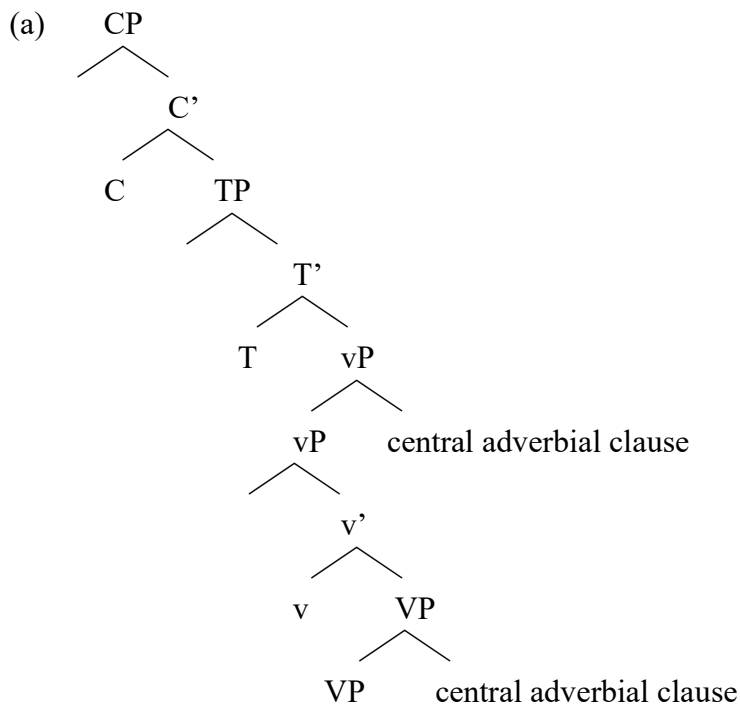
Previous studies on the syntax of adverbial clauses have shown that we can at least distinguish two subtypes, that have received several names in the literature: central adverbial clauses vs. peripheral adverbial clauses (Haegeman 2010; Frey 2012); predicate vs. sentence adverbial clauses (Renzi and Salvi 1991; Bosque and Demonte 1999; Berta et al. 1999); adjuncts vs. disjuncts (Quirk et al. 1985); integrated vs. peripheral adverbial clauses (Galán Rodríguez 1999; Lobo 2003). These two subtypes of adverbial clauses differ both in their external syntax (locus of merge) and their internal syntax (cartography of the left periphery). We will describe these differences in the following sections.

2.1. External syntax

Peripheral adverbial gerund clauses, unlike central adverbial gerund clauses, are subject to several restrictions: they cannot be clefted (24b) vs. (25b), they cannot answer wh-questions (24c) vs. (25c), and they cannot be under the scope of negation of the main clause (24d) vs. (25d) (Lobo 2002, 2003, 2006):

- (24) a. *[Tendo as crianças ficado com febre], a Ana teve de ficar em casa.*
 having the children got with fever, the Ana had to stay in house
 ‘The children having got a fever, Ana had to stay home’
- b. **Foi [tendo as crianças ficado com febre] que a Ana teve de ficar em casa.*
 [it] was having the children got with fever that the Ana had to stay in house
- c. – *Por que razão é que a Ana teve de ficar em casa?*
 for what reason is that the Ana had to stay in house
 ‘Why did Ana have to stay home?’
 – **Tendo as crianças ficado com febre.*
 having the children become with fever
- d. **A Ana não teve de ficar em casa tendo as crianças ficado com febre (mas sim havendo greve dos transportes)*
 the Ana not had to stay in house having the children got with fever (but yes being strike of the transports)
 ‘Ana did not have to stay home because her children had fever but because there was a transport strike.’
- (25) a. *Os ladrões entraram em casa [arrombando a fechadura].*
 the thieves entered in house forcing the lock
 ‘The thieves entered the house forcing the lock’
- b. *Foi [arrombando a fechadura] que os ladrões entraram em casa.*
 [it] was forcing the lock that the thieves entered in house
- c. – *Como é que os ladrões entraram?*
 how is that the thieves entered?
 ‘How did the thieves come in?’
 – *Arrombando a fechadura.*
 forcing the lock
 ‘Forcing the lock.’
- d. *Os ladrões não entraram em casa arrombando a fechadura (mas sim partindo uma janela).*
 the thieves not entered in house forcing the lock but yes breaking a window
 ‘The thieves did not enter the house forcing the lock (but breaking a window)’

This different behaviour shows that peripheral adverbial gerund clauses are merged in a higher position (above TP), either to the left (b) or to the right (c), and that central adverbial gerund clauses are merged in a lower position (adjoined to vP or VP) (see Lobo 2003; Endo and Haegeman 2019) (a), since they are under the scope of matrix negation:



2.2. Internal syntax

Central and adverbial gerund clauses also display different properties in what concerns their internal syntax (cf. Fernández Lagunilla 1999; Lonzi 1991; Lobo 2002, 2003, 2006). Peripheral adverbial gerund clauses may have a simple or compound gerund form, whereas

central adverbial gerund clauses only allow the simple gerund (27b). Peripheral adverbial gerund clauses may have an overt subject, which in the standard variety of European Portuguese is subject to inversion (26a)⁹, whereas central adverbial gerund clauses do not allow an overt subject (27c). Peripheral adverbial gerund clauses may have negation (26b); central adverbial gerund clauses also allow negation, but with some constraints (27c,d,e):

- (26) a. *Tendo as crianças ficado com febre, a Ana teve de ficar em casa.*
 having the children become with fever, the Ana had to stay at home
 ‘As her children had fever, Ana had to stay home.’
- b. *Não estando as crianças a sentir-se bem, a Ana teve de ficar em casa.*
 not being the children to feel-REFL well, the Ana had to stay at home
 ‘As her children were not feeling well, Ana had to stay home.’
- (27) a. *Os ladrões entraram em casa arrombando a fechadura.*
 the thieves entered the house forcing the lock
 ‘The thieves entered the house forcing the lock.’
- b. **Os ladrões entraram em casa tendo arrombado a fechadura.*
 the thieves entered the house having forced the lock
- c. ?? *Foi partindo o chefe o vidro que a quadrilha conseguiu escapar.*
 [it] was breaking the leader the glass that the group managed to escape
- d. ?? *Os ladrões entraram em casa não arrombando a fechadura.*
 the thieves entered in house not forcing the lock
- e. *Os alunos irritaram o professor não respondendo a nenhuma pergunta.*
 the students irritated the teacher not answering to no.one question
 ‘The students annoyed the teacher by not answering any question.’

Null subjects in peripheral adverbial gerund clauses do not need to be controlled – they may be correferent with the matrix subject (28), be expletive (29), have an arbitrary interpretation (30), have a clause external antecedent (31), or a dative antecedent (32):

- (28) [-] *Estando doente, o João ficou em casa.*
 being ill, the João stayed at home
 ‘As he was ill, João stayed home.’
- (29) [-] *Tendo chovido durante toda a tarde, o jardim estava todo molhado.*
 having rained during all the afternoon, the garden was all wet
 ‘As it had rained all afternoon, the garden was wet.’

⁹ In Brazilian Portuguese, these adverbial clauses do not display subject-verb inversion:

(i) *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 Joao listens to music too loud, Maria will get mad.’ (Fong 2015: 2)

- (30) [-] *Fumando mais de um maço por dia, aumenta o risco de cancro do pulmão.*
 smoking more than a packet by day, rises the risk of lung cancer
 ‘When one smokes more than a packet of cigarettes per day, the risk of getting lung cancer increases.’
- (31) [*O bebé*]_i *está com febre há três dias.*
 the baby is with fever is three days.
 [-]_i *Continuando assim, acho que o devemos levar ao médico.*
 [he] continuing so, think.1sg that him should.1pl take to.the doctor
 ‘The baby has fever for more than three days. If he goes on like this, I think we should take him to the doctor.’
- (32) [-]_i *estando sozinho em casa, pareceu-lhe_i ouvir um ruído estranho.*
 [he] being alone at home, seemed-him to.hear a sound strange
 ‘As he was home alone, he seemed to hear a strange noise.’

We can thus conclude that the null subject in a peripheral adverbial gerund clause is not subject to syntactic control.

Null subjects in central adverbial gerund clauses are more restricted in their interpretation: they can be coreferent with the matrix subject (33a), with a dative argument (33b) or they can have an arbitrary interpretation (33c), but expletive subjects are not possible (33d):

- (33) a. *Os bandidos_i amarraram o guarda [-]_i usando um arame.*
 the thieves tied the guard using a wire
 ‘The thieves tied the guard using a wire.’
- b. *Essa dor só te passará tomando este remédio.*
 that pain only to.you will.pass taking this medication
 ‘That pain will only go away if you take this medication.’
- c. *Essa dor só passa tomando este remédio.*
 that pain only passes taking this medication
 ‘That pain only goes away if you take this medication.’
- d. ??*Os atletas só teriam melhores resultados chovendo menos.*
 the athletes only would.have better results raining less
- e. *Os atletas só teriam melhores resultados treinando mais.*
 the athletes only would.have better results training more
 ‘The athletes would only attain better results if they trained more.’

Besides the above-mentioned syntactic restrictions, central adverbial gerund clauses always express a temporal overlapping relation with the situation described in the main clause:¹⁰

- (34) a. *Encontrei uma estrela-do-mar passeando à beira-mar.*
 found.1sg a starfish walking by the sea
 ‘I found a starfish while I was walking by the sea.’
- b. *As andorinhas construíram os ninhos juntando pequenos ramos.*
 the swallows built.3pl the nests gathering little branches
 ‘The swallows built their nests gathering little branches.’

Preposed peripheral adverbial gerund clauses, on the contrary, may express a temporal overlapping or anteriority relation with respect to the situation described in the main clause, depending on several factors: type of gerund form (simple or compound), aspectual type of predicates, semantic-pragmatic inferences (cf. Leal 2002, 2011):

- (35) a. *Estando a chover intensamente, a calçada está escorregadia.*
 being to rain intensively, the sidewalk is slippery
 ‘As it is raining intensively, the sidewalk is slippery’
- b. *Estando a chover intensamente, amanhã vão despejar a barragem.*
 being to rain intensively, tomorrow will pour the dam
 ‘As it is raining intensively, tomorrow the dam will be poured’

Postponed peripheral adverbial gerund clauses may express anteriority, posteriority, overlapping temporal relations or discourse relations that do not specify the temporal ordering of situations, both with the simple and the compound gerund (Leal 2002; Móia and Viotti 2004, 2005; Lobo 2006, 2013; Cunha et al. 2008; López 2018a, 2018b):

- (36) a. *Os ladrões fugiram à polícia, tendo sido capturados dois dias depois.*
 the thieves ran to.the police, having been captured two days later
 ‘The thieves escaped the police, and they were captured two days later.’
- b. *O João teve boa nota no exame, tendo estudado afincadamente durante toda a semana.*
 the João had good mark in.the exam, having studied doggedly during all the week
 ‘João had a good mark in the exam, since he studied a lot during the whole week.’
- c. *A Ana esteve deitada na praia toda a tarde, tendo visto*

¹⁰ One may consider that there may be an anteriority relation between central adverbial gerund clauses and the main clause, as in the following example:

- (i) *Os policiais dispersaram a multidão lançando gás lacrimogénio.*
 the police dispersed the crowd [by] throwing tear gas

We believe that, even though there is a causal relation between the two events, the event of dispersing has to be interpreted as temporally overlapping with the event of throwing tear gas. The two events are somehow interpreted as being part of a complex event and cannot be unrelated.

the Ana was lying on the beach all the afternoon, having seen
passar vários iates de luxo.
 to pass several yachts of luxury
 ‘Ana lied on the beach all afternoon, and she saw several luxury yachts pass by.’
 (Móia and Viotti 2005: 723)

d. *Só perdeu uma vez, em Braga, e pela margem mínima,*
 only lost one time, in Braga, and for the marge minimum,
tendo vencido por três ocasiões e empatado duas.
 having won on three occasions and tied two
 ‘It only was defeated once in Braga, and for a small difference, since it won on
 three occasions and tied in other two.’
 (López 2018b: 119)

These differences between the internal syntax of central and peripheral adverbial gerund clauses suggest that central adverbial gerund clauses either have a more truncated left periphery /a more defective structure than peripheral adverbial gerund clauses or that some other factor is responsible for the restrictions observed.

2.3. Deriving the syntax of adverbial gerund clauses

Haegeman (2003, 2006, 2010) argues that some adverbial clauses (including temporal and conditional clauses) are more defective than others and have a truncated functional structure, since they resist argument fronting and other main clause phenomena. We observe the same asymmetries in gerund clauses, although with different empirical phenomena.

The analysis in Haegeman (2010) derives the restrictions observed in central adverbial clauses (in particular, in temporal and conditional adverbial clauses) from movement of an operator from within the IP domain to the CP area, leading to intervention effects and blocking the fronting of arguments. In a following study, Endo and Haegeman (2019) argue that the external syntax of adverbial clauses (their locus of merge) is determined by their internal syntax. Their idea is that the merger of an adverbial clause with the associated main clause is determined by the label of the adverbial clause, which in turn is the result of the movement derivation. The more structure is manifested in the adverbial clause, the higher it is merged. Endo and Haegeman (2019) explain the degree of defectiveness of different types of Japanese and English adverbial clauses with intervention effects caused by movement of a TP-internal operator or of a head to the left periphery: a moved TP-internal operator blocks movement of fronted arguments to the left periphery in English; head movement to the left periphery also enables movement of different types of constituents to the left periphery.

This type of analysis, although interesting and empirically consistent with the data from adverbial clauses in English, Japanese and other languages, cannot be easily extended to adverbial gerund clauses. As said above, gerund clauses usually lack a connective and there is no visible movement in central adverbial gerund clauses. The restrictions that we observe, therefore, cannot be attributed to the fact that we have a special type of connective and movement to the left periphery in central adverbial gerund clauses, as argued for the more defective adverbial clauses of English and Japanese. On the other hand, in peripheral adverbial

gerund clauses it is usually considered that we have head movement of the auxiliary or main verb from the Tense domain to the C domain. This derives the subject-verb inversion that we find in these adverbial gerund clauses:

- (37) a. *Estando o bebé com muita febre, a mãe levou-o ao médico.*
 being the baby with much fever the mother took-him to.the doctor
- b. ??*O bebé estando com muita febre, a mãe levou-o ao médico.*
 the baby being with much fever the mother took-him to.the doctor
 ‘As the baby had a very high temperature, his mother took him to the doctor’

In Endo and Haegeman’s analysis, the defectiveness of an adverbial clause is the result of head movement to the left periphery. If we applied this type of analysis to gerund clauses, we would expect peripheral gerund clauses, where we find head movement to the left periphery, to be defective. However, the empirical data show that the left periphery of peripheral adverbial gerund clauses is less defective than the one of central adverbial gerund clauses.

Therefore, although we retain the idea that central adverbial clauses are merged in lower positions and display restrictions in their internal structure, we do not derive the defectiveness of central adverbial gerund clauses from the existence of movement to their left periphery. Instead, following Lobo (2003, 2006), we analyse both central and peripheral adverbial gerund clauses as having a CP domain and a TP domain, but we conjecture that when T of the gerund clause is c-commanded by matrix T it has to be anchored on the Tense features of the matrix T. Thus, central adverbial gerund clauses only have a temporal overlapping interpretation or a means/mode interpretation.

This anaphoric relation between embedded T and matrix T is somehow reminiscent of other defective constructions, such as infinitival clauses and pseudo-relatives. As shown in Casalicchio (2016), the verb of the pseudo-relative has anaphoric tense and the events described by the embedded clause and the main clause “are (at least partially) simultaneous”:

- (38) a. *Lo vedo che attraversa / *attraversava / *attraverserà la strada*
 him see.1sg that crosses / crossed / will.cross the street
 ‘I see him crossing the street’
 (Casalicchio 2016: 25)

A similar anaphoric relation has been proposed for infinitival clauses selected by control verbs that allow restructuring in Gonçalves (1999) and Gonçalves et al. (2010). Differently from the infinitival domains selected by control restructuring verbs, central adverbial gerund clauses allow clitics (39a) and occasionally allow negation (39b):

- (39) a. *Os alpinistas protegeram-se da tempestade abrigando-se numa gruta.*
 the climbers protected.CL.REFL from.the storm sheltering.CL.REFL in.a cave
 ‘The climbers protected themselves from the storm by taking shelter in a cave.’
- b. *Os alunos irritaram o professor não respondendo a nenhuma pergunta.*
 the students irritated the teacher not answering to no.one question
 ‘The students annoyed their teacher by not answering any question.’

Central adverbial gerund clauses, therefore, are not as defective as infinitival domains selected by restructuring verbs, which do not allow cliticization nor negation. We derive, thus, the defectiveness of central adverbial gerund clauses from an interaction between the C-T features of the gerund clause and the Tense features of matrix T (Agree relation) and not by head movement *per se*. The locus of merge of central adverbial gerund clauses determines that embedded T will be temporally anchored on matrix T. Embedded C-T of central adverbial gerund clauses Agrees with matrix T and is anchored on matrix T (by head Agreement). In central adverbial gerund clauses the embedded C-T is c-commanded by matrix T. The embedded event and the main event will be interpreted as being part of the same complex event. Therefore, the compound gerund is not allowed since it establishes an independent temporal domain. In peripheral (preposed) adverbial gerund clauses, C-T is not c-commanded by matrix T and we may have anteriority, posteriority or overlapping temporal relations depending on the availability of the compound gerund, the aspectual types, semantic-pragmatic inferences, and the ordering of situations.¹¹ Negation, although constrained in central adverbial gerund clauses, is not impossible, as shown in (27e).

This analysis differs from Frey (2011) and Endo and Haegeman (2019), who propose that the functional make-up of the adverbial clause determines the position in which it is merged, by a matching relation between the internal syntax of the adverbial clause and the point in the functional sequence of the matrix clause where the clause merges.

3. Predicative Gerund Clauses

Let us now consider predicative gerund clauses. Although predicative gerund clauses are standard in the Brazilian Portuguese variety (Neto and Foltran, 2001; Arsénio, 2010; Rodrigues, 2006; a.o.), the standard EP variety prefers the prepositional infinitival construction instead. However, the gerund construction equivalent to the PIC can also be found in the southern and insular varieties of European Portuguese, as shown in Carrilho and Lobo (2012) and Lobo and Carrilho (2015).

Although we do not have many data from the syntactic behaviour of this specific gerund construction, data collected for the Linguistic Atlas of the Iberian Peninsula (*Atlas Lingüístico da Península Ibérica*) show that the gerund construction selected by a perceptive predicate (40) is used in four localities of southern eastern varieties of Portugal, instead of the PIC. In these dialectal EP varieties, as an answer to Question 352 from the ALPI questionnaire, the answers contained the perceptive verb followed by a gerund form, and the DP that follows the perceptive verb was marked as accusative (Lobo and Carrilho, 2016):

- (40) *O pai, viram-no chorando.*
 the father, saw.3pl-him crying
 ‘The father, they saw him crying.’

A more fine-grained study on the properties of these gerund clauses in the EP non-standard varieties would be needed, but that is beyond the scope of our paper. Nevertheless, we

¹¹ See López (2018a) for a different analysis.

will consider some properties of this type of gerund clauses, that have been described in more detail for Brazilian Portuguese (Neto and Foltran, 2001; Arsénio, 2010; Fong, 2015).

Unlike the gerund in adverbial clauses, the gerund in predicative clauses always has a [+durative] aspectual value, similar to the PIC. Predicative gerund clauses may occur as complements to perceptive verbs (41a), as subjects of certain types of stative predicates (41b), as secondary predicates predicating of the subject (41c), or as complements of prepositions (41d) (see also Duarte (1993), for the PIC). In all these contexts, the standard EP variety prefers the prepositional infinitival construction.

- (41) a. *Vi [a Ana dançando / a dançar].*
 saw.1sg the Ana dancing / to dance
 ‘I saw Ana dancing’
- b. *[a Ana dançando / a dançar] era um espetáculo digno de se ver.*
 the Ana dancing / to dance was a show worthy of REFL see
 ‘Ana dancing was a show worth seeing’
- c. *Chegou a casa tremendo / a tremer de frio.*
 arrived.3sg to home shaking / to shake of cold
 ‘He arrived home shaking with cold’
- d. *Os noivos entraram na sala com [a banda tocando / a tocar].*
 the fiancés entered in.the room with the band playing / to play
 ‘The bride and groom entered the room with the band playing.’

These are all domains where we find defective propositional domains, usually known as ‘small clauses’, as observed by Barbosa and Cochofel (2005) for the PIC, and illustrated in (42) for the first context. Furthermore, it is possible to coordinate predicative gerunds with non-verbal small clauses (43).

- (42) a. *Eu vi o pai a chorar.*
 I saw the father to cry
 ‘I saw my father crying.’
- b. *Eu vi o pai triste.*
 I saw the father sad
 ‘I saw my father sad.’
- c. *Eu vi o pai sem ânimo.*
 I saw my father without energy
 ‘I saw my father spiritless.’
- (43) *Eu vi o pai chorando e os meninos muito tristes.*
 I saw the father crying and the children very sad.

Unlike adverbial gerund clauses, predicative gerund clauses do not allow negation (44c), do not allow stative predicates that cannot be converted into processes (44c), and may alternate with the PIC <a + infinitive> in the European Portuguese variety:

- (44) a. *Não tendo os meninos sorrindo para a avó, a mãe ficou triste.* PAC¹²
 not having the children smiled to the granny, the mother became sad
 ‘As the children did not smile to their granny, their mother was sad.’
- b. *Os meninos entristeceram a mãe não sorrindo para a avó.* CAC
 the children saddened the mother not smiling to the granny
 ‘The children made their mother sad by not smiling to their granny.’
- c. **Os meninos chegaram a casa não sorrindo / a não sorrir.* PredC
 the children arrived to house not smiling / to not smile
 ‘The children came home without smiling.’
- (45) a. *Não estando ninguém em casa, almocei sozinha.* PAC
 not being nobody in house, lunched.1sg alone
 ‘As nobody was home, I had lunch by myself.’
- b. *Os meninos aborreceram a professora estando sempre distraídos.* CAC
 the children annoyed the teacher being always distracted
 ‘The children annoyed their teacher by being distracted all the time.’
- c. **Os meninos chegaram a casa estando / a estar distraídos.* PredC
 the children arrived to home being / to be distracted
 ‘The children came home being distracted.’

The [+ durative] interpretation of predicative gerund clauses is not present in the other types of gerund clauses. This is why we only find an overlapping distribution with the PIC with this subtype of GC. As we will see, this may be attributed to the fact that this subtype of gerund clause is the projection of a specific aspectual head, as has been proposed for the PIC (Duarte, 1993; Barbosa and Cochofel, 2005). As in the PIC, (46b) does not entail that the chef has finished the preparation of the salad, whereas (46a) entails that the whole process of the preparation of the salad was witnessed:

- (46) a. *Vi o chef preparar a salada.*
 saw.1sg the chef prepare the salad
 ‘I saw the chef prepare the salad.’
- b. *Vi o chef preparando / a preparar a salada.*
 saw.1sg the chef preparing / to prepare the salad
 ‘I saw the chef preparing the salad.’

In an adverbial gerund clause like (47), on the contrary, the gerund does not have a [+ durative] interpretation:

- (47) *Preparando o chef a salada, o almoço vai ser um sucesso.*
 preparing the chef the salad, the lunch will be a success.
 ‘If the chef prepares the salad, the lunch will be a success.’

¹² PAC = Peripheral Adverbial Clause; CAC = Central Adverbial Clause; PredC = Predicative Clause.

This shows that, unlike adverbial gerund clauses, predicative gerund clauses are associated with a specific aspectual value, as in the progressive construction with *estar* ‘be’:

- (48) *O chef está preparando / a preparar a salada.*
 the chef is preparing / to prepare the salad
 ‘The chef is preparing the salad.’

Let us consider in more detail predicative gerund clauses embedded under perceptive predicates and their equivalent PIC.¹³

Raposo (1989), Duarte (1993), Duarte and Gonçalves (2001) and Barbosa and Cochofel (2005) analyse the standard Portuguese PIC, and they show that the DP and the prepositional infinitival form a constituent, since this sequence may be clefted, dislocated and constitute an answer to a wh-question:

- (49) *O que ele viu foi [a criança a sair de casa].*
 the what he saw was the child to leave of house
 ‘What he saw was the child leaving home.’

- (50) *[O teu filho a copiar no exame]_i, eu não vi _{ti}.*
 the your son to copy in.the exam, I not saw
 ‘Your son copying in the exam, I didn’t see.’

- (51) – *Sabes o que eu vi?*
 know.2sg the what I saw
 ‘Do you know what I saw?’
 – *O teu filho a fumar.*
 the your son to smoke
 ‘Your son smoking.’

In Raposo (1989)’s analysis, the PIC is a type of small clause headed by the preposition *a* that has an IP as a complement with a null subject controlled by the subject of the PP small clause. Depending on the availability of agreement on the infinitive, the subject will be *pro* or PRO:

- (52) perceptive V [PP DP_i [P’ [P *a*] [IP *pro*/PRO_i VP]]]

Duarte (1993) advances an alternative analysis, in which the PIC is the projection of the aspectual preposition *a*, which is analysed as the head of an aspectual projection. Contrary to Raposo (1989), no null category controlled by the DP is posited in the embedded domain:

- (53) perceptive verb [AspP NP [Asp’ [Asp *a-r*] [AgrP [Agr’ [Agr] VP]]]]

¹³ Borgonovo (1996) argues that English gerund clauses under perceptive verbs differ from Spanish gerund clauses under perceptive verbs. According to the author, the Spanish construction receives only one structural representation, whereas the English construction is ambiguous between two different types of representations: one in which the DP argument and the gerund clause form a clausal constituent and one in which the DP is an argument of the perceptive verb and the gerund construction is an adjunct depictive secondary predicate. To support this analysis, she uses different arguments: i) it is only possible to extract a constituent from a gerund complement but not from a gerund adjunct; ii) we can only have an expletive subject in a gerund complement; iii) only complement domains can be focused in a pseudocleft.

(adapted from Duarte 1993: 152)

The author argues for the absence of a T node in the embedded infinitival domain, since it is not possible to find the auxiliary *ter* ‘have’, contrary to what happens in other infinitival clauses. She also argues that the P *a* and the infinitival morpheme form a complex Asp nucleus with a [+ durative] value.

More recently, Barbosa and Cochofel (2005) propose an alternative analysis for the PIC. The authors consider that the perceptive verb selects a small clause with the DP as its subject and an AspP headed by the aspectual preposition *a* as its predicate:

(54) *Eu vi* [_{SC} [_{DP} *as crianças*]_i [_{AspP} [_{Asp} *a* [_{TP} *pro_i/PRO_i* *Vinf ...*]]]]

(adapted from Barbosa and Cochofel 2005: 398)

This analysis combines properties from Raposo’s and from Duarte’s analyses, in so far as it treats *a* as a preposition of central coincidence that heads an AspP, in line with Demirdache and Etxebarria (1997), and accounts for the fact that the DP receives accusative Case and not nominative Case even though the infinitive may display overt agreement inflection:

(55) a. *Eu vi-os a devorarem um gelado.*
I saw-them to eat.3pl an ice-cream

(Barbosa and Cochofel 2005: 387)

b. **/?Eu vi eles a devorarem um gelado.*
I saw they to eat.3pl an ice-cream

(Barbosa and Cochofel 2005: 388)

Taking into account its specific aspectual value, the *a* morpheme of the PIC has been analysed as an aspectual marker instead of a true preposition (Duarte, 1993; Barbosa and Cochofel, 2005). Similar values apply to the gerund construction embedded under perceptive verbs, which display a progressive value as well. In both cases, the non-finite complement denotes an ongoing situation in the time interval in which the matrix clause is located.

Accordingly, for this gerund construction that follows perceptive verbs, found in Brazilian Portuguese and in dialectal European Portuguese varieties, Arsénio (2010: 173) proposes a structure in which the perceptive verb selects a gerund clause that is an AspP, similar to the one proposed by Duarte (1993) for the PIC:¹⁴

¹⁴ For this same gerund construction of the Brazilian Portuguese variety, Rodrigues (2006, 2010) argues that there can be two different structures depending on the type of perception context. In direct perception contexts, as in (i), the author argues that the perceptive verb selects a clause that is an AspP. In imaginative perception contexts, as in (ii), the author argues that the selected complement is less defective and projects a TP:

(i) *Eu vi Maria brigando com seu filho.*
I saw Maria fighting with her son
‘I saw Maria arguing with her son.’

(ii) *Eu posso ver meu filho ganhando uma medalha de ouro no campeonato.*
I can see my son winning a medal of gold in.the championship
‘I can see my son winning a gold medal in the championship.’

(56) perceptive V [_{AspP} os meninos [_{Asp} trabalhando [_{VP} ~~os meninos trabalhando~~]]]

In this case, no empty controlled category is posited in the embedded domain: the gerund verbal form moves to the Asp head and the DP argument of the embedded verb is moved to its specifier and is Case marked as Accusative by the main verb.

The predicative gerund construction embedded under perceptive verbs allows clefting and can answer a wh-question, which shows that it behaves as a constituent.¹⁵

(57) *O que eu ouvi foi [essa aluna dizendo uma mentira].*

the that I heard was that student telling a lie

‘What I heard was that student telling a lie.’

(58) *- Sabes o que eu vi?*

know.2sg the that I saw

‘Do you know what I saw?’

- A Ana dançando.

the Ana dancing

‘Ana dancing.’

Following different authors, we will assume that predicative gerunds are the projection of an aspectual head and that these clauses lack the higher functional domain (see Barbosa and Cochofel, 2005, for the PIC; Rodrigues, 2006, 2010; Arsénio, 2010; and Fong, 2015, for different types of gerund predicative structures of Brazilian Portuguese; Casalicchio, 2019, for the PIC and predicative gerunds).¹⁶ Despite differences in the internal syntax of these clauses, all authors agree on the fact that predicative gerund clauses are defective clauses without the

Rodrigues (2006, 2010) bases her analysis on the following empirical arguments: i) in direct perception contexts, the verb disallows negation in the embedded domain and different temporal specifications in the matrix and embedded domains, whereas in imaginative contexts the embedded domain can be negated, and the matrix and embedded domains can have different temporal specifications.

¹⁵ Predicative gerunds embedded under perceptive verbs allow extraction, which shows that they are complements; on the contrary, predicative gerunds that behave as secondary predicates resist to extraction, which points to an analysis as adjuncts (see Borgonovo, 1996):

(i) *Que mentira é que o professor ouviu essa aluna dizendo?*

which lie is that the teacher heard that student saying

‘Which lie did the teacher hear the student saying?’

(ii) *?? Que mentira é que o professor entrou na sala dizendo?*

which lie is that the teacher entered in the room saying

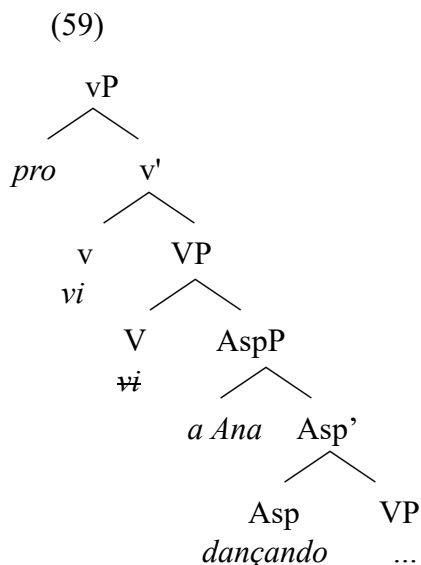
‘Which lie did the teacher enter the room saying?’

We will not explore the differences between complement and adjunct predicative gerunds in this paper. However, in all the cases the gerund construction maintains the same durative aspectual value. What seems to change is the position where the gerund clause is merged.

¹⁶ Casalicchio (2019) considers an additional functional head above Asp and argues that prepositional infinitivals have a more complex structure than predicative gerunds.

C-T domain¹⁷. In contrast, adverbial gerund clauses are full clauses with a C-T domain. The lack of the C-T domain explains that predicative clauses will always have a marked aspectual value and will display aspectual restrictions, unlike adverbial gerund clauses.¹⁸

Predicative gerund clauses are, thus, even more defective than adverbial gerund clauses:



Since only in predicative gerund clauses does the gerund end up in an Asp head, it is only in these contexts that it can alternate with the PIC in the EP variety. In other gerund clauses, the gerund will always move to a higher functional node – T or C. The specific durative aspectual interpretation of predicative gerund clauses, similar to the PIC, that is absent in other types of gerund clauses is, thus, the result of the fact that in this case the gerund lexicalizes an Asp head.

4. Como Gerund Clauses

Leal et al. (2023) consider another type of gerund clauses, illustrated in (60):

(60) *O tribunal condenou as atividades do homem como sendo de burla qualificada.*

the court condemned the activities of the man as being of qualified fraud

‘The court condemned the man’s activities as being of qualified fraud.’

These gerund clauses are always introduced by the connective *como* ‘as’, they have a syntactic distribution that differs from the other subtypes of gerund clauses and they display different internal properties, as described in Leal et al. (2023). Gerund clauses with *como* behave as selected complements of a subset of verbs, following three different verb patterns: i)

¹⁷ Rodrigues (2006, 2010), however, distinguishes between concrete and imaginative interpretations of the perceptive verb and argues that, whereas in cases in which there is an interpretation of direct perception only AspP projects, in cases of imaginative perception, the structure is richer and TP projects.

¹⁸ A possibility would be to consider that predicative gerunds project a Pred head as we propose below for *como*-GC following Leal et al. (2023). This would account for the fact that predicative gerunds have a distribution similar to non-verbal small clauses and have an obligatory lexical subject. We leave this for future research.

epistemic and perception verbs, such as *considerar* ‘consider’ (61); ii) declarative/saying verbs, such as *citar* ‘cite’, *descrever* ‘describe’, *apontar* ‘point’, *apresentar* ‘present’, *indicar* ‘indicate’, *falar de* ‘speak about’ (62); iii) manifestation/appearance verbs, such as *figurar* (*no dicionário*) ‘appear (in the dictionary)’ or *aparecer* ‘appear’ (63), which behave as unaccusative verbs:

- (61) *Catroga considerou a pressão especulativa como estando assente em pressupostos artificiais.*
 Catroga considered the pressure speculative as being based on assumptions artificial
 ‘Eduardo Catroga considered the speculative pressure as being based on artificial assumptions.’
- (62) *O «Jornal de Angola» cita fontes próximas de Nzau Puna como tendo garantido a execução de um elemento.*
 the «Jornal de Angola» quote-PRS.3.SG sources close of Nzau Puna as have-GER guarantee-PTCP the execution of one element
 ‘The «Jornal de Angola» quotes close sources of Nzau Puna as having guaranteed the execution of one element.’
- (63) *nenhuma das 23 empresas que aparecem como tendo adquirido matéria-prima*
 none of-the 23 companies that appear-PRS.3.PL as have-GER acquire-PTCP feedstock’
 ‘none of the 23 companies that appear as having acquired feedstock’

In the first two groups, the gerund clause predicates of the object (or of the derived subject when the sentence is passivized), in the third group, the gerund clause predicates of the derived subject. With the first group of verbs, the gerund clause is obligatory (64), with the other two subclasses it is usually optional, although this may affect their meaning (65)-(66):

- (64) *Catroga considerou a pressão especulativa (como estando assente em pressupostos artificiais).*
 Catroga consider-PST.3.SG the pressure speculative as be-PST.3.SG based on assumptions artificial
 ‘Catroga considered the speculative pressure *(as) being based on artificial assumptions.’
- (65) *visto que Olga V. nos apresentou o estudo (como tendo sido feito com Virodene), parece -me óbvio que*
 since that Olga V. us-DAT present-PST.3.SG the study as have-GER be-PTCP conduct-PTCP with Virodene, seem-PRS.3.SG me-DAT obvious that
 ‘since Olga V. presented us the study as having been conducted with Virodene, it seems obvious to me that...’
- (66) *Tony Blair apontou as deficiências da organização (como tendo contribuído para a violência).*
 Tony Blair point-PST.3.SG the deficiencies of-the organization as have-GER contribute-PTCP to the violence

‘Tony Blair pointed the organization’s deficiencies as having contributed to the violence.’

4.1. External syntax

Como-gerund clauses resemble secondary predication (Williams, 1980; Stowell, 1981; Rothstein, 1983, 2012; Schultze-Berndt, 2017; a.o.), but they differ both from depictives and from resultatives, as they cannot occur in sentence initial position (67b), they cannot predicate of an external argument (68b) and do not express a result (69b):

- (67) a. *Ramos é citado como tendo afirmado que com Artur Jorge não trabalha.*
 Ramos is quoted as having stated that with Artur Jorge not works
 ‘Ramos is quoted as having said that he does not work with Artur Jorge.’
 b. **Como tendo afirmado que com Artur Jorge não trabalha,*
 as having stated that with Artur Jorge not works,
Ramos é citado.
 Ramos is quoted
 ‘As having stated that with Artur Jorge he does not work, Ramos is quoted.’
- (68) a. *O presidente riu divertido / como se assistisse a uma comédia.*
 the president laughed amused / as if watched to a comedy
 ‘The president laughed amused / as if he was watching a comedy show.’
 b. **O presidente riu como assistindo a uma comédia.*
 the president laughed as watching to a comedy
 ‘The president laughed as if he was watching a comedy show.’
- (69) a. *O cozinheiro desfez o pão em migalhas.*
 the cook undid the bread in crumbs
 ‘The cook crumbled the bread.’
 b. **O cozinheiro desfez o pão como sendo migalhas.*
 the cook undid the bread as being crumbs

There is syntactic evidence that suggests that *como*-GC occupy a low position in the sentence: they may be under the scope of matrix negation and their null subject is controlled by an argument of the main predicate:

- (70) *O repórter não descreveu a Alemanha*
 the reporter not describe-PST.3.SG the Germany
como sendo um país imperialista, mas antes como
 as be-GERa country imperialist, but rather as
sendo um país ameaçado.
 be-GER a country threatened
 ‘The reporter did not describe Germany as being an imperialist country, but rather as being a threatened country.’

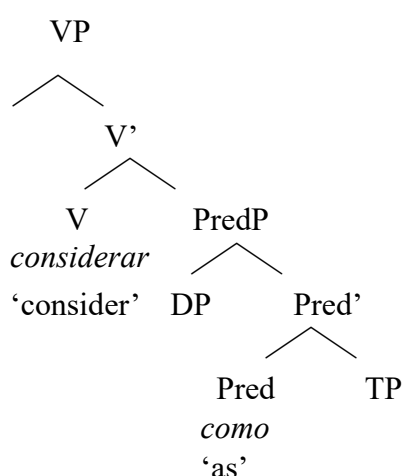
The fact that *como*-GC are dependent on specific types of predicates suggests that they are selected constituents (even though they may be optional). Constituency tests go in the same direction, since we cannot exclude a *como*-GC from a pseudocleft that focuses the predicate:

- (71) a. **O que o repórter fez como sendo um país imperialista foi descrever a Alemanha.*
 what the reporter did as being an imperialist country was to.describe Germany
- b. *O que o repórter fez foi descrever a Alemanha como sendo um país imperialista.*
 what the reporter did was to.describe Germany as being an imperialist country
 ‘What the reporter did was to describe Germany as an imperialist country.’

Following Leal et al. (2023), we will assume an asymmetric configuration, where the subject of predication is the specifier of a Pred head and the predicate is its complement (Bowers 1993, 2001; Adger and Ramchand 2001). *Como*-gerund clauses may then be analysed as a special type of predicative complement that predicates of a DP, a “Complex Small Clause” as described by Rafel (2001).

For verbs such as *considerar* ‘consider’, for which the gerund clause is obligatory, we propose that the PredP is selected by the main predicate, as in (72):

(72)



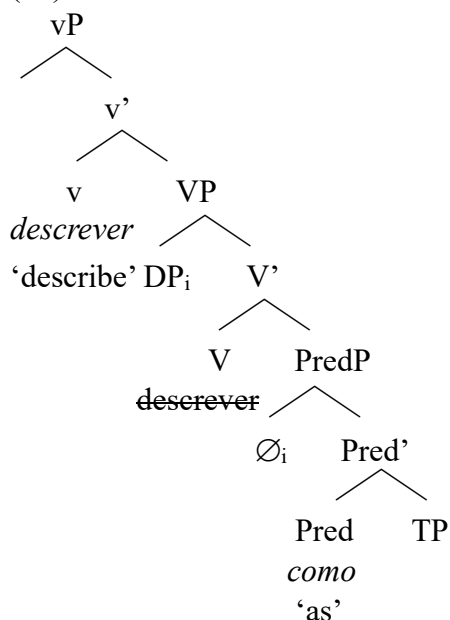
For verbs like *descrever* ‘describe’ or *aparecer* ‘appear’, we propose that the verb selects two complements, the first one being a DP/PP and the second one a small clause with a null subject as in (73).

In both cases, the gerund clause occupies a low position in the sentence and is c-commanded by matrix T and by the object DP, which controls the null subject of the gerund clause. The difference between the two types of verbs is that the first type (72) selects only one internal argument, whereas the second type selects two internal arguments (73), the second one being only optionally lexically expressed and behaving as a “default argument” in the sense of Pustejovsky (1995). In this case, if the verb is unaccusative, as in (63), or if the verb is

passivized, the first internal argument will be moved to subject position. If the verb is transitive, the first internal argument will remain in postverbal position, as in (62).

As for the gerund clause, as we will show in the following section, it is less defective than peripheral gerund clauses. Hence, we consider that it projects at least the TP layer.

(73)



4.2. Internal Syntax

As shown in Leal et al. (2023), *como*-gerund clauses, unlike other types of gerund clauses, always require the connective *como* ‘as’; they cannot be preposed (74), they cannot have a lexical subject (75), they cannot alternate with the PIC (76), but they allow the compound gerund (77) and negation (78).¹⁹

- (74) **Como sendo de burla qualificada, o tribunal*
 as be-GER of fraud qualified, the court
condenou as atividades do homem.
 condemned the activities of-the man
 ‘As being qualified fraud, the court condemned the man's activities.’

- (75) **Esta proposta foi criticada por muitos como*
 this proposal be-PST.3.SG criticize- PTCP by many as
não sendo as verbas suficientes.
 not be-GER the sums sufficient

‘This proposal was criticized by many as not being the sums sufficient.’

- (76) *O tribunal condenou as atividades do*

¹⁹ In other languages, we can find constituents with similar properties sometimes called “as phrases” (see Levin 1993; Stump 1985; Bowers 2001; Rafael 2001, among others).

the court condemn-PST.3.SG the activities of-the
*homem {como sendo /*como a ser} de*
man {as be-GER/ as to be-INF} of
burla qualificada.
fraud qualified

‘The court condemned the man's activities as being of qualified fraud.’²⁰

- (77) *O livro é apresentado como tendo sido*
the book be-PRS.3.SG present-PTCP as have-GER be-PTCP
escrito por um psicoterapeuta.
write-PTCP by a psychotherapist
‘The book is presented as having been written by a psychotherapist.’

- (78) *Esta proposta foi criticada por muitos como não*
this proposal be-PST criticize-PTCP by many as not
sendo suficiente.
be-GER sufficient
‘This proposal was criticized by many as not being sufficient.’

The syntactic properties of *como*-gerund clauses show that they project at least a TP domain, since they allow negation and the compound gerund, and they do not impose aspectual restrictions on the type of predicate, unlike predicative gerund clauses described in section 3. However, unlike peripheral adverbial GC, *como*-gerund clauses do not have an overt subject. Their null subject is always controlled.

4.3. The Pred head as an intervener

In Section 2., we proposed that central adverbial gerund clauses are more defective than peripheral adverbial gerund clauses because the embedded T is c-commanded by matrix T and establishes an Agreement relation with it. In the previous sections, we proposed that *como*-gerund clauses are a kind of predicative complement, which behaves differently from predicative gerund clauses and PIC. There are several differences between predicative gerund clauses equivalent to the PIC and *como*-gerund clauses both in their internal structure and in their external structure. Unlike the preposition *a* that introduces the PIC, the Pred head *como* does not impose aspectual restrictions on the situation described by the gerund clause. We have proposed that *como*-gerund clauses are merged in a low position, as complements of different types of predicates, since they are subject to lexical restrictions, they cannot be excluded from constituency tests that focus on the predicate and they are under the scope of matrix negation. We have also reviewed several empirical arguments that suggest that *como*-gerund clauses are functionally more complex than central adverbial gerund clauses: they allow the compound gerund, negation, all types of aspectual classes, and different temporal interpretations (including anterior interpretations) with respect to the situation described in the main clause.

If *como*-gerund clauses project a T domain and are merged in a low position, why is it that the embedded T does not have to be dependent on matrix T, as we have suggested for central adverbial gerund clauses? Our idea is that the Pred head blocks the Agreement relation

²⁰ Examples (74)-(78) are taken from Leal et al. (2023).

between matrix T and embedded T and allows the embedded T of the gerund clause to project an independent temporal domain.²¹ Therefore, although *como*-gerund clauses are merged in a low position, they are less defective than central adverbial gerund clauses. They are, however, more defective than peripheral adverbial gerund clauses since they do not allow an overt subject. We believe that this is due to the fact that these are a kind of obligatory control structures, the null subject being controlled by a higher argument.

5. A gradient typology of gerund clauses

In this article, we have seen that there is a gradience in gerund clauses from more defective to less defective domains. We have considered four different types of gerund clauses – predicative gerund clauses, *como*-gerund clauses, central adverbial gerund clauses and peripheral adverbial gerund clauses. Their properties are summarized in the following table:

	Predicative GC (≈ PIC)	Central adverbial GC	<i>como</i> GC (secondary predicate)	Peripheral adverbial GC
negation	-	+/-	+	+
compound gerund	-	-	+	+
aspectual restrictions	+	+/-	-	-
alternance with PIC	+	-	-	-
clefting	+	+	-	-
scope of matrix Neg	+	+	+	-

Table 1. Properties of subtypes of gerund clauses²²

These gradient properties of gerund clauses have led us to the following defectiveness scale, from more defective to less defective domains:

Pred GC >> Central Adv GC >> Como-GC >> Peripheral Adv GC

We have proposed that the degree of defectiveness of the different types of gerund clauses may be explained by an interaction between several factors, which include:

²¹ In Leal et al. (2023), it is proposed that the Pred head functions as a type-shifter that turns the whole gerund predication into a predicate.

²² The +/- signal in the third column indicates that the relevant properties may fail to apply in specific discourse contexts. That is, we can find negation in central adverbial gerund clauses, although it is felt as a marked option, and, although stative predicates are possible in central adverbial clauses, they are not very common. By contrast, in predicative GC negation and stative predicates are never possible.

- i) the functional architecture of the gerund clause;
- ii) the structural position where the gerund clause is merged;
- iii) the existence of an Agree/matching relation between embedded T features and matrix T features when matrix T c-commands embedded T;
- iv) the presence (or absence) of an intervening head that blocks the Agree relation.

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