

Adjuncts in the Generative Grammar

EDITED BY

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Recife - 2020

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Dedicated to the memory of
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[FOREWORD]

This book gathers the articles from the papers presented during the III International Workshop of Grupo de Estudos em Teoria da Gramática (Getegra), *Adjuncts*, that took place at Universidade Federal de Pernambuco (UFPE) and was promoted by Universidade Federal Rural de Pernambuco on 22nd and 23rd March 2018. Getegra is a group of studies and research in Theory of Grammar composed of professors and graduate students from different universities in the Northeast of Brazil. The main objective of the group is to develop and to expand research, particularly generativist ones, on the grammar of natural languages, thereby strengthening and consolidating this field of investigation in the Brazilian Northeast. Getegra also aims to promote the development of research, thus ensuring the education of human resources able to investigate issues that are relevant to the formal study of languages.

The goal of the biannual Workshops promoted by Getegra is to congregate, around a theme, researchers from renowned institutions of higher education from Brazil and abroad, to debate current issues such as the development of the generative grammar theory to elaborate descriptive-explanatory frameworks on the functioning of natural languages. The first workshop had as theme *Agreement*, took place in February 2014, in Recife, Pernambuco – Brazil, and explored approaches to the phenomenon of agreement in natural languages by researchers from several higher education institutions in Brazil and abroad. The second workshop, *Nominals*, took place in March 2016 in Recife, and had as main theme of discussion the morphosyntactic and semantic phenomena regarding the

nominal structures in natural languages, something that is very productive in the agenda of generative research.

Adjuncts, then, was the third international workshop promoted by Getegra that aimed at gathering works focused on the investigation of phenomena involving adjunction structures in natural languages, considering morphological, syntactic and/or semantic aspects in the theoretical generativist framework. The discussions throughout the event contributed both with the descriptive perspective, since the works presented engaged data from many natural languages, and with the theoretical perspective, as several formal approaches were considered for the subject.

Apart from the first chapter, which is an introduction to the topic and a brief presentation of the works presented during the workshop, all the papers congregated here correspond to a selection of papers resulted of discussions developed during the III Getegra International Workshop – III GIW. We thank the authors for their valuable contributions with the chapters of this volume, specially the invited speakers, Artemis Alexiadou and Jairo Nunes.

We would like to thank the III GIW scientific committee: Artemis Alexiadou (Humboldt - Universität zu Berlin), Juanito Avelar (State University of Campinas), Éva Dékány (Research Institute for Linguistics of the Hungarian Academy of Sciences), Marcel den Dikken (Research Institute for Linguistics of the Hungarian Academy of Sciences), Maria José Foltran (Federal University of Paraná), Jairo Nunes (Univeristy of São Paulo), Norma Schifano (University of Cambridge), Maria Cristina Figueiredo Silva (Federal University of Paraná), Giuseppina Silvestri (University of Cambridge) e Aquiles Tescari Neto (State University of Campinas).

We would also like to thank the attendants, the Universidade Federal Rural de Pernambuco, the Universidade Federal de Pernambuco and the Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco – FACEPE, which supported the realization of III GIW.

[CHAPTER 1]

Adjuncts: an introduction

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The goals of this chapter is to point some introductory aspects regarding adjunction in generative grammar and to make a brief presentation of the chapters that make up this book. Part of the discussion presented here is based on Hornstein and Nunes (2008) paper.

We would like to start observing that any theory of constituent structure must deal with elements that, in spite of not establishing an argumental relation with the head that projects the phrase, establish a semantic relation as modifier of this head (or modifier of the entire phrase projected by the head). These are elements that neither occupy the position of complement to a given head X , which is a position related to the internal argument, nor the position of the specifier of X , which is related to the external argument of X . Modifiers, typically called adjuncts, present, in an X -bar representation, a very peculiar configuration that we show later in (2) and (3).

In terms of thematic theory (Chomsky 1981, 1986), an adjunct can be conceived as a constituent whose theta role is not assigned by the head to which

it is adjoined. Therefore, adjuncts present a very peculiar property among many: unlike arguments, the number of adjuncts in a phrase can be indefinite, at first. In other words, a verb such as *eat* predicts two arguments only (the subject, that designates the *agent*, and the object, that designates the *patient*, the thing to be eaten). The same cannot be said about the number of adjuncts in a sentence with this verb. This is shown in the example of Brazilian Portuguese (BP) below with the presence of four modifiers (but could be much more):

- [1] O João comeu o bolo [rápido] [ontem] [na sala] [depois que a Maria saiu].
 ‘João ate the cake [quickly] [yesterday] [in the room] [after Maria left].’

In addition to the fact that they can appear in an indefinite number in a sentence, another property of adjuncts is the diversity of semantic meaning they can establish with a phrase. Example (1) provides at least three meanings: *manner* (quickly), *time* (yesterday/ after Mary left) and *place* (in the room). Considering other semantic meanings established by adverbial phrases (purposeful, proportional, causal, consecutive etc.) and by an adjectival or prepositional phrase adjoined to a noun (indicating *reason*, *origin*, *source* etc.)¹, there is an increase in the number of possible semantic relations introduced by adjuncts.

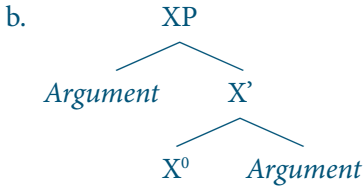
In terms of Theory X-bar, the traditional configuration employed to capture the notion of adjunction is represented in (2); as contrast, see the example of an argument structure of a biargumental verb in (3).

- [2] a. [_{XP} [_{XP} ... X⁰ ...] *ADJUNCT*]
 b.

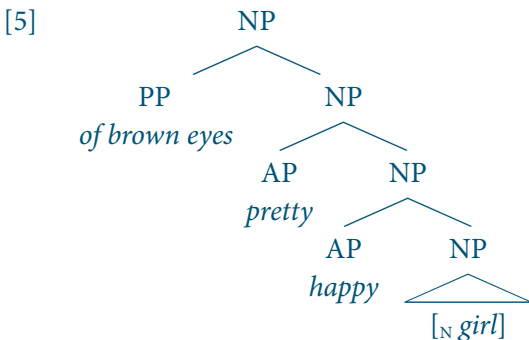
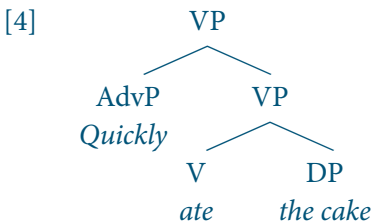
¹ Like in (i) below:

(i) [_{AP} fast] [_{AP} new] car [_{PP} from Germany]

[3] a. $[_{XP} \text{ ARGUMENT } [_{X'} X^0 \text{ ARGUMENT}]]$



Structures (2) are formal representations of adjunction. These configurations show that the label of the resulting object of adjunction (XP) is identical to the target of the adjunction (XP). Therefore, an adjunct does not interfere with the nature of the element to which it is adjoined, which preserves all its properties after adjunction, differently of an argumental structure of a two place verb, as we can see in (3). To make it clearer, let us take (4) and (5) below, which can be presented as examples of the representation (2b) for adjuncts:



Before the insertion of *quickly* within the tree, in (4), the object is formed by *ate* and *the cake*, that form a verb phrase, i.e., the VP. When *quickly*

is adjoined, the resulting object preserves verbal properties, that is, it remains a VP, but with a modifier in it. Similarly, in (5), regardless of the number of modifiers added to the noun phrase, the result is always a noun phrase.

In the perspective of the *Government and Binding Theory*, the adjunction could be given maximal, intermediate or minimal projection. Nonetheless, there remained the notion that the nature and the information on the level of projection were preserved after adjunction. This type of representation for adjuncts allowed the capture of some empirically observable properties.

One such property, as seen, concerns to the preservation of the categorial nature of the phrase to which a modifier is adjoined. Regardless of the nature of the adjective, for example, evaluative, descriptive etc., the adjunct to a nominal head always leads to a construction of nominal properties rather than adjectival. This is captured by the label of the object: it is not the adjunct that labels the new constituent, but the element to which the adjunct was merged.

The conservation of the categorial nature is also seen in the sentence of BP in (6) as follows:

- [6] Maria beijou [_{DP} [_{DP} [_{DP} um rapaz] baixinho] com bigode].
 ‘Maria kissed a short boy with a moustache.’

The verb *beijar* “to kiss” selects as complement a DP and never an adjectival or a prepositional phrase. Therefore, to ensure the grammar requirements of the verb are satisfied regarding the selection of a complement, it must be assumed that adjoining the adjectival phrase *baixinho* “short” and the prepositional phrase *com bigode* “with a moustache”, in (6), results in an object that is read by the computational system as a nominal construction, a DP, not as an adjectival or a

prepositional phrase. That is certain under the assumption that, in the case of adjunction, the element to which the adjunct is merged projects rather than the adjoined element.

The representation of adjunction in (2) also proposes that adjunctions conserve bar level information, therefore, the outcome of adjoining an item to XP (maximal projection) is also XP (also a maximal projection). This is different, for instance, from the operation that combines X to a complement, which places the object at X', and from the operation that combines X' to a specifier, ending in maximal projection, like (3), in terms of the standard Theory X-bar. Representation (2) also displays the fact that, before and after adjunction, the head of the structure is the same. For example, a VP, before and after an adverb is adjoined, preserves the V as head of the complex.

Adjuncts also constitute domains that are known in generative linguistics as islands. Islands are domains from which no constituent can be extracted. The island property of adjuncts can be verified through the following contrasts in BP – see also the case of extraction from adjuncts in BP in Nunes (in this volume).

[7] a. A Maria disse [_{CP} que a Ana beijou o João].

‘Maria said that Ana kissed João.’

b. Quem (que) a Maria disse [_{CP} que a Ana beijou?]

‘Who Maria said that Ana kissed?’

[8] a. A Maria saiu [_{CP} depois que a Ana beijou o João].

‘Maria left after Ana kissed João.’

b. **Quem* (que) a Maria saiu [_{CP} depois que a Ana beijou?]

‘*Who Maria left after Ana kissed?’

- [9] a. A Maria viu [_{NP} a garota [_{CP} que beijou o João]].
 ‘Maria saw the girl who kissed João.’
 b. *Quem (que) a Maria viu [_{NP} a garota [_{CP} que beijou]]?
 ‘*Who Maria saw the girl who kissed?’

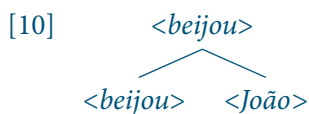
The extraction in example (7) results in a grammatical structure, whereas (8) and (9) result in ungrammatical structures in BP. In sentence (7b), the interrogative element correspondent to the complement to *beijar* “to kiss” in the embedded clause *quem* “who” is moved to the beginning of the higher clause. It is noted that the embedded clause in (7b), between brackets, works as argument of *dizer* “to say”, a transitive verb that, in this case, selects a CP. Next, in (8) and (9), CPs from which the interrogative constituents are extracted work as adjuncts. In the former, the interrogative constituent *quem* “who” is moved to the beginning of the matrix clause from the position of complement to *beijar* “to kiss”, which is within a time adverb traditionally classified as adjunct. As for the latter, the interrogative constituent is moved to the peripheral left of the matrix clause from the position of object to *beijar* “to kiss” which, in (10), is within a relative clause, also traditionally classified as adjunct.

The *Government and Binding* model aimed at attributing this island property of adjuncts to the syntactical representation of adjunction, which differs, for example, from the configuration established between a head and its complement. The noteworthy aspect here is the somewhat unusual nature of adjuncts: they do not interfere with bar-level information, they retain the categorial information of that object prior to adjunction and they are presented as “untouchable” places to the system, since elements cannot be extracted from their domain.

As several authors have noted (Chomsky, 1995; Hornstein & Nunes 2008; Boeckx, 2008, among others), the phenomenon of adjunction has not

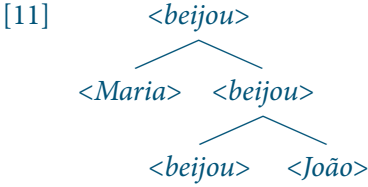
been satisfactorily explained by formal theories of language. Traditionally, this phenomenon is seen as an “exception” in relation to head-complement and head-specifier relations. Hence the claim by Hornstein & Nunes (2008) that what an adjunct is and how it works grammatically is not a clear issue. The obscurity of adjuncts is found in the description of its most salient features (they are optional, not selected, behave as syntactic islands etc.) as well as in the theoretical formalizations that attempt to codify its presence in syntactical structures.

A derivational approach of syntactical structures (Chomsky, 1995) in which labels are disregarded due to their theoretical motivations, adjunctions always form objects of a same nature, in bar level terms. One example is the derivation in the sentence *Maria beijou João ontem* “Maria kissed João yesterday”, in which *ontem* “yesterday” is an adjunct. The bottom up construction of the sentence shows the selection of two lexical items <beijou> “kissed” and <João>, with the former projecting and labeling the new object:



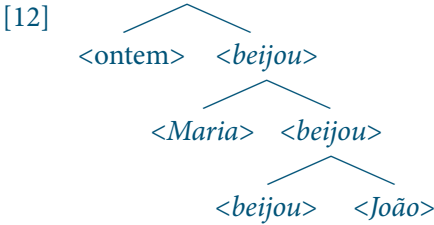
In the instant of derivation, <João> is both a minimal projection (a lexical item) and a maximal projection, once it no longer projects. The first instance of <beijou> “kissed”, sister to “João”, is also a minimal projection because it is a lexical item. The product of their merge, the second instance of <beijou> “kissed”, is not a minimal projection (because it does not correspond to a single lexical item, rather, it is the grouping of two lexical items), nor it is a maximal projection. Indeed, it needs to project because <beijou> “kissed” demands an agent, capable to kiss, at the specifier position in the structure.

The second concatenation in the derivation adds to the object formed in (10) the lexical item *Maria*, resulting in (11):



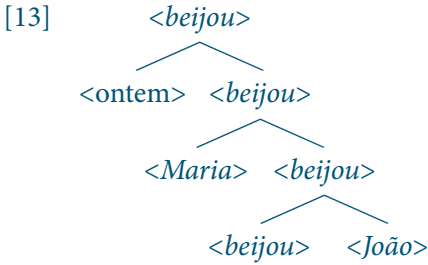
Concatenating <Maria> and <beijou> “kissed” results in a structure of verbal nature, thus indicating the label of the object to be <beijou> “kissed” not <Maria>. At this point in the derivation, the most prominent instance of <beijou> “kissed” is conceived as maximal projection because (i) it does not correspond to a single lexical item; (ii) it does not project to satisfy any grammatical demands.

The next step in the derivation is adjoining the adverb *ontem* “yesterday” to the object formed in (11), which leads us to (12):



Derivation of <ontem> “yesterday”, at this point, is a minimal projection because it corresponds to a single lexical item and, the object to which the adverb is adjoined, is a maximal projection as stated before. There are two possibilities to label the root node of the object in (12): the constituent in (12) either shares the nature of <ontem> “yesterday” or the nature of <beijou> “kissed”. The limitation to these two possibilities is due to a minimalist maxim that information legible to the interfaces are exclusively derived from the items (and their features) that inform the syntactic computation. In this particular case, the information on the

type of object in (12) must be conceived either by properties of *<ontem>* “yesterday” or *<beijou>* “kissed”. Because the object in (12) clearly displays properties of a verbal rather than an adverbial construction, the object is labeled *<beijou>* “kissed” as seen in (13):



Adjunction, then, is not incompatible to the relational perspective of bar levels because a maximal projection continues projecting to accommodate the adjunction. This questions the very notion of maximality, conceived as a projection that no longer projects.

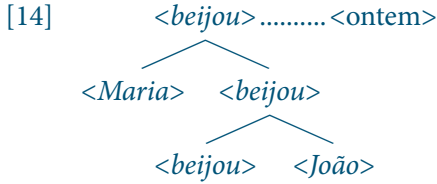
Hence, the question: how to sustain a relational perspective toward the definition of bar levels as assumed by Chomsky’s model (1995) and accommodate adjunction?

Authors such as Uriagereka (1998, 2001), Chametzky (2000), Boeckx (2008) and Hornstein & Nunes (2008) propose that adjuncts are licensed into the structure in a peculiar manner, less complex than the licensing of arguments. These author’s claims are based on one essential difference between how arguments and adjuncts are projected: the former demand labeling according to the object to which they are concatenated whereas the latter can be concatenated without labels that identify the adjunction.

Assuming that adjunction is an operation that is not necessarily labeled implicates conceiving operation *Merge* as involving two additional operations: *concatenate* and *label* (Hornstein, Nunes & Grohmann 2005. The former

aggregates constituents, whereas the latter forms an atom to be merged to another atom afterwards.

The possibility of adjoining an element to a structure without label allows us to reset the structure (13) as (14), according to Hornstein and Nunes (2008):



The relation established between *<beijou>* “kissed” and *<ontem>* “yesterday” in (14) allows us to refer to the most prominent instance of *<beijou>* “kissed” as maximal projection without disregard for the relational perspective in which this level of projection is defined, since, even with the adjunct concatenated to the structure, the maximal projection *<beijou>* “kissed” no longer projects. Therefore, once adjuncts can exist concatenated to the structure, but unlabeled, there is the possibility of accommodating the phenomenon of adjunction in Chomsky’s system (1995).

The theory of unlabeled adjunction, as presented by Hornstein & Nunes (2008), also makes labels possible between adjuncts and modified objects, which is, empirically, a desirable outcome. This is a desirable outcome because there are grammar operations, such as *Move* and *Delete*, that can both act upon the modified object alone as well as upon that object and the adjunct. Examples of that are given in (15), in which the constituents are moved. It is assumed that, in (15), the quantifier *todas* “all”, in BP, is adjoined to the DP *as roupas* “the clothes”, which is generated at the object position and moved to the subject position.

- [15] a. *As roupas todas* foram rasgadas ~~*as roupas todas*~~ pela Maria.
 ‘All clothes were ripped ~~*all clothes*~~ by Maria.’
 b. *As roupas* foram rasgadas ~~*as roupas*~~ todas pela Maria.
 ‘The clothes were ripped ~~*the clothes*~~ by Maria.’

The movement licensed in (15a) involves moving the modified element and the quantifier to the extreme left periphery of the sentence. This allows the speculation of labeling between <*as roupas*> and <*todas*> thus forming an atomic object targeted by operation Move.

On the other hand, the possibility of movement in (15b) is explained by assuming that there was no label onto the concatenation <*todas*> and <*as roupas*>. The target of operation *Move*, in this case, is <*as roupas*> “the clothes” and the *in-situ* permanence of the quantifier derived from its non-labeling along with the DP.

Furthermore, this notion allows for the accommodation of cases in which the grammar operations seem to act upon discontinuous elements, as verified in (16), taken from Hornstein & Nunes (2008). A movement, as displayed in (16a), was conducted upon the VP with the adjunct *in the afternoon*, indicating that the adjunct was labeled with the VP, thus forming the atomic element targeted by the operation. Similarly, a deletion is verified in (16b) by the ellipsis of the constituent VP+*in the afternoon*.

- [16] John [_{VP} ate the cake] [in the yard] [with a fork] [in the afternoon],
 a. and [_{VP} eat the cake in the afternoon], he should have in the kitchen,
 with a spoon.
 b. but Bill did (so) in the kitchen, with a spoon.

(Hornstein & Nunes, 2008: 74, ex. (41).

The examples in (16), then, can be explained as we consider that [*with a fork*] and [*in the yard*] are only concatenated to the structure – not labeled, therefore, operations *Move* and *Delete* would act upon the atomic structure [*ate the cake in the afternoon*], assuming that *in the afternoon* was concatenated and labeled with the VP.

The non-labeling of adjuncts allows the capture of its island behavior: once it is unlabeled, this constituent is “invisible” for syntactic computations, therefore, computation cannot extract elements from this domain.

Thereby, adjunction appears as the less complex operation regarding the input of arguments in the sentence given that arguments need an additional operation in order to be licensed: labeling. This perspective moves away from the traditional understanding of adjuncts that were always conceived as more complex than arguments.

Regarding a distinct operation to characterize adjunctions, we would like to mention Chomsky’s (2004) proposal that adjunctions are the result of a particular type of Merge (Pair-Merge), different from the one that merges arguments to the sentence structure (Set-Merge). Pair-merge takes two objects *a* and *b* forming the ordered pair $\langle a, b \rangle$ in which *a* adjoins to *b*, on a separate plane, and *b* retains all its properties. Pair-Merge is an asymmetric operation whereas Set-Merge is symmetric. In this regard, Oseki (2015) claims that “Pair-Merged adjuncts are just metaphorically stipulated to be on a “separate plane” in Chomsky (2004) to derive invisibility of adjuncts to syntax”.

Finally, we would like to point out that there are, at least, two perspectives to explain the licensing of items traditionally classified as adjuncts into the syntactic structure, we refer specifically to adverbs and adjectives: they are licensed either by an specific grammar operation, the adjunction (Ernst, 2002), or at the position of specifier to a functional head (Cinque, 1999). The latter perspective has prompted comparative investigations between natural

languages and allowed for the development of analyses within a framework conventionally called cartographic syntax.

The next chapters explore different aspects of adjunction in natural languages both in regard to morphology and syntax. The discussions approach central issues of adjunction, observing the extent to which they are islands, considering empirical data from different natural languages, and the extent to which the operation that adjoins elements to a syntactical structure makes adjuncts an opaque domain.

Adjunction is treated in the chapter by **Artemis Alexiadou**, entitled *Adjunction in morphology? The case of Greek diminutives*, in terms of the properties of head *versus* adjunct that diminutive morphemes can present in natural languages. The author explores the morphology of diminutives with special attention to Greek, in order to discuss the interaction of morphemes with gender and declination in languages such as German, Spanish and Brazilian Portuguese. The analysis approximates the behavior of diminutive morphemes in Greek to size-denoting adjectives, and enables the observation of both the head and the adjuncts for diminutive morphemes in that language.

In his chapter, *Edge features and sideward movement out of adjuncts*, **Jairo Nunes** discusses adjunction by considering the Condition on Extraction Domains (CED), a restriction that prevents extraction from adjuncts (Huang, 1982). Based on cases in which the extraction of constituents from adjuncts could be interpreted as violating the CED, Nunes outlines a proposal that relies on the notion of sideward movement. This allows the preservation of CED in the minimalist terms of grammar (Chomsky, 1995 and so forth) and the accommodation of cases of extraction from adjuncts in his analyses.

The chapter by **Carlos Muñoz Perez**, *What is in a trace? Accounting for reconstruction patterns in parasitic gaps*, discusses licensing of parasitic

gaps (PG) by focusing on contexts in which the gap is within adjuncts. The author introduces the inconsistencies of the treatment of PGs that either act as pronouns or as copies of their filler. Therefore, the author resumes the copy theory and introduces a system that enables chains to be formed without copy resources and allows for the internal structure of a PG to be captured without resorting to the notion of chain or a theory of movement.

In *The (im)possibility of extraction from adjuncts*, **Chiara Dal Farra** discusses the status of island attributed to adjuncts by analyzing cases of licensed extraction from adjuncts. The author concentrates specifically on the extraction from adjuncts in the form of prepositional phrase in Italian to verify under which conditions extraction from these domains are licensed. Observing the asymmetries in the extraction from adjuncts, the author proposes these elements not to be treated in a uniform way, once different adjuncts would display island behavior or not, depending, for example, on the point of adjunction to the structure.

Finally, **Cláudia Coelho**, **Jairo Nunes** and **Letícia Santos**, in *Finite clauses associated with *convencer* in Brazilian Portuguese: complements or adjuncts?*, present results of an experiment of grammaticality judgment conducted with speakers of BP on the extraction of subjects from complement clauses, adjunct clauses and intercalated finite clauses associated to the verb *convencer* “to convince” in BP. Special attention is directed to the contexts of intercalated finite clauses with the verb *convencer* in which the null subject is interpreted as the subject of the matrix clause. Results show these clauses behave as adjuncts to these clauses, and the association of the subject to the matrix clause with the null subject of the adjunct clause is a reflex of sideward movement. Their discussion, then, enables observation to the extent in which the adjunct is accessible for syntactic computation regarding extraction.

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[CHAPTER 2]

Adjunction in morphology? The case of Greek diminutives

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1. Introduction

In this paper, I will be concerned with evaluative (and specifically diminutive) morphology. Evaluative morphology is an interesting domain of investigation for theories of the syntax-morphology and syntax-semantics interface. According to Grandi (2015), there is a descriptive and a qualitative dimension of evaluative morphology: the former refers to size variation, while the latter expresses the speaker's attitudes toward the referent of the noun phrase. In other words, diminutives may express both size properties as well as attitudes. The focus of this paper will be on size, as following Jurafsky (1996), and more recently Prieto (2005), the size interpretation is the basic one, the attitude one is secondary. From this perspective, diminutives are interesting, as, according to Dressler & Merlini Barbaresi (1994: 51), they constitute an example of morpho-pragmatics, as morphological rules seem to yield pragmatic effects, challenging our standard models of architecture of grammar, as it is not clear how additional level of interpretation can be modeled.

Diminutives have been controversially discussed in the literature, as they pose several challenges. First of all, it is not clear whether diminutive morphology is derivational or inflectional. Several researchers assume a characterization as a third type of morphology. Second, as Fortin (2011), Andreou (2017) and others have shown, the semantics of evaluative morphology are identical to those of size adjectives, involving scales and comparison classes. Moreover, several languages, English and (Mainland) Scandinavian among them, lack diminutives and make use of adjectives instead. All this suggests that looking at evaluative morphology tells us something about modification and the structure of noun phrases in generally. To this end, next to the morpho-syntactic representation of diminutives and their role within noun phrases, I will compare evaluative (and specifically diminutive) morphology to size adjectival modification.

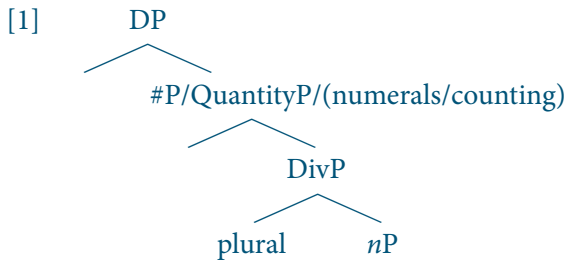
The paper is structured as follows. In section 2, I will first offer some background on the structure of the noun phrase and diminutives I will be assuming in this paper. I will then discuss the properties of diminutive affixes by assuming two types of affixes: the first type realizes a categorizing head, while the latter is an adjunct to the categorizing head. In section 3, I will discuss Greek diminutive formation. In section 4, I will turn to a comparison of diminutives and size adjectives. In section 5, I will offer an account of the cross-linguistic variation, comparing German, Spanish, and Greek. In section 6, I will offer my brief general conclusions.

2. Background

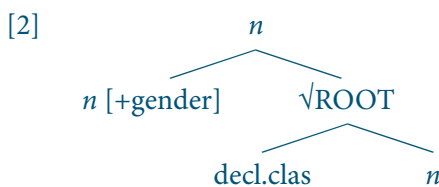
2.1 DP structure

Before having a detailed look at the properties of diminutives, some remarks are in order concerning the structure of DP. Following several

authors, e.g. Heycock & Zamparelli (2005), Borer (2005), Klockmann (2017), and others, I assume that noun phrases contain a series of functional projections on top of the nominal layer. In particular, following Borer (2005), between DP, the locus of definiteness, and *n*P, which provides the category for the acategorial root, there are two further projections, Div(ision)P and QuantityP. The former is the locus of plurality, while the latter introduces numerals. As in Borer (2005), the absence of DivP leads to a mass interpretation for the nominal:



Following Lowenstamm (2008), Kramer (2015), Alexiadou (2017) among others, I assume that gender is a feature on *n*. That is, roots do not come with gender features, contra Kucerova (2018). This is an important assumption, as in Greek, like German, certain diminutive affixes come with a specific gender, namely neuter. Moreover, in languages such as Greek in which nouns fall into distinct declension classes, declension class is a feature on *n* inserted post-syntactically, contra Alexiadou & Müller (2008). In particular, declension class is inserted as an adjunct on *n*, see Vadella (2016) for details:



As an illustration consider a comparison between Greek and Spanish nominal morphology. To begin with, Greek has 8 declension classes, as has been argued for in detail in Ralli (2000). These are illustrated in Table 1, adapted from Alexiadou & Müller (2008):

Table 1: Greek declension classes

	I _{M/F}	II _M	III _F	IV _F	V _N	VI _N	VII _N	VIII _N
Nom _{sg}	os	s	Ø	Ø	o	Ø	Os	Ø
Acc _{sg}	o	Ø	Ø	Ø	o	Ø	Os	Ø
Gen _{sg}	u	Ø	s	s	u	U	Us	os
Voc _{sg}	e	Ø	Ø	Ø	o	Ø	Os	Ø
Nom _{pl}	i	es	es	is	a	A	I	a
Acc _{pl}	us	es	es	is	a	A	I	a
Gen _{pl}	on	on	on	on	on	on	on	on
Voc _{pl}	i	es	es	is	a	A	I	a

Ralli's argument was that in Greek declension class is not related to gender, the point being that in class I the same set of endings applies both to feminine and masculine nouns. As can be seen from table 1 and has been discussed by Ralli (1994), and Alexiadou & Stavrou (1997), nominal morphology is syncretic, meaning that each noun carries information about number, and case which are realized by the same exponent. As Alexiadou & Stavrou (1997) note, this is very different from Romance, where number and declension class are realized by distinct forms. Moreover, case morphology cannot be separated from gender and number markings. This is shown in (3), where unlike the Spanish example where the marker for declension class is distinct from the plural affix, one exponent realizes case, declension class and number:

- | | | | | |
|-----|----|--|---|----------------|
| [3] | a. | <i>l-a pelicul-a</i> (sg.)
the film | <i>l-a-s pelicul-a-s</i> (pl)
the-pl films | <i>Spanish</i> |
| | b. | <i>o anthrop-os</i> (sg.)
the man.masc.sg.nom | <i>i anthrop-i</i>
the men.masc.pl.nom. | |

I will assume, following Anagnostopoulou (2017), that case is a feature on *n*, at least for languages that have gender. Viewing declension class and case as features on *n*, this syncretism can be accounted for under the assumption that Div and *n* are fused in Greek, as suggested in Alexiadou & Stavrou (1997); when this happens, one exponent realizes both nodes. This can be expressed in terms of the re-bracketing proposal in Radkevich (2010), cf. the pruning mechanism in Embick (2010):

- [4] [Div [*n*]] → [Div *n*]

2.2 Diminutive expressions

Turning now to diminutive expressions, these have been argued to come in at least two types. The first type is exemplified here with German and Greek, and changes the gender and declension class of the noun it attaches to:

- | | | | | |
|-----|------------------------------|------------------------------------|------------------------------|---------------|
| [5] | der Tisch
the table.masc | das
the | Tisch-chen
table-dim.neut | <i>German</i> |
| [6] | o anthrop-os
the man.masc | to anthrop-aki
the man-dim.neut | | <i>Greek</i> |

A second type, exemplified here with Greek, does not seem to change the gender of the noun, nor its DC, Katramadou (2001).

[7]	porta	port-ula	port-itsa
	door.fem	door-dim.fem.	door-dim.fem

Greek has a third type, where the diminutive does not change gender, but it may change the DC of the noun, according to Melissaropoulou & Ralli (2008).

[8]	babakos	babas
	daddy.DC1	dad.DC2

I will discuss these patterns in detail in section 3.

Languages like English have a limited number of diminutive affixes, clearly derivational e.g. *pig-let* or make use of the analytic pattern containing an adjectival modifier.

[9]	the table	the small table
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Mainland Scandinavian is similar to English: it lacks affixal diminutives, Grandi (2015), Postma (2016), Alexiadou & Lohndal (2018) (and augmentatives for that matter).

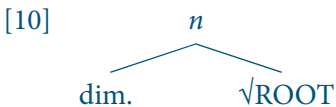
Scalise (1984) introduced several criteria to distinguish between different diminutive affixes:

- i. The syntactic category of the base does not change.
- ii. The syntactic features of the base do not change (e.g. gender).
- iii. The semantics of the base change (e.g. *ragazzo* ‘boy’-*ragazzino* ‘little boy’)
- iv. Consecutive application of the rule is allowed.

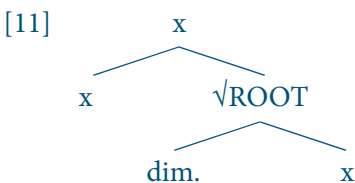
- v. They are external with respect to derivational affixes but internal with respect to inflectional affixes.
- vi. They trigger idiosyncratic readjustment rules.

As we will see, when we turn to Greek, these diagnostics apply to a subset of its diminutives. Structurally speaking, diminutives that have the properties identified by Scalise are adjuncts to a nominal categorizing head, i.e. they do not realize *n* in our nominal structure. Being adjuncts, they are close enough to the base to affect its semantics. Booij (1996), Ralli (1988), Wiltschko & Steriopo (2007), Steriopo (2008) among others have pointed out that diminutive affixes can be heads, i.e. realize *n* in our terms. This is determined on the basis of three diagnostics: i) Do they change syntactic category? ii) Do they change grammatical gender? and iii) Do they change declension class? If the answer to these questions is yes, then we have evidence for head status, i.e. affixes realize *n*, as in structure (10). If the answer is no, then there is evidence for adjunction to *n*, as in structure (11), cf. De Belder et al. (2014) for an alternative analysis. Let us have a closer look at how these diagnostics apply.

Diminutives as heads



Diminutives as adjuncts



Evidence for the head status of diminutives comes from German, as shown in the examples in (12) and (13), discussed in Wiltschko & Steriopolo (2007):

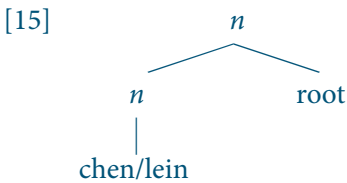
- | | |
|--|---|
| [12] masculine | neuter |
| a. der klein-er Tisch
the.masc little-masc table.masc
the little table | b. das Tisch-chen/-lein
the.neut table.dim/dim
the little table |
| [13] feminine | neuter |
| a. die klein-e Flasche
the.fem little-fem bottle
The little bottle | b. das Fläsch-chen/-lein
the bottle. dim |

German *-chen/-lein* affects the gender of the noun, it basically only gives neuter nouns, irrespectively of the gender of the noun it attaches to. Moreover, as Wiltschko & Steriopolo (2007) note, these affixes shift mass nouns into count nouns.

- [14] a. viel Wein
much wine
much wine (mass noun)
- b. viel-e Wein-chen
many-pl wine-dim
many portions of wine (count noun)

From this perspective, the behavior of *chen/lein* comes close to that a singulative affix (see also Ott 2011, who uses the label Unit). Singulative

affixes generally take as input mass nouns and render count nominals, which can then be combined with numerals. Singulatives, similar to gender, have been argued by Kramer (2015) to realize *n*. According to Kramer (2015: 202), “the singulative is derived by adding a *n* with semantic features corresponding to a singulative reading and an uninterpretable gender feature to a collective/mass *n*P.” I will adopt this analysis here. The structure in (15) can be assumed for German diminutives. Since in German the process of creating a diminutive gives a particular type of noun, it is sensible to see diminutives as realizing categorizing heads, Wiltschko (2006), Wiltschko & Steriopolo (2007), Steriopolo (2008) argue:



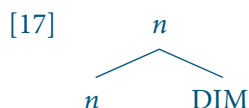
Assuming (15), German diminutive affixes realize nominalizers and specify the gender of the noun they attach to as neuter.

Savoia et al. (2016) offer similar remarks for the diminutive suffix *-in-* in Italian, and suggest that this “corresponds to something as ‘a small/ little individual’ to which the properties introduced by the root apply.” However, these authors reject an analysis of diminutives as realizations of *n*.

However, applying the above diagnostics to other languages gives mixed results, e.g. Spanish and Brazilian Portuguese. As discussed in Kramer (2015) and Vadella (2016), in Spanish certain diminutive affixes preserve the gender of the base. Moreover, these affixes can attach to a variety of categories, e.g. nouns, adjectives and adverbs.

[16]	Base form	Diminutive form	
	casa	casita	house
	chico	chiquito	small
	pronto	prontito	soon

In addition, mass nouns remain mass nouns under diminutive affixation. This is clearly evidence for the adjunct status of the affix. Bachrach & Wagner (2007) reach a similar conclusion for Brazilian Portuguese /iñ/ and /ziñ/. Vadella (2016: 192) thus proposes to analyze such affixes as adjuncts to *n*, as in (17):



With this background, let us now turn to Greek.

3. Greek diminutives

Turning to Greek diminutives, their behavior offers mixed results. Like Spanish and German, Greek has certain affixes that seem to have head status, while other affixes seem to be similar to those of Spanish and Brazilian Portuguese and behave like adjuncts.

(18) offers a list of the Greek diminutive affixes:

[18]	-ak-i,	-ak-os	-ud-i/ud-a	-ul-is/-ul-a	-its-a
	dim.DC	dim.DC	dim.DC	dim.DC	dim.DC

The most frequent one is *ak-i*, which applies to all nouns and always yields neuter nouns. These nouns belong to Ralli's declension class 6, irrespectively of the DC the noun it attaches to, if these were neuter:

[19]	anthrop-os	anthrop-ak-i
	man.masc.DC1	man.dim.neut
	marid-a	marid-ak-i
	whitebait.fem.DC3	small fry.neut
	lath-os	lath-ak-i
	mistake.neut.DC7	mistake.dim.neut.

-ak-i (and also *-ud-i*) change feminine and masculine nouns to neuter ones, like German *-chen*. Melissaropoulou & Ralli (2008) show that *-ak-i* changes mass nouns to count nouns and moreover, it may also change the interpretation of the base noun:

[20]	a.	psom-i	psom-ak-i
		Bread.neutDC6	little bread
	b.	Agorasame dio psomakia	
		bought-1pl two little breads	
		We bought two rolls	

Thus *-ak.i* is really very similar to German *-chen*. A further characteristic of *-ak-i*, according to Melissaropoulou & Ralli (2008:194), is that it yields non-compositional meanings:

[21]	melidzan-a	melidzan-ak-i
	aubergine	dessert made of a special type of eggplants

Other affixes, however, preserve the gender of the noun and often its DC, Katramadou (2001). However, Melissaropoulou & Ralli (2008) note that in Greek dialects, diminutive affixes always yield neuter nouns.

[22]	port-a	port-ul-a	port-its-a
	door.fem.DC3	door-dim.fem.DC3	door-dim.fem.DC3

Katramadou treats *-ul-a* and *-its-a* as allomorphs, as their distribution is restricted: Greek does not allow two adjacent laterals across a morpheme boundary.

In some cases, when affixes do not change gender, they may change the declension class of the noun, according Melissaropoulou & Ralli (2008). The question is whether this is evidence for adjunction or head-hood. I take it that they may surface with different DCs, these affixes should be seen as realizing *n*.

[23]	babakos	babas
	daddy.DC1	dad.DC2

Melissaropoulou & Ralli (2008) note gaps in the paradigm: *-ak-i* lacks genitive plural:

[24]	papaki	little duck
	*papakion	little ducks-gen.

Diminutive affixes can stack, but only in one particular order:

[25]	Angelos	angeludi	angeludaki	* angelakiudi
	Angel.masc	angel-dim.neut	angel-dim.dim.neut	

As stated in Vadella (2016: 230) “stacking the diminutive provides further evidence for an analysis in which diminutives are adjuncts.”

On the basis of this description, I conclude that Greek diminutives give mixed results: certain diminutives are heads in Greek (*-aki* and *-udi*), as they trigger gender and DC shift, while others behave like adjuncts (*-ula*, *-itsa*), as they do not trigger gender and DC shift. Melissaropoulou & Ralli (2008) propose that the split is related to the derivational vs. inflectional status of the affix, an insight that I will adopt and re-interpret in terms of the head vs. adjunct distinction.

The question that arises is whether the head vs. adjunct status affects interpretation. There might be differences in attitude, but I will not discuss this. Importantly, irrespectively of the head vs. adjunct nature of the affix, we find the same effect of comparison as with adjectives. I turn to this in the next section.

4. Size denoting adjectives

It is generally agreed upon that size-denoting adjectives are gradable/scalar. Standardly, they are computed against a comparison class. Size-denoting adjectives are interpreted as relative to the characteristic function of the noun they modify, see Higginbotham (1985), and Alexiadou, Haegeman & Stavrou (2007) for an overview.

[26] small elephant = *small for an elephant*

In particular, in (26) the entity is small in comparison to other entities in the same class. As the comparison class plays a role, size adjectives are not seen as absolute/objective adjectives and are seen as similar to evaluative adjectives

such as good or bad, which require information about the domain in which a particular individual is good or bad.

Similar effects are found with diminutive affixes. “The Italian sentence *questa é una casetta* “this is a small house (lit. house-DIM) means that the house in question is small with respect to the standard size of Italian houses.” (Grandi and Körtvélyes 2015: 13). Andreou (2017) points out evaluation assigns a value that is different from the default within a pertinent scale.

- [27] to *elefandaki*
the elephant.dim neut
the small elephant

The comparison class is the base lexeme.

I have already mentioned that in English only the analytic formation is licit. Nieuwenhuis (1985: 42-4) points out that English *small* is like a diminutive restricted to denoting size. If we now compare the behavior affixes to that of adjectives, we find similar results. Consider the following contrast, from Fortin (2011: 113, 118). As Fortin (2011: 118) states, “the negation of *hombrecito* in does not entail that the man in question is large, just that he is not in the positive extension of *--ito*”:

- [28] Mars is not large *does not entail* Mars is small
Mars is not small *does not entail* Mars is large

- [29] Es demasiado grande para llamarlo
is.3g too big/old to call.3sg.obj
un hombre-cito.
a man-dim.
≈He’s too big/old for you to say he’s a small man.

Fortin thus concludes, that semantically diminutives and gradable adjectives are identical. Importantly, Fortin (2011: 120) also shows that size adjective can also receive secondary evaluative readings:

[30] a. Juan tiene un coche pequeño.

Juan has a car small

‘Juan’s got a small car.’

b. Juan tiene una voz pequeña.

Juan has a voice small

‘Juan’s got a small voice.’

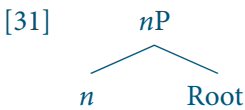
In (30a), we the basic interpretation of the adjective, while in (b) the adjective receives a different reading, weak or not loud. Thus, gradable adjectives and diminutive affixes fare on a par.

To conclude, diminutives and size adjectives are very similar. Diminutives behave like heads in some languages, but as adjuncts in others. Some languages, e.g. English lack morphological diminutives and make use of adjectives instead.

5. Towards an account

Intuitively, if diminutives alternate with adjectival modifiers, then the modifier and the affix should be associated with the same projection, in the spirit of Alexiadou (1997) and Cinque (1999). Specifically, Cinque claimed that across languages, functional heads are visible either by means of head morphology or via the adverbs, which occupy the specifiers of various functional projections.

We have identified *nP* as the locus of diminutive morphology in general. Fortin (2011) argues, on the basis of Spanish, that an evaluative interpretation is possible only when the noun that undergoes diminutive suffixation is mass. The Greek data seem to suggest otherwise: count and mass nouns participate alike in such formations. Importantly, in view of the fact that in Greek *-aki* can yield non-compositional interpretations it seems to be a good candidate for root affixation. As diminutives can pluralize in Greek, unlike German, the diminutive affix must be in *nP*, which is the input to Div, see Carstens (2008), cf. Cinque (1994), (2015), Ott (2011), De Belder et al (2014).



While adjectives modify nouns, morphological diminutives can take over the task of noun classification in which case they are *n* heads. From this perspective, size adjective can be analyzed as *nP* adjuncts. Only those evaluative affixes that classify roots as nouns are heads. Those that apply to already classified nouns are adjuncts.

That suggests that diminutives are very similar to gender. As noted in Savoia & al. (2016) and in di Garbo (2014), evaluative affixes and gender are means to classify nouns. According to di Garbo (2014: 20): “In the literature on noun classification, size-related meanings are nearly unanimously mentioned among the possible semantic values of a gender system.” Animacy and stereotypical semantic associations that have been observed suggest that prototypically, feminine and neuter are used as diminutives. Di Garbo (2014) mentions that in languages with sex-based gender systems, gender shifts from masculine/feminine to neuter or from

masculine to feminine (and vice versa) can be used to encode diminutive (and augmentative) meanings.

Coming now to a cross-linguistic comparison, I note the following. In Greek and German, we can state that languages with a three-gender system, feminine and masculine nouns are shifted to neuter through diminutive formation. Basically, neuter becomes a novel way to re-classify the noun (or in our terms to classify and categorizes the root). In Spanish, there is no gender shift, occasionally a shift in declension class is observed. Italian, however, is different: as detailed in Savoia et al. (2016), the affix *-in-* attaches to mass nouns and renders count interpretations or to adjectives and yields count nouns:

[32] *cioccolat-a* ‘chocolate’ *cioccolati-in-o* ‘chocolate count’

This particular suffix, however, also shifts the gender: it always yields masculine nouns. Thus, while in Spanish the lack of gender shift led Vadella to argue that the type of diminutive that simply shifts DC is not a categorizing head, diminutives that affect classification must be viewed as realizations of ns. Crucially, the re-classification seems to pick the unmarked gender of the system, neuter in Greek and masculine in Italian respectively. It is not clear to me how to explain this difference between Italian and Spanish, as the default gender in Spanish is also the masculine. The answer might lie in other independent differences between the noun phrases of these two languages, e.g. the lack of partitive article in Spanish, the consistent marking of plurality via *-s* in Spanish, the lack of an explicit system of non-countability, which is present in Italian, see Stark (2007) for discussion. Finally, English lacks nominal gender, and thus lacks diminutive morphology. If diminutives are present, they are clearly derivational, see Kramer (2015) for details.

6. Conclusion

I have shown that diminutive affixes in Greek have properties that lead to an analysis thereof, according to which they can either be heads (n) or adjuncts to an n head. Diminutives, which are heads, classify roots. An important observation that merits further scrutiny relates to the relationship between diminutives and gender. It seems possible that in languages gender systems, a particular gender, neuter or masculine gender emerges as a means of (re-)categorization/re-classification of roots. While in languages with three-gender systems, at least in Greek and German, this seems to be the neuter gender, often characterized as default gender, Corbett (1991), languages with two gender systems do not behave alike. For instance, Spanish differs from Italian in that only in the latter does diminutive formation affect gender. The properties of the noun phrases in these two languages that lead to this non-unified behavior need to be further investigated.

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[CHAPTER 3]

Edge features and sideward movement out of adjuncts

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1. Introduction²

Chomsky's (2000, 2001) phase-based model provides an interesting computationally-guided answer to *why* successive cyclic movement exists in the grammar. The proposal is that an optimal computation of syntactic derivations involves the inspection of certain chunks of structure (phases) for convergence, by shipping them to the relevant interfaces as the derivation unfolds. Under the assumption that there should be no backtracking to recover material already transferred to the interfaces (the Phase Impenetrability Condition), the computational system must then remove from the transfer domain constituents that will be later needed in the derivation. Assuming that CP and ν P are phases (see Chomsky 2000, 2001), the derivation of a sentence such as (1) below, for instance, proceeds as in (2). The matrix interrogative complementizer of

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(1) requires being licensed by a *wh*-element. *What* is such an element but is inaccessible to the matrix complementizer as its merge position is deeply buried within three phase layers (the matrix νP , the embedded CP, and the embedded νP). To circumvent this problem, the computational system pushes *what* to the edge of each of these phases (see (2b), (2d), and (2f)) so that it can finally reach the matrix Spec,CP (see (2h)) and license the interrogative complementizer Q.

[1] What do you think John saw?

- [2] a. [νP John ν saw **what**]
 b. [νP **what**_i [John ν saw t_i]]
 c. [$_{CP}$ C [John_k [νP **what**_i [t_k ν saw t_i]]]]
 d. [$_{CP}$ **what**_i [C [John_k [νP t_i [t_k ν saw t_i]]]]]
 e. [νP you ν think [$_{CP}$ **what**_i [C [John_k [νP t_i [t_k ν saw t_i]]]]]]]
 f. [νP **what**_i [you ν think [$_{CP}$ t_i [C [John_k [νP t_i [t_k ν saw t_i]]]]]]]]]
 g. [$_{CP}$ did_x-Q [you_w t_x [νP **what**_i [t_w ν think [$_{CP}$ t [C [John_k [νP t [t_k ν saw t_i]]]]]]]]]]]
 h. [$_{CP}$ **what**_i [did_x-Q [you_w t_x [νP t_i [t_w ν think [$_{CP}$ t_i [C [John_k [νP t_i [t_k ν saw t_i]]]]]]]]]]]]]

Assuming that something along these lines is on the right track, there arises the question of *how* each instance of movement of *what* in (2b), (2d), and (2f) is motivated. Chomsky (2000) proposes that after each phase is completed, its head may be optionally assigned an EPP-type of feature, triggering successive cyclic movement. From this perspective, the movements of *what* in (2b), (2d), and (2f) are required to check the putative EPP-feature

of the embedded ν , the embedded C, and the matrix ν , respectively. One of the problems that this approach faces involves sentences such as the ones in (3) below (see e.g. Bošković 2007, Nunes 2014, 2016). (3a) shows that movement of *what* is not obligatory if there is some other higher *wh*-element to license the interrogative complementizer. This by itself is not problematic, as EPP assignment to phase heads is optional in Chomsky's proposal; hence, the derivation of (3a) is obtained if the matrix ν , the embedded C, and the embedded ν do not exercise this option. The problem actually arises with respect to (3b) in a derivation where the embedded ν and the embedded C have been assigned the EPP-feature. Once the EPP-features are checked, the derivation should converge and (3b) should be acceptable, contrary to fact.

- [3] a. Who thinks John saw what?
 b. *Who thinks what John saw?

Discussing analogous problems with respect to object shift, Chomsky (2001) suggests that a phase head is assigned an EPP feature only if this assignment has an effect on the outcome. Under this view, assignment of EPP to the embedded ν constitutes a step towards convergence in (1), for instance, but not in (3b). This suggestion ends up undermining the whole piecemeal computational approach to derivations, though. The reason is that the system may need to await the computation of higher phases to determine whether the assignment of EPP to a lower phase head is legitimate or not. Notice that (1) and (3b) share the same derivational path up to the point where (4) below is built. Whether the assignment of EPP to the embedded ν is licit or not will then depend on the element that merges with (4): it is licit if the element merged is not a *wh*-element, like *you* in (2e), but not if it is a *wh*-element, like *who* in (3b). Given the unbounded nature of successively cyclic movement, we then end up

in the very uncomfortable situation where a local decision may actually depend on operations that may take place arbitrarily far ahead in the derivation.

[4] $[_{vP} \nu \text{ think } [_{CP} \text{ what } [C_{EPP} [John [_{vP} t [John \nu_{EPP} \text{ saw } t]]]]]]]$

Bošković (2007) offers an alternative approach that does not have this look-ahead problem, by placing the relevant feature that triggers successive cyclic movement (uF in his terms) on *wh*-elements themselves. The idea is that if a *wh*-element is transferred with an unchecked uF , the derivation crashes regardless of future computations. Under this view, *wh*-elements in English are optionally associated with uF but in case they bear uF , they must move from phase edge to phase edge until they reach an appropriate specifier and uF gets licensed. Within this system, *what* is associated with uF in (1) and (3b) but not in (3a). In (1), *what* reaches a position where uF can be checked but not in (3b). Crucially, if structures such as the ones in (5) below are transferred, the derivation crashes regardless of later computations. In other words, illicit cases of partial *wh*-movement such as the one in (3b) are ruled out in a local fashion.

[5] a. $[_{vP} \text{ what}_{uF} [John \nu \text{ saw } t]]$
 b. $[_{CP} \text{ what}_{uF} [C [John [_{vP} t [John \nu \text{ saw } t]]]]]]]$

In Nunes (2014, 2016) I argued that languages may in fact vary with respect to the locus of the features that trigger successive cyclic movement, which I will henceforth refer to as *edge features*. What is relevant for our present concerns is that Nunes (2016) proposes that when an edge feature is lexically hosted by a phase head (as in Chomsky's 2000 system), the phase head assigns it to an appropriate element in its probe domain. So, even in these cases, an edge feature is ultimately associated with a *wh*-element

and therefore, illicit cases of partial *wh*-movement can be locally excluded, exactly as in Bošković's 2007 system.

In this paper I argue that this local computation of edge features works not only with respect to familiar instances of “upward” movement, but also with respect to “sideward” movement (see e.g. Nunes 1995, 2001, 2004, 2012). In particular, I will show that Bošković's (2007) proposal provides a unified account of two apparently unrelated empirical descriptions:

- [i] A parasitic gap can generally be licensed by a moved *wh*-element, but not by an *in situ wh*-element (see e.g. Chomsky 1982), as illustrated in (6) (see footnote 6 below):
 - [6] a. **[Which paper]_i** did you file *t_i* without my reading **PG_i** first?
 - b. *Who filed **[which paper]_i** without my reading **PG_i** first?
- [ii] In Brazilian Portuguese, stress class resolution via stress shift within an adjunct may be sensitive to *wh*-movement in the subordinating domain (see Nunes and Santos 2009). In (7) below, for instance, the verb *comprou* ‘bought’ has stress on its last syllable and the adverb *ontem* ‘yesterday’ has stress on its first syllable. Such stress clash configuration can generally be resolved via stress shift in Brazilian Portuguese once certain prosodic conditions are met (see e.g. Abousalh 1997). Interestingly, shifting the stress of *comprou* to the penultimate syllable to resolve the clash is allowed in (7a), where we have *wh*-movement in the matrix clause, but not in (7b), where we have an *in situ wh*-phrase.³

³ “#” in (7b) marks phonological unacceptability.

- [7] a. [[Que livro]_i você recomendou t_i [depois que COMprou ec_i ontem]]
 which book you recommended after that bought yesterday
- b. #[Você recomendou [que livro]_i [depois que COMprou ec_i ontem]]
 you recommended which book after that bought yesterday
 ‘Which book did you recommend after you bought it yesterday?’

The paper is organized as follows. In section 2 I briefly show how sideward movement allows movement out of adjuncts without violating Huang’s (1982) Condition on Extraction Domains (CED). Section 3 addresses the issue of why *in situ wh*-phrases cannot in general license parasitic gaps (see (6b)) and section 4 provides an account of why stress retraction within an adjunct clause in Brazilian Portuguese may be blocked by an *in situ wh*-phrase in the subordinating clause (see (7b)). Some concluding remarks are finally presented in section 5.

2. Sideward movement and movement out of adjuncts

Within the standard *GB* model (see e.g. Chomsky 1981, Chomsky and Lasnik 1993), D-Structure presented the computational system with a single-rooted syntactic object (a tree) and movement operations displaced syntactic constituents within this original tree, yielding S-Structure and LF representations (modified trees). From this perspective, there was no issue as to which tree a given moving element targets, for there was only one single-rooted object throughout the derivation; thus, a moving element could only target positions within this unique tree. With the abandonment of D-Structure within minimalism, syntactic structures came to be built by interspersed

operations of Merge and Move (see Chomsky 1995) and the requirement that a single tree be obtained should be viewed as an LF condition. Crucially, under the assumption that applications of these operations cannot alter the structures already built (Chomsky’s (1995) Extension Condition), it must be the case that the computational system is able to operate with more than one single-rooted object at a time. The derivation of a simple sentence such as (8a), for instance, must involve the step sketched in (8b), with the three single-rooted syntactic objects K, L, and M, before the whole structure is assembled.

[8] a. The boy saw her.

b. K = the

L = boy

M = [saw her]

Once the system may in principle operate with more than one tree at a time, one is now in the rightful position of asking which tree a given moving element targets. In the abstract scenario in (9), for instance, movement of α could in principle target the root node of trees P, Q, or R.



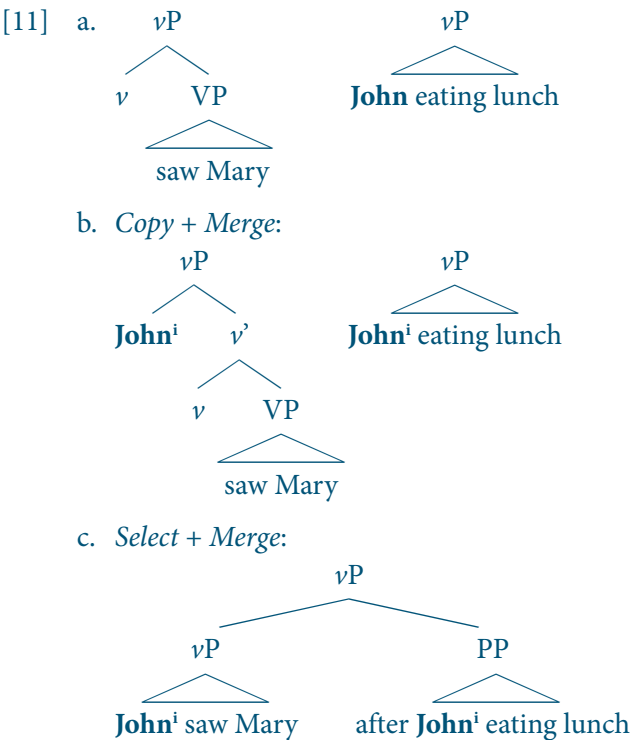
If α targets Q, we have a familiar instance of “upward” movement; if α targets P or R, we have an instance of what I have called “sideward movement” (see Nunes 1995, 2001, 2004, 2012).⁴ It is worth noting that these are just

⁴ Such a sequence of operations was also called an interarboreal operation by Bobaljik (1995) and Bobaljik and Brown (1997) and paracyclic movement by Uriagereka (1998).

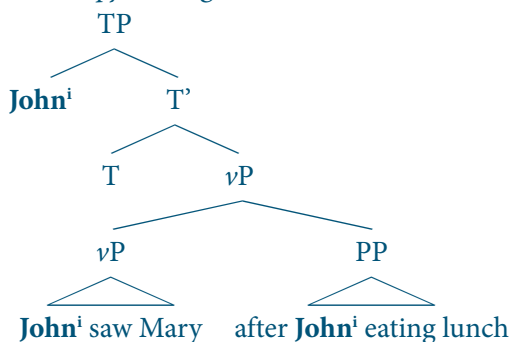
mnemonic labels, devoid of any theoretical status; “upward” movement describes the situation where a copy of α is merged with the root syntactic object that contains α and “sideward” movement, the situation where a copy of α is merged with some other root syntactic object. In both cases the ultimate outputs are then subject to the usual conditions on chains (see Nunes 2001, 2004, 2012 for relevant discussion).

Let us consider a concrete illustration of sideward movement by examining Hornstein’s (2001) analysis of adjunct control. According to this approach, a sentence such as (10), for instance, is derived along the simplified lines of (11).

[10] John saw Mary after eating lunch.



d. *Select + Copy + Merge:*



e. *Delete:* [_{TP} Johnⁱ [_{T'} T [_{vP} [_{vP} Johnⁱ saw Mary] [_{PP} after Johnⁱ eating lunch]]]]]

Given the two root syntactic objects in (11a), *John* gets copied and merges with the first *vP* (an instance of sideward movement), as shown in (11b), licensing the assignment of the external θ -role of the first *v*. After further applications of Select and Merge, we reach the derivational stage in (11c), with PP adjoined to the first *vP*. After further selection and merger of T, *John* is copied again and becomes the specifier of TP (see (11d)). Finally, the lower copies are deleted in the phonological component (see (11e)), yielding the sentence in (10). What is crucial for the present purposes is when *John* is copied at the derivational step in (11b), it is not within an adjunct; only later will the *vP* containing *John* in (11a) become part of the adjunct PP (see (11c)). After the step in (11c) is reached, the copy within the adjunct should become inaccessible for movement, regardless of how exactly Huang's (1982) CED is to be formulated in minimalist terms. The copy in the matrix Spec,*vP*, on the other hand, is located in a transparent domain and can undergo further movement. This derivational approach implies that a given syntactic object α can indeed move out of an adjunct via sideward movement provided that at the step where sideward movement takes place,

the relevant constituent containing α is not an adjunct yet (see Nunes and Uriagereka 2000, Hornstein 2001, Nunes 2001, 2004, 2012, and Hornstein and Nunes 2002 for evidence and relevant discussion).

Bearing this general picture in mind, in the next sections I will discuss the role of edge features in adjunct parasitic gap constructions, which provide another example of (sideward) movement out of a will-be adjunct.

3. Single parasitic gap constructions

Consider the contrast between the two parasitic gap constructions in (12) below, which shows that a parasitic gap may be licensed by a moved *wh*-element but not by an *in situ* one. Within GB, *in situ wh*-phrases were supposed to undergo movement after S-Structure; so, contrasts such as the one in (12) were taken to show that parasitic gaps should be licensed at S-Structure, before covert movement took place (see Chomsky 1982). Given the abandonment of S-Structure conditions within minimalism, let us then see how the proposal reviewed in section 1, according to which edge features are ultimately associated with moving elements (see Bošković 2007 and Nunes 2016), can account for contrasts such as the one in (12).

- [12] a. [**Which paper**]_i did you file *t_i* without my reading **PG_i** first?
 b. *Who filed [**which paper**]_i without my reading **PG_i** first?

Let us consider the relevant steps of the derivation of (12a) first. Assuming that the derivation of parasitic gap constructions involves sideward movement (see Nunes 1995, 2001, 2004, 2012 and Hornstein 2001) and that the derivation

proceeds in a bottom-up fashion, from more to less embedded domains (see Chomsky 2000, 2001 and Nunes and Uriagereka 2000), a convergent derivation of (12a) starts with the construction of the embedded νP , as shown in (13).

[13] [$_{\nu P}$ my ν [reading [**which paper**]_{EF} first]]

In (13), the *wh*-phrase bears an edge feature (*EF*) – a possibility available in English. Assuming with Bošković (2007) that an edge feature must function as a probe in order to be licensed, it then triggers movement of *which paper* in (13) to the edge of νP , yielding (14) below.⁵ In (14), *EF* probes its domains but does not find a suitable goal. In other words, *EF* is still active in (14). In fact, given that *EF* must function as a probe, an unchecked instance of *EF* in a given structure tells the system that the constituent containing *EF* must move in order for *EF* to have the chance of being licensed. This amounts to saying that the need for movement is locally determined under this approach.

[14] [$_{\nu P}$ [**which paper**]_{EF} [my ν [reading t_{wh} first]]]

(15) below shows the next step of the derivation, with the computational system beginning to build another phase (another νP) by selecting *file* from the numeration. Notice that in (15), we have more than one single-rooted tree (K and L). However, this is allowed once we no longer rely on D-Structure as a starting point for the derivation. In fact, (15) is no different from the step in (8b) (or (11a)).

[15] K = **file** L = [$_{\nu P}$ [**which paper**]_{EF} [my ν [reading t_{wh} first]]]

⁵ To simplify the exposition, I will henceforth use traces instead of deleted copies.

(15) has two requirements to be met: *file* needs a complement to assign its internal θ -role and *which paper* must get out of its position due to its unchecked edge feature. Satisfying both requirements at once, *which paper* then gets copied and merged with *file* (an instance of sideward movement), as shown in (16) below. Notice that although L in (15) will eventually become part of an adjunct in the derivation of (12a), this information is not available at this derivational step. The movement of *which paper* in (16) takes place while L is still an independent syntactic object; hence, movement in (16) vacuously complies with Huang's (1982) CED (see Nunes and Uriagereka 2000, Hornstein 2001, Nunes 2001, 2004, 2012).

[16] $K' = [\text{file } [\mathbf{\text{which paper}}]_{\text{EF}}]$ $L = [_{\nu\text{P}} t_{wh} [\text{my } \nu [\text{reading } t_{wh} \text{ first}]]]$

Further applications of selection and merger complete the matrix νP phase in (17) below. Given that the edge feature of *which paper* in (17) has not been checked yet, it triggers movement of *wh*-phrase to the edge of νP , yielding (18). Observe that although the copies of the *wh*-phrase (see footnote 4) within the adjunct PP in (17) are not available for further copying in virtue of being inside an adjunct island, the copy in the object of *file* is within a transparent domain and can undergo further movement.

[17]

[18]

After additional operations build the matrix CP phase in (19) below, the *wh*-phrase moves to the edge of CP (see (20)), allowing EF to probe the structure and get licensed by the interrogative complementizer Q.

[19] [_{CP} **did_k-Q** [_{TP} you_j *t_k* [_{VP} [**which paper**]_{EF} [[*t_j* *v* file *t_{wh}*]] [_{PP} without
[_{PP} without [*my_i* [_{VP} *t_{wh}* [*t_i* *v* reading *t_{wh}* first]]]]]]]]]

[20] [_{CP} [**which paper**]_{√EF} [_C **did_k-Q** [_{TP} you_j *t_k* [_{VP} *t_{wh}* [[*t_j* *v* file *t_{wh}*]] [_{PP} without
[_{PP} without [*my_i* [_{VP} *t_{wh}* [*t_i* *v* reading *t_{wh}* first]]]]]]]]]

As for the derivation of (12b), it also involves the sequence of steps in (13)-(16). In other words, sideward movement of *which paper* is licit in the derivation of (12b), for it satisfies the θ -requirements of *file* and takes place before L becomes part of an adjunct. The problem with the derivation of (12b) is that *which paper* stays put in the matrix object position and its edge feature remains unchecked, as shown in (21).⁶

⁶ In previous work (Nunes 1995, 2001, 2004, 2012), I have derived parasitic gap constructions such as (12a) by allowing the object within the adjunct clause to undergo sideward movement to the object position in the subordinating clause and excluded sentences like (12b) in terms of linearization. The idea was that the *wh*-element in the matrix object position in (12b) could not form a chain with the copy inside the adjunct due to lack of c-command. Chain Reduction would then be inapplicable and the surviving copies would induce violations of the irreflexivity and asymmetry conditions on linear order. The current proposal has three advantages over the previous version: it excludes sentences like (12b) in a more local manner (crashing in the previous version is only detected when the system attempts to linearize the relevant structure); it uniformizes upward and sideward movement in that a given element can only move from the domain of a strong phase head via its edge; and it is able to account for multiple parasitic gap constructions (see Nissenbaum 2000), where an *in situ wh*-phrase can license a parasitic gap (see footnote 6 below).

One independent question that arises in any version of copy theory is why unchecked features of lower copies (unchecked edge features in the present case) do not cause the derivation to crash. For instance, Chomsky (1995:381, footnote 12) has proposed that “the features of chain are considered a unit: if one is affected by an operation, all are”; ▶

- [21] *_{[CP who_j [_{VP} [_{VP} *t_j* *ν* filed [**which paper**]_{EF}] [_{PP} without [_{my_i} [_{VP} *t_{wh}* [*t_i* *ν* reading *t_{wh}* first]]]]]]]}

To put it in more general terms, from the perspective entertained here the contrast in (12) falls under Bošković's (2007) account of contrasts such as the one between (22a) and (23a) below, involving upward movement. In order to undergo *wh*-movement, *what* in both (22b) and (23b) must bear an edge feature. But if this is so, *what* must keep moving until it reaches a position where EF can probe the structure and be appropriately licensed. This happens in (22b), but not in (23b); hence, the contrast between (22a) and (23a).

- [22] a. What do you think John saw?
- b. $[_{CP} \textbf{what}_{\text{vEF}} [_C' \text{do}_k\text{-Q} [_{TP} \text{you}_j t_k [_{vP} \textbf{t}_{wh} [t_j \nu \text{think} [_{CP} \textbf{t}_{wh} [_C' C [_{TP} \text{John} [_{vP} \textbf{t}_{wh} [t_i \nu \text{saw } \textbf{t}_{wh}]]]]]]]]]]]]]]]]]]]]]$

- [23] a. *Who thinks what John saw?
- b. $[_{CP} \text{who}_i [_{vP} t_i \nu \text{ thinks } [_{CP} \textbf{what}_{EF} [_{C'} C [_{TP} \text{John}_i [_{vP} t_{wh} [t_i \nu \text{ saw } t_{wh}]]]]]]]]]$

This result is welcome not only because it provides a uniform account of apparently unrelated phenomena, but also because it does so regardless of whether the relevant movement proceeds upwards or sideways. In other words, it conforms with Nunes's (1995, 2001, 2004, 2012) proposal that there is no

hence, if the head of the chain has its edge feature licensed, all the other copies will, too. Nunes (2011, 2018) implements this intuition in a derivational manner by proposing that after being licensed by Agree, a [-interpretable] feature may probe the structure and value the lower copy in a cascade fashion., if convergence requirements so demand it. This seems to suggest that when chains are involved, either Transfer is delayed or it is employed, but lower copies are held in a buffer until the head of the chain is computed. Alternatively, it may be the case that the crashing induced by EF is computed after Chain Reduction. I will leave a discussion among these choices for another occasion.

intrinsic theoretical difference between upward and sideward movement, both being simply outputs of applications of Copy and Merge. From an abstract point of view, the role of sideward movement in (16) and upward movement to the edge of embedded νP , the embedded CP, and the matrix νP in (22b) is the same: to provide an escape hatch for an element bearing an unchecked edge feature. Such escape hatches are required to ensure convergence of the whole structure. So, by moving to the object position of *file* in (16), *which paper* remains accessible to the computational system as it manages to get out of a constituent that will later become an adjunct island; in turn, the first three movements of *what* in (22b) remove it from transfer domains, also allowing it to become accessible to further computations. However, none of these movements by itself suffices to ensure convergence, for the feature that motivates it – the edge feature – remains in need of appropriate licensing. If these movements are not followed by additional movements to license EF, the derivations crash, as seen with (12b) and (23a). Also worth noting is the fact that crashing is computed locally, as soon as the structure containing an unchecked instance of EF is spelled out.⁷

⁷ As discussed in detail by Nissenbaum (2000), an *in situ wh*-phrase can license a parasitic gap in multiple parasitic gap constructions such as the one in (i) below. In Nunes (in progress) I propose that these cases can be accounted for if we assume that edge features, like any other uninterpretable feature (see e.g. Pesetsky and Torrego 2007), may be intrinsically valued or unvalued. (i), for instance, is obtained in a derivation where *which candy bar* has an unvalued instance of EF (EF:u) and *which kid*, a valued one (EF:Q). Crucially, when *which candy bar* moves to the edge of νP , it probes the structure and is valued by the edge feature of *which kid*, as illustrated in (iib). After the two *wh*-phrases undergo sideward movement, as shown in (iii), *which candy bar* can stay put, because its unvalued EF got valued. The intrinsically valued EF of *which kid*, on the other hand, must keep moving until it reaches a position where it can be checked against an interpretable instance of Q (see (iv)). For our current purposes, I will put aside issues related to the value of edge features.

[i] ?[**which kid**]_x did you give [**which candy bar**]_y to *t_x* [without first telling a parent of *PG_x* about the ingredients in *PG_y*]? ▶

4. Parasitic gap constructions and stress retraction in Brazilian Portuguese

Let us now examine the effects of moved and *in situ* *wh*-phrases with respect to parasitic gap licensing in Brazilian Portuguese (BP). At first sight, the fact that BP allows for null objects (see e.g. Galves 1989, Kato 1993, Cyrino 1997, Ferreira 2000) makes it impossible to observe the effects of the “S-Structure condition” on parasitic gap licensing seen above in English (see (12)). The sentences in (24), for example, look like parasitic gap constructions and are both well formed, regardless of the position of the *wh*-phrase in the matrix clause.

- [24] a. [**Que artigo**]_i [você arquivou *t_i* [sem ler *ec*]]?
which article you filed without read
- b. [Você arquivou [**que artigo**]_i [sem ler *ec*]]?
you filed which article without read
 ‘Which article did you file without reading?’

-
- [ii] a. [_{VP} PRO telling_i-v [_{VP} [a parent of [**which kid**]_[EF:Q] *t_i* [about the ingredients in [**which candy bar**]_[EF:u]]]]
 b. [_{VP} [**which candy bar**]_[EF:u] [_v PRO telling_i-v [_{VP} [a parent of [**which kid**]_[EF:Q] *t_i* [about the ingredients in *t_y*]]]]]
 c. [_{iP} [**which kid**]_[EF:Q] [_v [which candy bar]_[EF:Q] [_v PRO telling_i-v [_{VP} [a parent of *t_x*]_i [about the ingredients in *t_y*]]]]]]]
- [iii] a. [_{VP} you give_i-v [[**which candy bar**]_[EF:Q] *t_i* [to [**which kid**]_[EF:Q]]]]
 b. [_{VP} [_{VP} you give_i-v [[**which candy bar**]_[EF:Q] *t_i* [to [**which kid**]_[EF:Q]]]] [_{PP} without [PRO_k first [_{VP} *t_x* [_v *t_x* [_v PRO telling_i-v [_{VP} [a parent of *t_x*]_i [about the ingredients in *t_y*]]]]]]]]]]]
- [iv] [_{CP} [**which kid**]_[EF:Q] [did_m+Q [you_w *t_m* [_{VP} *t_x* [_v *t_w* give_i-v [[**which candy bar**]_[EF:Q] *t_i* [to [**which t_x**]]] [_{PP} without [PRO_k first [_{VP} *t_x* [_v *t_x* [_v PRO telling_i-v [_{VP} [a parent of *t_x*]_i [about the ingredients in *t_y*]]]]]]]]]]]]]]]]]]]]]

Nunes and Santos (2009) have nonetheless argued that the relevant contrasts may be detected if stress retraction is taken into account. Their argument is based on work by Santos (2002, 2003), who has shown that in BP, traces do not block stress retraction, but *pro* does. To see this, let us first consider a sentence like (25) below in BP. The last syllable of *comeu* ‘ate’ and the first syllable of *bolo* ‘cake’ in (25) are both lexically stressed, yielding a configuration of potential stress clash. Abousalh (1997) shows that in such cases, when the phonological phrases containing the relevant syllables are restructured into a single phonological phrase, BP optionally allows stress clash resolution via stress shift. This is illustrated in (26), where the stress of *comeu* moves to the penultimate syllable after restructuring.

[25] O Pedro comeu bolo.

the Pedro ate cake

‘Pedro ate cakes.’

[26] a. [o Pedro]_φ [coMEU]_φ [BOlo]_φ →_{restructuring}

b. [o Pedro]_φ [coMEU Bolo]_φ →_{stress shift}

c. [o Pedro]_φ [COmeu Bolo]_φ

Assuming this general background, Santos (2002, 2003) raises the issue of what happens in a situation where an empty syntactic category intervenes between two contiguous stressed syllables within a single phonological phrase, as sketched in (27) below. Interestingly, Santos argues that the answer depends on the type of empty category involved. The sentences in (28a) and (28b), for instance, both instantiate the situation sketched in (27) and are both fine without stress retraction. However, if stress retraction takes place, only (28a) is prosodically well formed.

[27] [ves**TIU** *ec* **HO**je]_φ

dressed today

[28] a. [só esse casaco]_i o João disse que ele **VEStiu** *ec_i* **HO**je

only this coat the João said that he dressed today

‘Only this coat did João say that he put on today.’

b. #[esse casaco]_i, a Maria ficou elegante [depois que ela

this coat the Maria became elegant after that she

VEStiu *ec_i* **HO**je.]

dressed today

‘As for this coat, Maria became elegant after she put it on today.’

Upon close inspection, the only relevant difference between (28a) and (28b) is the empty syntactic category intervening between the stressed syllables given in (27). In (28a), we have a transparent domain between the empty category and its antecedent and the antecedent is a focused element. Given that focused elements resist being associated with resumptive pronouns (see e.g. Cinque 1990), the empty category of (28a) must be a trace rather than a *pro*. In turn, in (28b) an adjunct island separates the empty category from its antecedent and there is no convergent derivation that could allow sideward movement of *esse casaco* ‘this coat’ to circumvent the adjunct island (see e.g. Nunes and Uriagereka 2000 and Nunes 2001, 2004, 2012). Crucially, assuming that *esse casaco* in (28b) occupies Spec,TopP, for concreteness, at the point where the Top head is introduced in the derivation, the embedded clause containing *esse casaco* has already become an adjunct. The empty category of (28b) must therefore be a *pro*. Contrasts such as the one between (28a) and (28b) have led Santos to conclude that in BP clash resolution via stress shift is permitted across traces but not across *pro*.

Bearing this conclusion in mind, consider the data in (29), for example (adapted from Nunes and Santos 2009).

- [29] a. [[Que livro]_i você recomendou *t_i* [depois que com**PROU** *ec_i*
which book you recommended after that bought
ONtem]]?
yesterday
- b. [Você recomendou [que livro]_i [depois que com**PROU** *ec_i* **ONtem**]]?
you recommended which book after that bought yesterday
 ‘Which book did you recommend after you bought it yesterday?’

In both sentences of (29), there is an empty category intervening between the verb and the adverb in the embedded clause, which takes the *wh*-phrase of the matrix clause as its antecedent. Furthermore, the last syllable of the verb and the first syllable of the adverb are both stressed, yielding a stress clash configuration. Interestingly, the stress clash can be resolved via stress retraction in (29a), but not in (29b), as respectively shown in (30).

- [30] a. [[Que livro]_i você recomendou *t_i* [depois que **COMprou** *ec_i* **ONtem**]]?
 b. #[Você recomendou [que livro]_i [depois que **COMprou** *ec_i* **ONtem**]]?

Note that the *wh*-phrase is in Spec,CP in (29a) but in the matrix object position in (29b); hence, only the empty category of the former can be analyzed as a parasitic gap (cf. (12)). Nunes and Santos (2009) then argue that the phonological contrast in (30) can be accounted for if (29a) indeed involves a parasitic gap and (29b), a null pronoun. As a trace, the parasitic gap behaves like traces in general in BP in not blocking stress retraction. On the other hand,

pro in (29b) blocks stress retraction, which explains the phonological oddness of (30b) ((29b) is fine without stress retraction).

From the present perspective, the derivation of (29a) involves the (simplified) step in (31) below, where a *wh*-element bearing EF moves to the edge of its phase and then undergoes sideward movement to the object position of the verb *recomendou* (cf. (16)). After the *wh*-phrase further moves to Spec,CP (see (32)), EF is appropriately licensed and in the phonological component, stress retraction can proceed across the trace of the *wh*-phrase in the embedded clause.

[31] K = [recomendou [**que livro**]_{EF}] L = [_{VP} *t_{wh}* [Ø *v* [comprou *t_{wh}* ontem]]]

[32] [_{CP} [**que livro**]_{√EF} [Q [você_j [_{VP} *t_{wh}* [[*t_j* *v* recomendou *t_{wh}*] [depois que Ø_i [_{VP} *t_{wh}* [*t_i* *v* [COMprou *t_{wh}* ONtem]]]]]]]]]]]]?]

As for (30b), we have to consider two scenarios, depending on where the *wh*-element is generated. If it has been generated within the adjunct clause, it must be the case that it bears EF; otherwise, it wouldn't be able to undergo sideward movement to the matrix object position along the lines of (31). Given that such movement leaves a trace (the “parasitic gap”) and traces do not block stress retraction in BP, stress retraction in (30b) should be allowed. However, the derivation of (30b) under this scenario independently crashes, for EF cannot be checked in the matrix object position, as sketched in (33).

[33] * [_{CP} Q [você_j [_{VP} *t_j* [[*v* recomendou [**que livro**]_{EF}] [depois que Ø_i [_{VP} *t_{wh}* [*t_i* *v* [COMprou *t_{wh}* ONtem]]]]]]]]]]]]?]

On the other hand, if in the derivation of (30b) the *wh*-element is generated in the matrix clause, a *pro* must occupy the object position within

the adjunct. The derivation can now converge if the *wh*-element is not specified for EF. However, stress retraction as in (30b) is not possible in this scenario, as represented in (34), for *pro* blocks stress retraction in BP (see Santos 2002, 2003).

- [34] #_{[CP Q [você_j [_{VP} [_{t_j} *v* recomendou [que livro]] [depois que Ø_i [_{VP} *t_i* *v* [COMprou *pro* ONtem]]]]]]]?]}

In sum, the same reasoning that accounts for the lack of partial *wh*-movement in English (see (3b)/(23a)) and the fact that parasitic gaps cannot be licensed by *wh*-phrases *in situ* (see (12b)) also provides an account for an otherwise very surprising correlation in BP involving *wh*-movement in the matrix clause and stress retraction within the adjunct clause.

5. Concluding remarks

In this paper I have shown that Bošković's (2007) proposal that edge features are located on moving elements rather than phase heads has interesting consequences for sideward movement out of constituents that will later become adjuncts. In particular, the so-called S-Structure condition on parasitic gap licensing (see e.g. Chomsky 1982) and the intriguing correlation in Brazilian Portuguese between stress shift in an adjunct clause and *wh*-movement in the subordinating clause (see Nunes and Santos 2009) are subsumed under Bošković's analysis of illicit partial *wh*-movement: in these three cases, an unchecked instance of EF causes the derivation to crash. Importantly, this crashing is detected locally, as soon as the relevant constituent containing an unchecked EF is transferred. This is of particular relevance in the case of stress shift in BP, for at first sight we have a very global computation directly relating *wh*-movement in the syntactic

component and stress clash resolution in the phonological component. Under the analysis presented in section 4, the relevant computations of each component take place without paying attention to the computations of the other. In the syntactic component, all that matters is whether the relevant *wh*-elements host EF and if so, if EF has been checked or not. In turn, in the phonological component, all that matters is whether an empty syntactic category intervening between two stressed syllables within a phonological phrase is a trace or a *pro*.

The cases discussed in section 3 and 4 provide independent evidence not only for Bošković's (2007) proposal, but also for Nunes's (1995, 2001, 2004, 2012) claim that sideward movement is simply a description of the interaction among more basic operations (Copy, Merge, and Delete), being devoid of any theoretical status. Sideward movement patterns like upward successive cyclic movement in that it removes a *wh*-element with an unchecked edge feature from a domain that will be later inaccessible to the computation (the adjunct island in the case of sideward movement and a transferred domain in the case of successive cyclic movement). In both cases, the element bearing EF must keep moving until it reaches a position where EF can probe the structure and be checked.

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[CHAPTER 4]

What is in a trace? Accounting for reconstruction patterns in parasitic gaps

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1. Introduction

Parasitic gap constructions involve configurations in which a gap within an opaque domain for extraction is licensed by a legitimate movement dependency in the sentence. For instance, extraction cannot take place from within adjuncts (1a); however, a gap inside an adjunct ends up being acceptable if there is a filler-gap dependency in the matrix structure (1b), i.e., the gap *pg* in the adjunct is “parasitic” on the gap in the main clause.

- [1] a. * $[_{DP}$ Which paper] $_i$ did Elaine review the book $[_{ADJUNCT}$ without reading t_i]?
b. $[_{DP}$ Which paper] $_i$ did Elaine review t_i $[_{ADJUNCT}$ without reading pg_i]?

An immediate question that this phenomenon raises is whether parasitic gaps and true gaps are the same kind of syntactic object. According to copy theory (Chomsky 1995, Nunes 1995, 2004), standard movement gaps are silent

copies of the filler. Therefore, if parasitic gaps were elements of this type, they should be identical to the filler in the main structure (e.g., Nunes 2001, 2004). This prediction has proven to be problematic, as parasitic gaps tend to obviate reconstruction effects. In (2), for example, the parasitic gap *pg* does not seem to be identical to the *wh*-phrase *which picture of Jerry* as this would produce a Condition C violation with respect to the pronoun *he*.

[2] [D_{PI} Which picture of Jerry_j] did Elaine destroy *t*_i [ADJUNCT after he_j saw PGⁱ]

A similar argument can be drawn from reconstruction patterns for Condition A. As (3a) shows, the reflexive anaphor *himself* can be interpreted in the position of the movement gap to get its reference. However, an unacceptable outcome is obtained if the anaphor *herself* in (3b) needs to be interpreted in the parasitic gap position.

- [3] a. [D_{PI} Which picture of himself_j] did Cosmo_j destroy *t*_i [ADJUNCT after Elaine saw PGⁱ]
 b. *[D_{PI} Which picture of herself_j] did Cosmo destroy *t*_i [ADJUNCT after Elaine_j saw PG^j]

Cinque (1990) proposed analysing parasitic gaps as a sort of null pronominal that forms a chain with a constituent in a c-commanding A'-position.⁸ While this hypothesis allows to account for the data in (2) and (3), it does not suit well with standard assumptions on chain formation under copy theory. In this framework, constituents forming a chain are assumed to be *non-distinct*, which in most implementations is taken to

⁸ Similar analyses have been advanced by Chomsky (1982), Engdahl (1985), Postal (1993), among others.

mean *identical*. Therefore, forming chains containing distinct types of element is not immediately granted.

However, a further and more serious problem for an account of parasitic gaps in terms of null pronouns is the fact that they do exhibit reconstruction effects in certain cases. As noticed by Williams (1990: 271), parasitic gaps corresponding to *whose*-phrases feed Condition C. This is shown in (4), where the pronoun *he* cannot be interpreted coreferentially with *whose*, as a copy of the *wh*-possessor seems to be within the parasitic gap position.

[4] *_[D_{PI}] Whose_j mother] did we warn *t_i* _[ADJUNCT] before he_j arrested pgⁱ?

The patterns discussed so far suggest that, depending on yet unknown factors, parasitic gaps may be either pronouns or copies of their filler. This paper argues that this behaviour follows straightforwardly from a system in which the internal structure of movement gaps is calculated by appealing to representational economy principles applying over anaphoric constituents. That is, there are conditions in which a gap will exhibit the full lexico-syntactic content of its filler, but in other cases it will simply consist of a pronominal element. As an important characteristic, this system does not appeal to copying procedures to account for filler-gap isomorphism: it is contended that such a relation is enforced by interpretability requirements.

The structure of the paper is as follows. Section 2 introduces the system that will be employed to account for reconstruction and anti-reconstruction patterns in parasitic gaps; a brief presentation of its functioning with respect to standard gaps is also included. In section 3, an analysis of the puzzling data introduced in this introduction is offered. Finally, section 4 concludes the article.

2. The system

The analyses to be advanced in this paper rely on many non-canonical assumptions on the functioning of movement dependencies. This section introduces some of them, and attempts to offer an exemplification of their interaction. However, many potential shortcomings will be ignored for the moment, as the consequences of the proposal go far beyond the realm of parasitic gaps and reconstruction effects.⁹

2.1. Assumptions on chain recognition

As mentioned in the introduction, standard copy theory does not provide the means to account for chains containing both full phrases and pronouns. In order to allow this possibility, the algorithm of chain recognition developed in Muñoz Pérez (2017, 2018) will be adopted.

This mechanism is originally aimed to solve the *copies vs. repetitions* problem within copy theory.¹⁰ As an illustration of this issue, consider the passive sentence in (5a) as analysed in (5b). The phrase marker in (5b) contains two occurrences of the DP *Cosmo*. For this kind of representation to capture the displacement property of human language, the interpretative components must be assumed to be capable of recognizing that both occurrences of *Cosmo* are non-distinct, i.e., they are “one and the same

⁹ In particular, the proposal as presented here lacks explicitness with respect to the functioning of those mechanisms that are taken to apply during the syntactic derivation, i.e., Agree and Merge. A main reason to remain silent about derivational operations is that the very logic of some of the principles to be advanced below seem to require top-down derivations (e.g., Phillips 2003, Chesi 2015, Georgi & Salzmann 2016, den Dikken 2018), which implies an even greater deviation from the standard minimalist framework. Obviously, a proper justification of all these changes is far beyond the scope of the article.

¹⁰ See Collins & Groat (2018) for recent discussion of this issue.

thing” for the purposes of many grammatical processes (e.g., pronunciation, θ -assignment).

- [5] a. Cosmo was arrested.
 b. [_{TP} Cosmo [_T was [_{VP} arrested Cosmo]]]

There are situations in which repetitions of a certain constituent are not supposed to form movement dependencies. That is, whatever definition of non-distinctiveness applies to the occurrences of *Cosmo* in (5b), it should be fine-grained enough to distinguish the unrelated repetitions of this constituent in sentences as (6).

- [6] *Cosmo_i arrested Cosmo_j.*

The definition of non-distinctiveness offered by Muñoz Pérez (2017, 2018) is based on the type of reasoning that allows to distinguish, for instance, the pronouns *she* and *her* in English. While both pronouns have basically the same grammatical features (cf. (7)), their Case values are different: *she* carries a nominative NOM value for its κ -feature, while *her* has an accusative ACC value. As this opposition allows to discern between *she* and *her* in general terms, it is just a safe assumption that non-distinctiveness also makes use of this kind of contrast.

$$[7] \quad she_{\text{NOM}} = \left\{ \begin{array}{l} \langle \kappa, \text{NOM} \rangle \\ \langle \text{Gender, FEM} \rangle \\ \langle \text{Number, SG} \rangle \\ \langle \text{Person, 3} \rangle \\ \langle \text{Category, D} \rangle \\ \dots \end{array} \right\} \neq \left\{ \begin{array}{l} \langle \kappa, \text{ACC} \rangle \\ \langle \text{Gender, FEM} \rangle \\ \langle \text{Number, SG} \rangle \\ \langle \text{Person, 3} \rangle \\ \langle \text{Category, D} \rangle \\ \dots \end{array} \right\} = her_{\text{ACC}}$$

In this case, a distinction is made by appealing to values that are assigned during the syntactic computation, i.e., Case. However, non-distinctiveness should also be considered with respect to elements that do not enter directly in licensing relations and, therefore, do not receive new values.¹¹ For example, the first externally merged occurrence of the pronouns in (7) should look like the set in (8), which lacks a value for its κ -feature.

$$[8] \quad she/her_{\text{CASELESS}} = \left\{ \begin{array}{c} \langle \kappa, \emptyset \rangle \\ \langle \text{Gender, FEM} \rangle \\ \langle \text{Number, SG} \rangle \\ \langle \text{Person, 3} \rangle \\ \langle \text{Category, D} \rangle \\ \dots \end{array} \right\}$$

Should this object be considered non-distinct from *she* and *her* in (7)? There are good reasons to believe it should, as it is able to form chains with both of these pronouns, as shown in the following examples.¹²

- [9] a. *She*_{NOM} was arrested ~~*she/her*~~_{CASELESS}.
 b. Cosmo believes *her*_{ACC} to have ~~*she/her*~~_{CASELESS} won.

¹¹ The implicit hypothesis here is that Agree only values the features of a single matching constituent, not the ones in all its occurrences. As for the interpretability of valued/unvalued features, it should be assumed that an unvalued feature $\langle F, \emptyset \rangle$ on a constituent α is tolerable at the interfaces if α pertains to a chain CH containing an element α' with a valued version of that same feature. While this is different from Chomsky's (1995: 381) side assumption that "the features of a chain are considered a unit: if one is selected by an operation, all are", both approaches seem to be extensionally equivalent. In fact, the version implicitly adopted here seems to be preferable, as Chomsky's version presupposes that chains are narrow syntactic constructs over which Agree/feature-checking can take place.

¹² Strikethrough words represent unpronounced constituents.

In sum, the pronouns in (7) can be said to be different syntactic objects because of the opposing values in their Case features, while the examples in (9) show that the lack of a certain value on a constituent is not a factor that makes it distinct from another element. These two traits of the non-distinctiveness relation are straightforwardly captured under the following definition.

[10] Non-Distinctiveness (Muñoz Pérez 2018: 5)

A constituent β is non-distinct from a constituent α if for every feature-value of β there is an identical feature-value in α .

This definition allows to posit a representational algorithm of chain recognition.

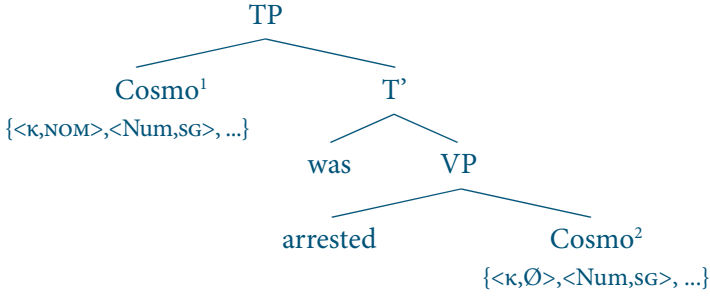
[11] Two constituents α and β are part of the same chain if:

- a. α c-commands β ,
- b. β is non-distinct from α ,
- c. there is no δ between α and β such as β is non-distinct from δ , or δ is non-distinct from α .

Consider once again the sentence in (5a), this time represented as a tree in (12). In this representation, there are (at least) two occurrences of the same DP: *Cosmo*² occupies a θ -position and lacks a Case value; while *Cosmo*¹ agrees with T and receives nominative Case.¹³

¹³ Numerical indexes on constituents are for expository purposes only.

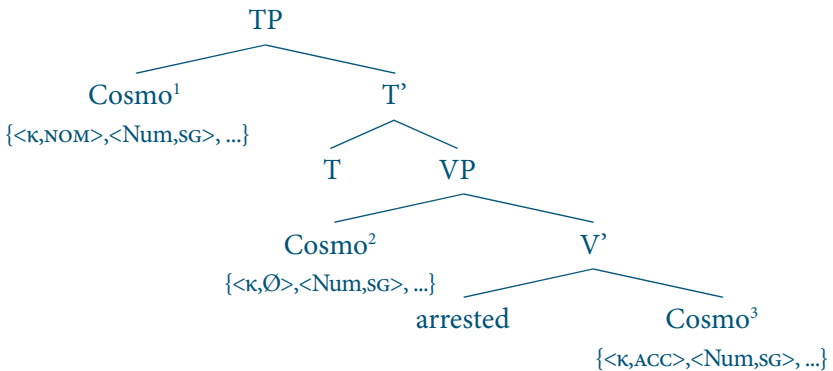
[12]



As *Cosmo*¹ c-commands *Cosmo*² (11a), the feature-values of *Cosmo*² are contained in those of *Cosmo*¹ (11b), and there are no potential interveners between *Cosmo*¹ and *Cosmo*² (11c), both DPs must be interpreted as a single chain CH = {*Cosmo*¹, *Cosmo*²}. Notice that no transformational operation is assumed to relate both chain-members; they are base-generated constituents that are identified as pertaining to the same chain in virtue of the algorithm in (11).

Take again the example in (6), represented now as a tree in (13). There are (at least) three occurrences of the DP *Cosmo* in this representation: *Cosmo*³ is in the internal argument position of the verb and receives an accusative value for its κ-feature; *Cosmo*² occupies the external argument position; and *Cosmo*¹ is in the Spec,T position and receives nominative Case.

[13]



In this representation, *Cosmo*¹ and *Cosmo*² are taken to be part of the same chain in virtue of the same calculation than in (12). The relevant difference between both examples lies in *Cosmo*³: while it is c-commanded by *Cosmo*², these elements cannot pertain to the same chain as the feature-values of *Cosmo*³ are not included in those of *Cosmo*², i.e., *Cosmo*³ has an accusative ACC value that is not present in *Cosmo*². Therefore, the occurrences of *Cosmo* must form two different chains CH₁ = {*Cosmo*¹, *Cosmo*²} and CH₂ = {*Cosmo*³}.

This system has two important characteristics that will be exploited along the rest of the paper. First, it allows forming chains without appealing to copying procedures, e.g., the Copy operation in Nunes (2004, 2011);¹⁴ this trait will be exploited to analyse anti-reconstruction phenomena as cases of gaps being underlying pronoun-like elements.

Second, the definition of non-distinctiveness in (10) and the algorithm of chain recognition in (11) do not posit any restrictions on the lexico-syntactic form of unpronounced constituents. Therefore, the internal structure of a gap should be calculated by resorting to principles that are not specific to chains or movement dependencies. These are introduced in the next section.

2.2. Non-redundancy and interpretability

This paper maintains the hypothesis that the internal structure of gaps is constrained by representational economy principles ranging over anaphoric

¹⁴ Furthermore, this characteristic could potentially lead to dispense entirely with the Copy operation. As authors as Rizzi (1986b) and Brody (1995) have pointed out, a theory that incorporates both movement operations and chain formation algorithms is redundant, as both theoretical constructs express the same type of syntactic relation. Following this logic, given that (i) movement is taken to be Copy+Merge (Nunes 2004), and (ii) Merge is a conceptually necessary operation, it follows that Copy should be abandoned. Notice that the preference for chain formation algorithms relies partially in their capability to deal with anti-reconstruction, as discussed throughout this article.

constituents. Such an approach is based on Schlenker's (2005) treatment of Condition C. According to him, the unacceptability of (14a) is due to a "redundant" use of the nominal restrictor *neighbour* within DP². This NP introduces no new information with respect to the restrictor in the antecedent DP¹. Therefore, representational economy dictates that a smaller definite description, i.e., a pronoun, should be preferred to occupy the DP² position (14b).

[14] a. *_{[DP1 The _{[NP neighbour]]_i said that _{[DP2 the _{[NP neighbour]]_i was arrested.}}}}

b. _{[DP1 The _{[NP neighbour]]_i said that _{[DP2 he]_i was arrested.}}}

This proposal can be adapted to account for the distribution of NP restrictors within movement gaps. Unlike Schlenker's *Minimize Restrictors!*, the economy principle to be adopted here (i) is sensitive to c-command, and (ii) applies to any type of DP, not only definite descriptions.

[15] Given a DP¹ that c-commands an anaphorically dependent DP², the restrictor in DP² must be as little redundant as possible with respect to the restrictor in DP¹.

While this definition seems to be aimed to account for the pair in (14), it can also be exploited to predict the internal structure of the gap DP² in a sentence like (16).

[16] [_{TP} [_{DP1 The _{[NP crazy _[NP neighbour]]}]] [_{T'} was [_{VP arrested $\bar{D}P^2$]]]}}

The economy principle in (15) states that the lexico-syntactic structure of the unpronounced chain-member DP² must avoid containing elements that

are already present within the antecedent DP¹. This introduces a competition between determiner phrases “of different size” that may function as the gap DP². A first type of candidate to occupy this position is a DP that contains the full NP restrictor together with its adjunct modifiers (17a); as these elements are also part of the structure of the filler, this DP is highly redundant in the sense of (15). The next option involves a DP that does not contain any adjuncts, but the NP restrictor alone (17b); while this choice is more economical than the previous one, the NP part of the constituent is still redundant. A third alternative to occupy the DP² position is a DP that lacks altogether an NP, but has a set of ϕ -features as restrictor, i.e., it is a pronoun (17c); in this case, redundancy with respect to the filler is reduced to features only. A final potential choice consists on a bare determiner D with no NP restrictor at all (17d); this element is taken to be a placeholder that avoids redundancy altogether.

[17] a. Noun phrase + optional modifiers

[_{DP} the [_{NP} crazy_{<e,t>} [_{NP} neighbour_{<e,t>}]]]

b. Noun phrase

[_{DP} the [_{NP} neighbour_{<e,t>}]]

c. Pronominal (ϕ -features as restrictor)

[_{DP} he _{ϕ}]

d. Bare D (no restrictor)

[_{DP} the]

While the bare determiner in (17d) is the most economical pick for DP² in (16), there are additional factors that must be taken into consideration at computing the internal structure of a gap. In particular, there are cases in which a certain gap must contain a minimal structure in order to generate an interpretable representation.

This is to say that the lexico-syntactic content of a gap is the product of a natural tension between representational economy and interpretability conditions.

Consider as an illustration of this idea the abstract representation in (18), in which the gap DP^2 occupies the Spec,T position, and must Agree with T to value its ϕ -features.

[18] $[_{XP} DP^1 \dots [_{TP} DP^2 [_{T'} T_{u\phi} \dots]]]$

In principle, the most economical type of DP competing to occupy this position is a bare determiner D with no restrictor at all, as the one exemplified in (17d). However, these elements lack ϕ -features, so they are not able to satisfy the uninterpretable features on T.¹⁵ Therefore, the optimal pick to function as the gap DP^2 must be a pronoun, a D-element that carries ϕ -features as restrictor as in (17c). This example shows that independently motivated interpretability requirements interact with representational economy to define the internal structure of gaps.

Back to the representation in (16), there seems to be no particular interpretability condition constraining the form of the gap DP^2 : this element is not required to value the features of the T head, as these are satisfied through agreement with the filler DP^1 ; moreover, there are no semantic requirements over traces of A-movement other than being placeholders for θ -assignment. Thus, DP^2 must simply consist on a bare determiner D.

[19] Competing alternatives for DP^2 in (16)

$[_{DP} \underline{\text{the}}] > [_{DP} \text{he}_{\phi}] > [_{DP} \text{the neighbour}] > [_{DP} \text{the crazy neighbour}]$

THIS ONE!

¹⁵ The assumption here is that the ϕ -features that determiners exhibit in certain languages are interpretable within the NP. Therefore, determiners lacking NPs must also lack ϕ -features.

Before moving to reconstruction phenomena, there is an additional assumption that must be made explicit. As discussed, the algorithm of chain recognition in (11) does not require copying procedures to identify movement dependencies; instead, base-generated constituents are identified as pertaining to a given chain due to their feature-values. The problem with this is that nothing excludes forming a chain $CH = \{DP^1, DP^2\}$ in which DP^1 and DP^2 contain different lexical items.

[20] * $[_{TP} [_{DP1} \text{The crazy neighbour}] [_{T'} \text{was} [_{VP} \text{arrested} [_{DP2} \text{the great golfer}]]]]$

This unwanted prediction becomes particularly problematic for the economy principle in (15), as the “minimizing” effect attested in (17) obtains only if the constituents forming the gap DP^2 are supposed to be the same than those displayed in the filler DP^1 ; otherwise, redundancy can be avoided simply by appealing to distinct lexical items, as it happens in (20). Therefore, the theoretical proposal in this section requires a constraint according to which the material that may be interpreted within a movement gap depends on the content of its filler.

A simple way of deriving this result is by appealing to conditions on recoverability of deletion (e.g., Katz & Postal 1964, Chomsky 1965, 1981). For instance, it could be argued that a representation like (20) violates the recoverability conditions as the information encoded in the silent gap DP^2 cannot be recovered from the overt parts of the sentence.¹⁶ While offering a descriptively adequate definition of Recoverability is beyond the scope of the article, the following working definition will be adopted in what follows.

¹⁶ At defining parasitic gaps as null pronominals, Cinque (1990) faces a similar problem. In order to comply with the identification requirements of null pronouns (Rizzi 1986a), Cinque proposes that the φ -features of a parasitic gap are recovered from the constituent that moves in the matrix structure. This intuition is immediately captured in the definition of Recoverability in (21), i.e., the φ -features to be interpreted in the gap are those available in the filler.

[21] Recoverability¹⁷

A movement gap can only contain lexico-syntactic information that is available on a preceding filler.

This condition allows to rule-out representations like (20), at the time that constrains the form of the determiner phrases that compete for a certain gap position.

2.3. Accounting for some (anti)reconstruction effects

The system advanced so far allows to account for the distribution of reconstruction effects in a very elegant way. To begin with, consider the sentence in (22); notice that if DP² was a copy of DP¹, (22) would be incorrectly ruled-out due to a Condition C violation.

[22] [_{DP1} The claim that Cosmo_i was asleep] seems to him_i to be DP² correct.

According to the assumptions in this paper, there are three DPs “of different size” competing to occupy the DP² position, i.e., a bare

¹⁷ While the definition of Recoverability in (21) is taken to be a primitive, it could also be derived from the *Full Interpretation Principle*.

[i] Full Interpretation (Chomsky 1986: 98)

Every element of PF and LF must receive an appropriate interpretation. None can simply be disregarded. At the level of PF, each phonetic element must be licensed by some physical interpretation.

The example in (20) violates Full Interpretation as the lexical items within DP² are selected from the lexicon but do not receive phonological representation. The effect of this principle for chain theory is that the material forming an unpronounced constituent is restricted to what appears in an overt antecedent, just as stated in (21).

determiner D, a pronoun, and a full occurrence of the filler.¹⁸ From these elements, the “smallest” constituent yielding an interpretable representation must be selected to function as the gap DP². Since there are no particular semantic conditions on traces of A-movement other than being placeholders for θ -assignment, the most economical pick is the bare determiner D.

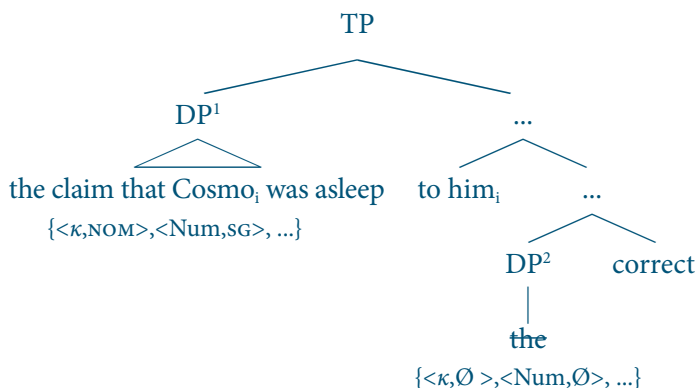
[23] Alternatives for DP² in (22)

[_{DP} the] > [_{DP} it _{φ}] > [_{DP} the claim that Cosmo was asleep]

THIS ONE!

The resulting phrase marker is the one sketched in (24), which includes the features of each member of the chain CH = {DP¹, DP²}. Roughly the same representation has been independently advanced for this kind of anti-reconstruction effect by Takahashi & Hulsey (2009) under very different assumptions.

[24]



¹⁸ In this case, there are no adjuncts to the NP in the filler DP¹. Therefore, Recoverability in (21) dictates that elements containing this type of constituent should not compete for the position DP².

Consider now the example in (25). This sentence is bad if *George* and *he* corefer, so it must be the case that there is an occurrence of the NP *picture of George* within DP^2 producing a Condition C violation, as shown in (25).

[25] * $[_{DP1}$ Which picture of George $_i$] did he $_i$ see $[_{DP2}$ which picture of George $_i$]?

According to this representation, DP^2 introduces an NP restrictor that is redundant with respect to DP^1 , in apparent contradiction to what is expected from the economy principle in (15). While at first sight this may look problematic, cases like this one are expected under the assumptions advanced so far, as the type of redundancy attested in (25) is enforced by interpretability conditions on A'-chains.

A number of authors working within copy theory have advanced the idea that gaps of A'-movement must function as anaphoric definite descriptions bound by their filler (e.g., Sauerland 1998, Fox 2002, 2003, Elbourne 2005). This hypothesis implies that in order to interpret a chain $CH = \{DP^1, DP^2\}$ as a proper operator-variable dependency, (i) both chain-members must have restrictors denoting matching predicates, and (ii) the determiner heading DP^2 must be interpreted as a definite determiner. For instance, the LF representation of a sentence like (26a) ends up looking like (26b).

[26] a. $[_{DP1}$ Which book] did Elaine read $\overline{DP}^2$?

b. *For what x, x a book, Elaine read $[_{DP2}$ the book x]*

These assumptions allow to account for the internal structure of the gap DP^2 in (25). As the filler DP^1 and the gap DP^2 must have matching

restrictors, DP^2 is required to contain the NP *picture of George*. Therefore, more economical picks for this position (i.e., a bare interrogative determiner, and a *wh*-pronoun) must be disregarded, as shown in (27). In short, this election shows that interpretability requirements on A' -chains override the non-redundancy principle in (15).

[27] Alternatives for DP^2 in (25)

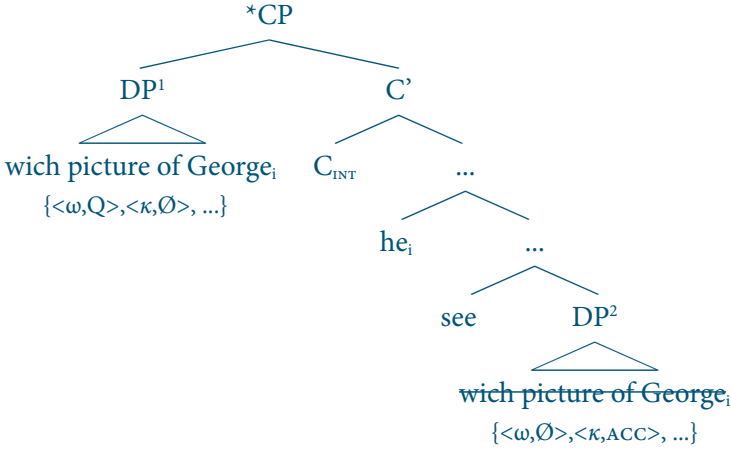
$[_{DP} \text{ which}]$	$>$	$[_{DP} \text{ what}_\phi]$	$>$	$[_{DP} \text{ which picture of George}]$
*		*		<u>THIS ONE!</u>

In the particular case of the sentence in (25), this choice leads to a Condition C violation with respect to the pronoun *he*. The outcome LF representation is sketched in (28).

[28] **For what x , x a picture of George_i, he_i saw $[_{DP^2} \text{ the picture } x \text{ of George}_i]$*

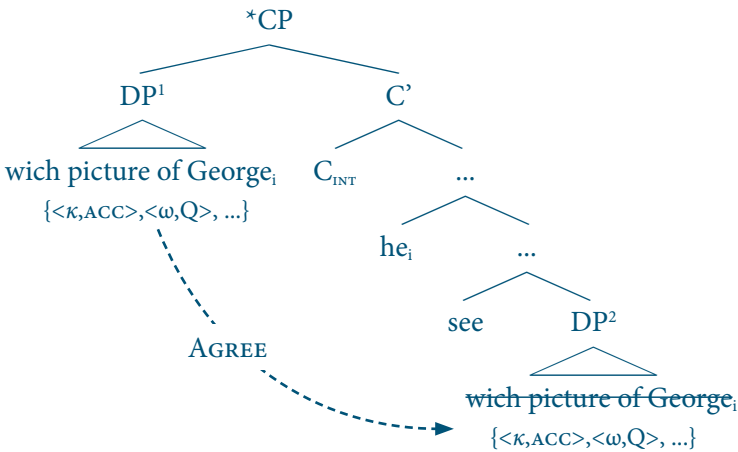
As for the feature-values that allow to form chains in these cases, some qualifications are necessary. Licensing of left-peripheral phrases is taken to function in fairly traditional terms: these constituents are assumed to carry an activity feature for A' -dependencies, call it an *ω -feature*, that gets satisfied through direct Merge with the relevant type of complementizer, e.g., DP^1 in (25) receives a Q value for its *ω -feature* by being introduced in the specifier position of an interrogative complementizer C_{INT} , as shown in (29).

[29]



In this representation, however, the κ -feature in DP¹ remains unsatisfied. By hypothesis, valuation is taken to occur through Agree with DP², as in (30). The resulting feature-values allow to form the chain CH = {DP¹, DP²} according to the algorithm in (11).

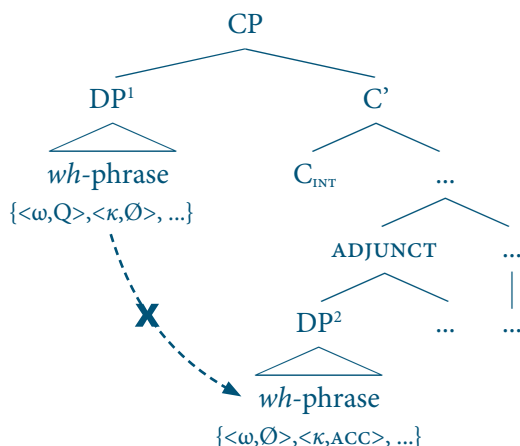
[30]



This trait permits to account for certain restrictions on syntactic movement that would be otherwise unexpected under a base-generation approach. The island status of adjuncts, for example, can be derived from it: since Agree cannot take place through the boundaries of an adjunct, it follows

that a *wh*-phrase DP^1 merged in the left-periphery will not be able to satisfy its κ -feature with a DP^2 within an adjunct, so no chain $CH = \{DP^1, DP^2\}$ will be formed in this scenario.

[31]



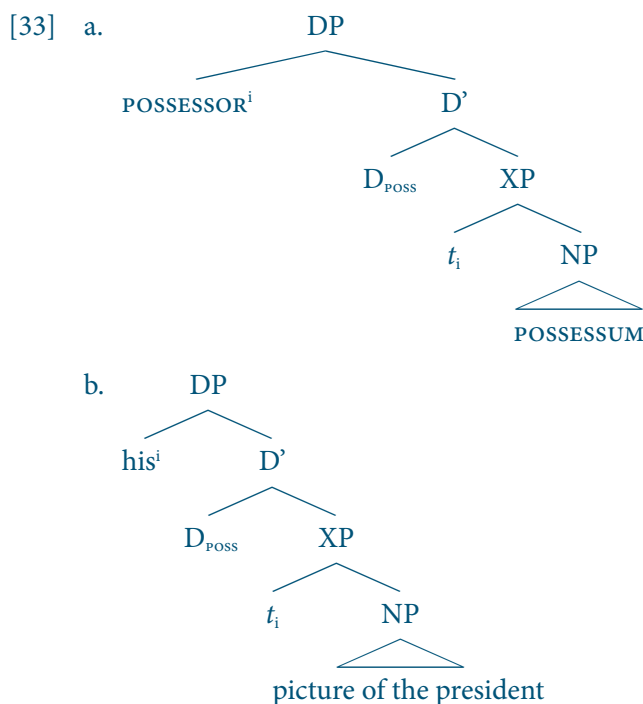
To finish the exemplification, consider the interpretation of the gaps in (32):¹⁹ first, the NP *picture of the president* does not seem to be part of the gap DP^3 , as this would otherwise lead to a Condition C violation with respect to the pronoun *him*; second, the possessive pronoun *his* needs to be interpreted within DP^2 to be bound by the quantifier *every man*.

[32] [$_{DP^1}$ His_i picture of the president_k] seemed to every man_i DP^2 to be seen by him_k DP^3 to be a real intrusion.

In particular, reconstructing *his* within DP^2 seems to require the presence of the full DP *his picture of the president*, as most analyses of prenominal possessives take *possessor* and *possessum* to be generated together

¹⁹ This example is taken from Lebeaux (2009: 47).

within the complement of a null determiner (e.g., Szabolcsi 1994, Radford 2000, Alexiadou et al. 2007). A rather agnostic version of this analysis is as follows: possessor and possessum form a constituent XP that is selected by a particular type of determiner, call it D_{POSS} ; this head attracts the possessor to its specifier position and assigns it genitive Case. As discussed by Alexiadou et al. (2007), among others, this functioning makes prenominal possessives similar to preverbal subjects.



An immediate outcome of positing a type of determiner head with these properties is that no pronoun is expected to pertain exactly to the same class. That is, if D_{POSS} is an element that expresses the relation between possessor and possessum as sketched in (33), then it follows that there is no version of it that stands by its own, without selecting a lexical complement. Therefore, when evaluating the constituents that compete

for the position DP^3 in (32), there will be no pronoun as a potential alternative; the only candidates are a bare determiner D_{POSS} and a full phrase headed by D_{POSS} . As there are no particular conditions on DP^3 , the former option is preferred.

[34] Alternatives for DP^3 in (32)

$[DP D_{\text{POSS}}]$ < $[DP \text{ his picture of the president}]$

THIS ONE!

The same candidates are available for the position DP^2 , with an important difference: picking the full DP would allow to license a bound reading of the pronoun *his* and the quantifier *every man*. Just as Schlenker (2005) points out with respect to his *Minimize Restrictors!*, violations of the economy principle in (15) are permitted if they introduce semantic effects that are not possible with more economical representations. Therefore, selecting a redundant occurrence of *his picture of the president* for DP^2 is allowed in case this reading is looked for.

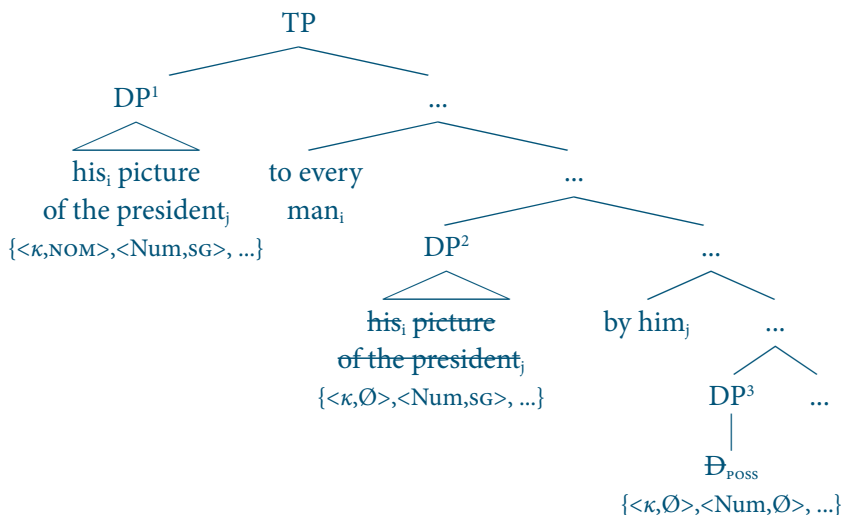
[35] Alternatives for DP^2 in (32)

$[DP D_{\text{POSS}}]$ > $[DP \text{ his picture of the president}]$

OK ALLOWS BINDING *his*

The resulting representation is sketched in (36). As the tree shows, this analysis predicts that DP^3 does not produce a Condition C violation, and that *his* gets a bound reading.

[36]



As seen, a theory of chain recognition that does not employ the Copy operation but relies on the interaction of economy and interpretability to account for the internal structure of gaps captures in an elegant way many otherwise puzzling (anti)reconstruction patterns.

3. Back to parasitic gaps

The article started by asking whether standard movement gaps are the same kind of object than parasitic gaps. There are reasons to believe they are different: while standard gaps of A'-movement trigger weak crossover effects (37a), parasitic gaps do not seem to do so (37b).

[37] a. *Who_i did his_i neighbour vouch for t_i?

b. Who_i did you gossip about t_i [_{ADJUNCT} despite his_i neighbour's having vouched for PG_i]?

To account for this asymmetry, Lasnik & Stowell (1991) suggest that parasitic gaps do not function as variables for *wh*-operators. This idea may be translated to the system advanced here in the following terms: while standard gaps of A'-movement need to be interpreted as anaphoric definite descriptions, i.e., a sort of variable, such a requirement does not hold for parasitic gaps, which may display a more economical structure.

Under this assumption, consider again the sentence in (2), repeated for convenience in (38). As already discussed, this example shows that a parasitic gap like DP³ bleeds Condition C.

[38] [DP¹ Which picture of Jerry_i] did Elaine destroy DP² [ADJUNCT after he_i saw DP³]

Just as in (25), the gap DP² must contain a full occurrence of *which picture of Jerry* in order to be interpreted as an anaphoric definite description bound by DP¹. Therefore, more economical candidates for this position are disregarded (i.e., the bare interrogative determiner *which* and the *wh*-pronoun *what*).

[39] Alternatives for DP² in (38)

[DP which]	>	[DP what _φ]	>	<u>[DP which picture of Jerry]</u>
		*		*
				THIS ONE!

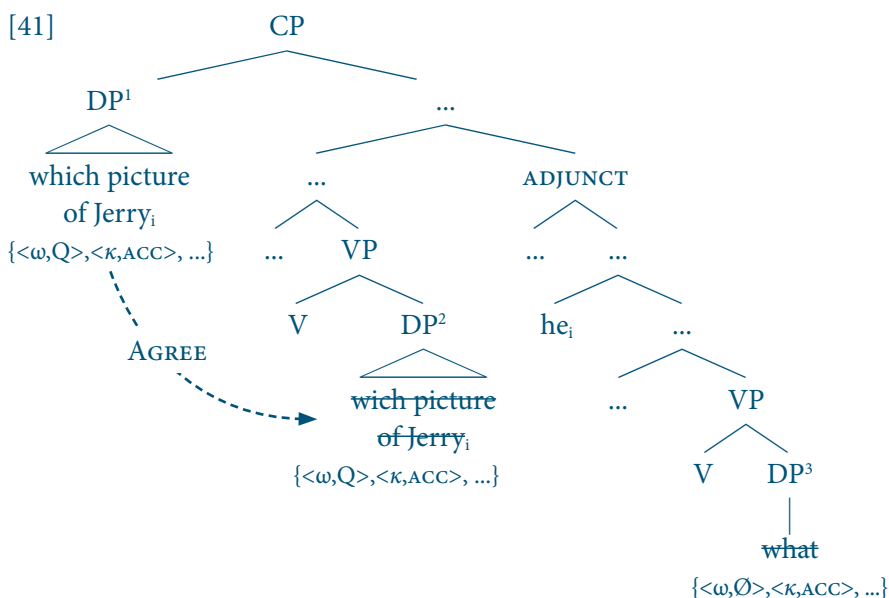
While the same options are available for the parasitic gap DP³, there is an important difference: this constituent is not required to function as a bound variable. Therefore, there is no need to pick a full occurrence of *which picture of Jerry* in the DP³ position, so more economical alternatives can be considered. The “smallest” candidate, i.e., the bare interrogative determiner

which, will not work as DP^3 needs to be able to value the ϕ -features of the v-head within the adjunct. Therefore, “the best pick” for the position DP^3 is the interrogative pronoun *what*.

[40] Alternatives for DP^3 in (38)

$[_{DP} \text{ which}] > [_{DP} \text{ what}_\phi]$ > $[_{DP} \text{ which picture of Jerry}]$
 * THIS ONE!

A sketchy tree for (38) is offered in (41). As argued with respect to (30), the κ -features in DP^1 receive a value through Agree with DP^2 . This representation predicts the formation of two chains $CH_1 = \{DP^1, DP^2\}$ and $CH_2 = \{DP^1, DP^3\}$, from which only CH_1 is interpreted as a proper operator-variable dependency. Since the parasitic gap DP^3 is a pronoun, no Condition C violation arises due to coreference between *he* and *Jerry*.



The patterns of reconstruction for Condition A in (3) also receive a straightforward analysis within this system. Take the sentence in (3a), repeated in (42). In this case, the anaphor *himself* requires being interpreted within DP² to be bound by *Cosmo*.

- [42] [DP₁ Which picture of himself_i] did Cosmo_j destroy DP² [ADJUNCT after Elaine saw DP³]

This behaviour is expected, as only a full occurrence of *which picture of himself* in DP² yields a proper operator-variable dependency.

- [43] Alternatives for DP² in (42)

[DP which]	>	[DP what _φ]	>	[DP <u>which picture of himself</u>]
★			★	THIS ONE!

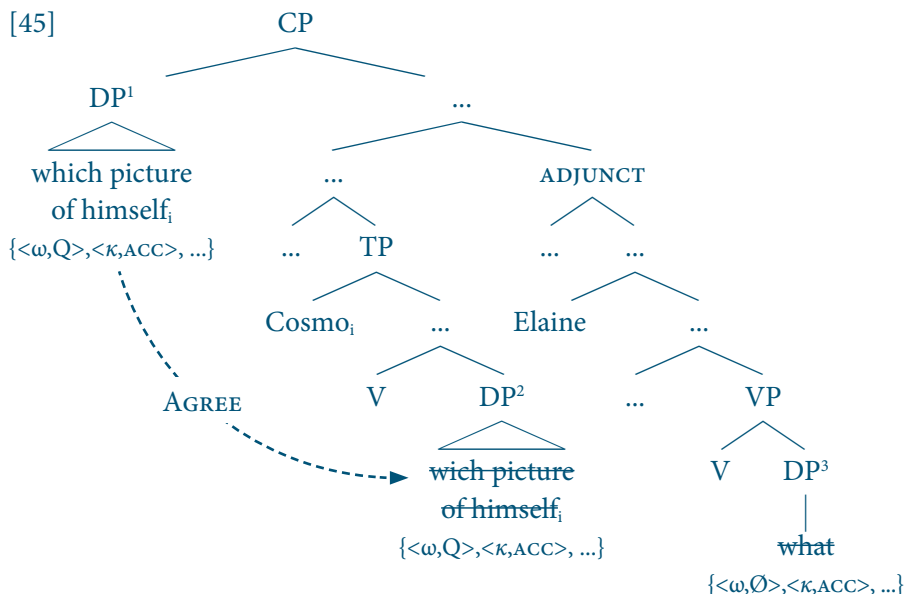
As before, an occurrence of the interrogative pronoun *what* in the parasitic gap position DP³ allows to value the φ-features of the *v* head inside the adjunct. In this case, the full DP *which picture of himself* is not even a proper candidate to function as the parasitic gap DP³, as the R-expression *Elaine* is not a proper antecedent for the anaphor *himself*.

- [44] Alternatives for DP³ in (42)

[DP which]	>	[DP <u>what_φ</u>]	>	[DP <u>which picture of himself</u>]
		★	THIS ONE!	★

The resulting representation is sketched in (45), in which the anaphor *himself* in DP² is bound by *Cosmo*. As in the previous example, DP¹ values its κ-feature through Agree with DP², so two movement chains are identified,

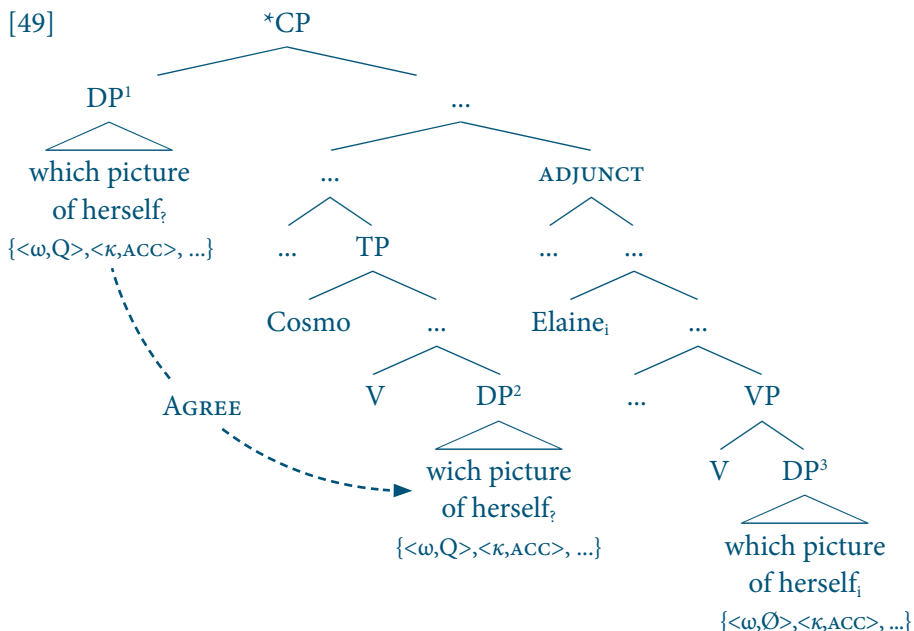
i.e., $CH_1 = \{DP^1, DP^2\}$ and $CH_2 = \{DP^1, DP^3\}$, from which only the former functions as an operator-variable dependency.



This sentence contrasts with the example presented in (3b), repeated in (46).

[46] *_{[DP1} Which picture of herself_j] did Cosmo destroy DP² _{[ADJUNCT} after Elaine_j saw DP³]

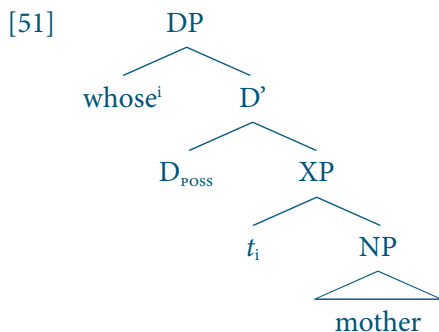
The problem with (46) is that the filler DP¹ does not determine a proper candidate to occupy the position DP². This gap needs to be interpreted as an anaphoric definite description bound by DP¹. Therefore, DP² is supposed to contain the NP *picture of herself*. However, the anaphor *herself* does not find a proper antecedent in the binding domain of DP², i.e., the phrase *which picture of herself* yields an uninterpretable result if selected for this position.



As mentioned in the introduction, there are cases in which parasitic gaps actively exhibit reconstruction effects. The example in (4), repeated for convenience in ((50)), shows that the *whose*-phrase reconstructs in the parasitic gap position DP^3 for Condition C, as the sentence becomes unacceptable only with a coreferential interpretation of *he* and *whose*.

[50] $*[_{DP1} \text{ Whose}_j \text{ mother}] \text{ did we warn } \cancel{DP^2} [\text{ADJUNCT before he}_j \text{ arrested } \cancel{DP^3}]?$

As previously discussed (cf. (33)), prenominal possessors are generated in the c-command domain of a head D_{POSS} , and subsequently move to $\text{Spec}, D_{\text{POSS}}$ (51).



Moreover, it was argued that, due to the relational nature of the determiner head D_{POSS} , there are no pronouns pertaining exactly to the same class, i.e., there are no D_{POSS} with inherently valued ϕ -features.

Consider first the internal structure of the gap DP^2 in (50). As there are no D_{POSS} pronouns, the competition for this position involves only two elements, i.e., a bare determiner D_{POSS} and a full DP headed by D_{POSS} . As this gap needs to be interpreted as an anaphoric definite description, the full DP is selected.

[52] Alternatives for DP^2 in (50)

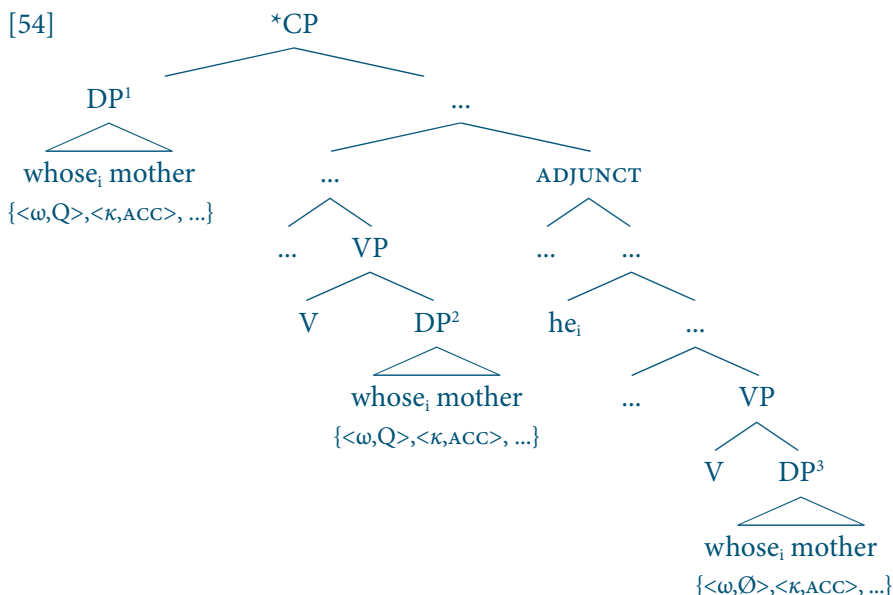
$[_{DP} D_{\text{POSS}}]$	>	$[_{DP} \text{whose mother}]$
*		THIS ONE!

As already stated, parasitic gaps are not required to function as bound variables, so DP^3 could in principle have no NP restrictor. However, this DP must, at least, be able to value the ϕ -features of the v Probe inside the adjunct. Since a bare D_{POSS} cannot do this, the full DP *whose mother* must be picked for this position.

[53] Alternatives for DP^3 in (50) DP

$[_{DP} D_{\text{POSS}}]$	>	$[_{DP} \text{whose mother}]$
*		THIS ONE!

The resulting structure is sketched in (54). In this representation, DP^1 values its κ -features with DP^2 , and the chains $CH_1 = \{DP^1, DP^2\}$ and $CH_2 = \{DP^1, DP^3\}$ are successfully formed. However, the presence of *whose* within DP^3 produces a Condition C violation, as this element is c-commanded by the coreferential pronoun *he*.²⁰



In sum, the proposed system allows to account for puzzling reconstruction and anti-reconstruction patterns in parasitic gaps.²¹

²⁰ For concreteness, the ω -features of *whose* are assumed to percolate to the DP node.

²¹ While reconstruction patterns in parasitic gaps are successfully accounted for by this system, the proposal exhibits a different type of shortcoming. As shown by Kayne (1983), parasitic gaps within islands inside islands produce unacceptable results.

- [ii] a. ?_{[DP The books]_i} you should read t_i [before it becomes difficult to talk about PG^i].
 b. *_{[DP The books]_i} you read t_i [before [talking about PG^i] becomes difficult].

The general approach introduced here (in particular, the chain recognition algorithm in (11)) requires extra assumptions to derive this restriction; other analyses of parasitic gaps as pronominals exhibit the same type of problem. Importantly, while the pair in (ii) ►

4. Concluding remarks

Anti-reconstruction phenomena are difficult to handle within a theory of movement that takes gaps to be isomorphic to their filler. This paper advanced a system that allows to account for both (i) cases in which filler and gap seem to differ, and (ii) cases in which they have the same structure. The basic intuition is that the lexico-syntactic content of a gap depends on economy and interpretability: a gap must be the smallest constituent that yields a convergent representation.

This hypothesis has been applied to the analysis of parasitic gaps. It has been argued that parasitic gaps are not required to function as bound variables, so they do not need to contain an NP restrictor matching that in the *wh*-operator. Therefore, they may simply be pronouns, i.e., D-elements carrying ϕ -features; these features are exploited to satisfy the Probes in the domain of the parasitic gap. It follows from this analysis that reconstruction effects are not expected to arise in these contexts, at least for negative constraints as Condition C.

However, *whose*-phrases do exhibit reconstruction effects in parasitic gaps for Condition C. This is expected if prenominal possessives involve a particular type of D-element for which there are no pronouns. As no pronoun competes to function as the gap of a *whose*-phrase, the constituent chosen for this position must be an occurrence of the *whose*-phrase itself, i.e., a “copy” of the filler.

While the version of the system advanced here is fairly schematic, the results are promising both in terms of description and explanation. In fact, a more complete version of this theory might be able to function as a principled framework for the study of reconstruction effects.

may be derived by appealing to derivational mechanisms such as *sideward movement* (Nunes 2001, 2004), these alternatives also need additional machinery to derive (anti) reconstruction patterns.

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[CHAPTER 5]

The (im)possibility of extraction from adjuncts

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1. Introduction

This paper addresses the possibility of extraction from adjuncts, an important issue in order to obtain some evidence about the very nature of adjunction and its place in the structure. In particular, this matter needs to be taken into account in order to establish whether adjuncts are merged in a different plane, or whether they have to be connected to the structure in some other way. I will challenge the traditional view which invariably considers adjuncts as strong islands, as I will show that extraction is sometimes licensed. I will analyse some of the factors able to manipulate and reduce the island effect and the reasons why extraction is available only in some cases. In particular I will refer to their placement in the sentence, the type of adjunct, and the verbs used.

As is well known from the literature, adjuncts belong to the class of strong islands (Cinque 1990, Szabolcsi & Lohndal 2017): they are domains out of which extraction leads to ungrammaticality either in the

case of argument extraction, as in (1a) and in adjunct extraction, as in the case of (1b).

[1] a. * Which boy did Mary arrive [before Sara kissed _]?

b. * How did Mary arrive [before Sam kissed Sara _]?

Even though island effects are subject to cross-linguistic differences, according to some scholars extraction from adjuncts is universally banned (Stepanov, 2007). For this reason adjunct islands have been accounted for by means of principles holding in narrow syntax, as in the case of the Condition on Extraction Domain (Huang, 1982). According to the CED, extraction is not licensed if it takes place from domains that are not properly governed. Following such an analysis two types of strong islands, i.e. subjects and adjuncts, are unified under the same condition and are differentiated from complements.

The timing of merging of adjuncts has also been taken into account in the explanation of their islandhood; in the case of the Multiple Spell-Out approach (Uriagereka 1999; Nuñez & Uriagereka 2000), the adjunct is claimed to be merged too early, in the sense that a PF convergence requirement forces an early transfer of the adjunct in order to establish the correct linear order following the LCA (Kayne, 1994). This means that, after the early spell-out and the consequent linearization, adjuncts are atomized and they become opaque domains: only their label is accessible, but not what is inside of them. In this way, the label provides the address for their insertion, but extraction is not allowed. On the other hand, in the case of Late Merge, adjuncts are inserted after everything else in the structure, i.e. too late to participate in the derivation, either because they merge postcyclically (Stepanov 2001, 2007) or even acyclically (Lebeaux, 1998).²²

²² Notice that there are many problems in the adoption of a late merger approach. See especially the discussion in Sportiche (2018). One of the main issue if we assume the ►

The common point of all these theories is that they make the same prediction regarding extraction, namely the fact that it is never allowed, from any adjunct. However, this turns out to be too strong, in fact we do find many exceptions cross-linguistically (see Truswell 2007, 2011; Sheehan 2010; Brown 2017 for English, Uriagereka 2011; Fábregas & Jiménez-Fernández 2016a, b for Spanish, Müller 2017 for Swedish and Biskup & Šimík 2018 for Czech). This holds for different types of adjuncts: bare present participial adjuncts, as can be seen in examples in (2), secondary adjectival predicates in (3), and prepositional adjuncts, represented in (4).

[2] a. Which play did you fall asleep [watching _]?

b. ¿ Qué entró [diciendo _] Juan?

what entered saying Juan

‘What did John came in saying?’

(Fábregas & Jiménez-Fernández, 2016a:1308)

[3] a. ¿ Con quién llegó [enfadada _] Maria?

with whom arrived angry Maria

b. Whom did Mary arrive [angry with _] ?

(Fábregas & Jiménez-Fernández, 2016b:42)

[4] a. What are you working so hard [in order to achieve _]?

(Boeckx, 2012:24)

b. Which man did you return home [without talking to _]?

(Sheehan, 2010:141)

availability of late merger is that this would non trivially increase the generative capacity of grammars. Moreover, it also tends to overgenerate, predicting that adjunct movement is potentially able to void any island.

The examples above show that the approaches trying to account for the islandhood of adjuncts are too strong since none of them is able to account for the extractability cases considered in (2)-(4). In this work I will focus mainly on data from Italian, especially as far as prepositional adjuncts are considered, in order to understand whether extraction is possible or not, and under which conditions.

Notice that extraction from adjunct islands in Italian has been experimentally investigated in Sprouse et al. (2016), where the (un)acceptability of some islands was tested. In this experiment, sentences containing with from adjuncts were judged as completely ungrammatical. An example of the sentences they tested is given in (5):

- [5] * Cosa ti lamenti [se uso _ in classe]?
what yourself complain if I.use in class
 ‘What do you complain if I use in class?’

(Sprouse et al., 2016:18)

However, the unacceptability of (5) is expected for many reasons. In fact, extraction takes place from an adjunct with the verb in its finite tense and the *wh*- constituent is a simple one. As I will show in the next section, both of these factors are able to deeply affect the islandhood of several domains.

2. The data

The island effect can be manipulated by means of several factors: islands tend to be selective in the degree of their unacceptability. This means that the strength of the island effect can be weaker or stronger depending on such factors. Consider as an example sentence (6), where the island effect is not present (or is not very strong).

- [6] Quale ragazza Gianni è partito [senza salutare _]?
which girl Gianni is left without to.greet
 ‘Which girl did John leave without greeting?’

In (6), extraction of an argument takes place from a prepositional adjunct introduced by *without*. The *wh*- is a complex one, and the verb in the adjunct is in its nonfinite form. If we change some of the factors involved in (6), though, we obtain a much stronger island effect. I will present some of the factors involved in the case of adjuncts, but notice that some of them can be applied to other island types as well.

The presence of tense in the island domain is one of the major factors affecting the grammaticality of a sentence with extraction. These kinds of sentences are best when the gap is in a nonfinite clause (see Cinque 1990, Manzini 1992, Szabolcsi & Lohndal 2017). The finiteness effect can be applied to adjuncts as well: if the adjunct contains a finite verb, the island effect is much stronger. This can be noticed from the ungrammaticality of the Italian example in (7), the tensed counterpart of sentence in (6), and also from the asymmetries in the English examples in (8).^{23,24}

²³ However, there are languages that allow extraction from finite adjuncts, as in the Swedish cases described in Müller (2017) and the Czech ones in Biskup & Šimík (2018). See also Chaves (2012:468) for some exceptions from English, such as the one in (i):

- [i] Which problem would you be devastated [if someone had already solved _]?
 Notice also that in the literature on the topic, it is reported that the status of tensed constituents seems to vary cross-linguistically, at least in the case of *wh*- complements. In this case, inter-speaker variation has been addressed in sentences similar to (ii), as reported in Szabolcsi & Lohndal (2017): “some speakers of English reject extractions from them entirely, whereas other find them tolerable. Likewise they are rejected by speakers of Dutch, whereas they are acceptable in Scandinavian languages and in Hungarian. [...] This variation is not well understood.”

- [ii] % Which man did John ask [who invited _]?

²⁴ Notice that the complete unacceptability of (8a) can also be connected to the kind of ►

- [7] * *Quale ragazza Gianni è partito [senza che salutasse _]?*
which girl Gianni is left without that he.greeted
 ‘Which girl did John leave without that he greeted?’

- [8] a. * Which topic did you leave [because James talked about _]?
 b. ? Which topic did you leave [without talking about _]?

This is a crucial issue that needs to be addressed further: if the presence of tense in the embedded verb makes extraction impossible, then we might assume that there is something special about the head T or its maximal projection TP which somehow interacts with adjunction and thus induce the island effect (see also Truswell, 2007). Alternatively, such an effect could be connected to the fact that a finite sentence is considered as a CP, whereas a non-finite one as a TP.²⁵ I will leave these questions aside in the present study.

Even though adjuncts are traditionally considered strong islands, which means that extraction is banned for both arguments and adjuncts, there is an asymmetry in extraction of a DP with respect to extraction of a PP. The former is much more acceptable than the latter, as can be seen in (9) for Italian and in (10) for English:

- [9] * *Con quale ragazzo Maria e Sara sono partite*
with which boy Maria and Sara have left
[senza aver parlato _]?
without having spoken
 ‘With which boy did Mary and Sara leave without having spoken?’

adjunct used: there are asymmetries between adjuncts that presumably are high in the structure, as seems to be the case for *because*, and those which should be lower (see Uriagereka 2011; Boeckx 2012).

²⁵ Thanks to Irene Amato for pointing this out.

- [10] a. Which book did John design his garden [after reading _]?
b. * How much water did you make the pasta [after boiling _]?

The type of verb used in both the matrix and the adjunct clause also plays a crucial role (Truswell, 2007, 2011 and Fábregas & Jiménez-Fernández, 2016a:

- [11] * Quale ragazza Gianni **ha raggiunto la vetta** [senza salutare]?
which girl Gianni has reached the top without greeting
‘Which girl did John reach the top without greeting?’

- [12] a. What does John arrive [whistling _]?
b. * What does John work [whistling _]?

Crucially, there is a D-linking effect: extraction of a complex *wh*- word is much better than extraction of a simple *wh*- (Cinque, 1990; Phillips, 2013).

- [13] * **Chi** Gianni è partito [senza salutare _]?
who Gianni is left without to.greet
‘Who did John leave without greeting?’

As noted by Uriagereka (2011) and Boeckx (2012) there are asymmetries between adjuncts that presumably are very high in the structure, and those which should be lower, as can be seen in the case of extraction from a *because* clause, which is always ungrammatical.

- [14] a. * Who did John leave the room [because Mary kissed _]?

- b. ?* Ese es el partido que lloró (amargamente)

This is the game that cried.he bitterly

[**porque** habíamos perdido _].

because had.we lost

‘That’s the game that he cried (bitterly) because we had lost.’

- c. ? Ese es el partido que lloró (amargamente)

This is the game that cried.he bitterly

[**por** haber perdido _].

for to.have lost

‘That’s the game that he cried (bitterly) for having lost.’

(Uriagereka, 2011:117)

A final asymmetry has to be taken into account, namely the position of the adjunct. In fact, if extraction takes place from an adjunct in a preverbal position the effect is much stronger, as can be seen in the sentences in (15).

- [15] a. Quale ragazza Gianni è partito [senza salutare _]?

which girl Gianni is left without to.greet

- b. * Quale ragazza, [senza salutare _], Gianni è partito?

which girl without to.greet Gianni is left

In the next section I will account for the asymmetry in (15) and explain why the position of the adjunct matters as far as extraction is considered.

Therefore, it seems that extraction from adjuncts is licensed once all of the factors explained above are carefully manipulated in order to keep the islandhood of these domains at a minimum level. This means that adjuncts

have to be attached to the structure, rather than be merged on a different plane. I will also take this issue into account in the next sections.

3. The placement of adjuncts

Consider once again the asymmetries for Italian in (16) and (17):

- [16] a. Gianni è partito senza salutare Maria.
 ‘John left without greeting Mary.’
 b. Quale ragazza Gianni è partito **senza salutare** _?
 ‘Which girl did John left without greeting?’
- [17] a. Senza salutare Maria, Gianni è partito.
 ‘Without greeting Mary, John left.’
 b. * Quale ragazza, **senza salutare** _, Gianni è partito?
 ‘Which girl, without greeting, did John left?’

In a sentence like (16a) the adjunct is in a postverbal position – its basic placement in the structure given that adjuncts are usually placed at the end or at the beginning of a sentence (see Diessel, 2001). In such a case, the adjunct does not have to be intonationally separated from the main clause and extraction is licensed, as in (16b). Notice that the same cannot be said for a sentence like (17a) where the adjunct is in a preverbal position and extraction leads to an ungrammatical result (17b).

If we change the order of the adjuncts in Italian, we clearly obtain a stronger violation when the adjunct is in the middle and not in the beginning or, most naturally, at the end of the sentence. Interestingly, the same distinction holds for Spanish, as noted by Uriagereka (2011:117), and for English (Polinsky et al. 2013).

- [18] a. ? Ese es el partido que lloró (amargamente) [por haber perdido _].
This is the game that cried.he bitterly for to.have lost
 ‘That’s the game that he cried (bitterly) for having lost.’
- b. ?? Ese es el partido que [por haber perdido _] lloró (amargamente).
This is the game that for to.have lost cried.he bitterly
 ‘That’s the game that for having lost he cried (bitterly).’
- [19] a. * This is the dish that, although the chef overcooked _, the guests
 were not upset.
- b. This is the dish that, although the chef overcooked the sauce,
 the guests enjoyed.

Examples in (19) were used in an experimental study conducted in English testing the island effect of some domains (Polinsky et al. 2013). The ratings of adjuncts were surprising in the sense that both in the supposedly grammatical control sentence like (19b) and the island violation as (19a) were rated very poorly: sentences without island violations had only a slight advantage over sentences containing an island. Notice that the placement of the adjuncts is not common, given that they are in the middle of the sentence. Most likely, such a preverbal position might explain the lack of amelioration in the control items.

The data therefore show that the placement of the adjunct in the clause is one of the factors able to strengthen (or weaken) the island violation. A possible explanation regards the interpretation that adjuncts might be connected with, namely their normal adjunct status versus the parenthetical one. Extraction is licensed only in the first case, whereas in the latter it is always impossible.

Parentheticals are fragment of discourse that can be interpolated in a sentence. They can have different forms and be simple words, as in the case of (20a) or more complex structures as (20c).

- [20] a. John, *probably*, likes to go to parties.
b. John, *you know*, likes to go to parties.
c. John, *as everybody knows*, likes to go to parties.

Parenthetical structures share many properties with adjuncts. I will briefly review here the main points that should be taken into account. First of all, neither parentheticals nor adjuncts can occur in isolation, as can be seen in sentences in (21c) and (22c) respectively. Rather, they have to be inserted in a matrix clause in order for the sentence to be grammatical.

- [21] a. A Elia, come tutti sanno, piace cucinare.
‘Elia, as everybody knows, likes to cook.’
b. A Elia piace cucinare.
‘Elia likes to cook.’
c. * Come tutti sanno.
* As everybody knows.
- [22] a. Alice è andata a Londra perché Noemi l’aveva invitata.
‘Alice went to London because Noemi invited her.’
b. Alice è andata a Londra.
‘Alice went to London.’
c. * Perché Noemi l’aveva invitata.
* ‘Because Noemi invited her.’

On the other hand, the matrix clause does not need a supplement or an adjunct, as can be seen in (21b) and (22b), but it can be accompanied by an extra level of the sentence which can add or change meaning and information

of that sentence. Notice that an adjunct is never required in a sentence, as in the case of a parenthetical, and this means that it is not selected by anything, contrary to arguments.

Parentheticals and adjuncts also share distributional properties: the former can be realised in different positions in the sentence, with the same intonation and the same meaning. Adjuncts behave in a similar way: their most common position is lower in the sentence (Diessel, 2001), but they can be moved, as in the case of (23).

- [23] a. Giulia ha risparmiato per un anno per viaggiare in Sudamerica.
‘Giulia saved money for a year to travel to South America.’
- b. Giulia, per viaggiare in Sudamerica, ha risparmiato per un anno.
‘Giulia, to travel to South America, saved money for a year.’
- c. Per viaggiare in Sudamerica, Giulia ha risparmiato per un anno.
‘To travel to South America, Giulia saved money for a year.’

Crucially, when the adjunct is realised in a preverbal position, the intonation connected to it is different: it is separated from the main clause with an intonational break. This is similar to the one of parentheticals, which are realized with a pause between what precedes and what follows, the so-called comma intonation (Selkirk, 2005). This is the intonation found in (23b), and not obligatorily in (23a).

However, parentheticals have properties that cannot be extended to adjuncts. In fact, the truth value of the parentheticals is independent from the truth value of the host (Giorgi, 2014), but the same cannot be said for prepositional adjuncts, where the adjunct contributes to the truth value of the clause. Moreover, adjuncts cannot be defined as illocutionary independent from the hosts, which is instead the case of parentheticals (Giorgi, 2014). Therefore,

there is not a complete overlapping of their properties and behaviours: adjuncts cannot actually *be* parenthetical structures, but they can “adopt” such an interpretation when moved in a position different than the base one.

The parenthetical interpretation would easily explain the impossibility of extraction from preverbal adjunct, independently from the approach that one is following. In this paper I adopt Giorgi’s (2014, 2016) analysis, according to whom there is a prosody oriented head corresponding to the [+ comma] feature (Selkirk, 2005). In this case, comma is a head K projecting its own constituent, which contains the parenthetical and which is read off at the interface with prosody as the characteristic comma intonation of parentheticals. Crucially, the content of the K head is not lexical, but a prosodic oriented one: KPs are not permeable to movement. This means that extraction can never take place out of parentheticals.

Notice that there might also be a different explanation able to account for the asymmetries of the placement of the adjunct. Assuming that the low position is their base one, one might follow Takahashi (1994) and subsequent literature, and state that extraction is never possible out of a previously moved domain. This could also explain the higher degree of unacceptability of the case in (17b). But notice what happens in case the adjunct in its base position gets realised with comma intonation, in (24b):

- [24] a. Quale ragazza Gianni è partito [senza salutare _]?
 which girl Gianni is left without greeting
- b. * Quale ragazza Gianni è partito, [senza salutare _]?

Contrary to (24a), extraction is not accepted. This means that it is not simply a matter of moved *vs.* unmoved domains, otherwise we would expect

that there is no difference in the acceptability of sentences in (24), where both adjuncts are in a low and (supposedly) unmoved position.

To sum up, I argue that adjuncts are usually realized in a low, postverbal position, which I assume here is their base position. Whenever they are realized low they can simply be considered adjuncts: they are not connected to a special prosody, and if extraction takes place from such a position the sentence is either fine or less degraded. On the other hand, if they are realised in a preverbal position (and are therefore moved), their interpretation is not that of a normal adjunct but more similar to a parenthetical one. In fact, in such cases extraction is not licensed, as shown in cross-linguistic examples in (16)-(19). However, it is possible that when the adjunct is in its base position it *can* also be realized as a parenthetical, that is, it can be realised with comma intonation. Whenever they are realized in such a way, extraction is once again ruled out, as in (24b).

4. Explaining extraction

4.1 Adjuncts and merging points

The parenthetical interpretation discussed in the previous section cannot explain a different asymmetry, presented in (26).

- [25] a. * Quale ragazza, [senza salutare _], Gianni è partito?
 which girl *without to.say.goodbye* *Gianni is left*
- b. * Quali dolci, [dopo aver rubato _], Luca è scappato?
 which sweet *after to.have stolen* *Luca is run.away*

- [26] a. Quale ragazza Gianni è partito [**senza** salutare _]?
which girl Gianni is left without to.greet
- b. ??/* Quali dolci Luca è scappato [**dopo** aver rubato _]?
which sweet Luca is run.away after to.have stolen
 ‘Which sweets did Luca run away after having stolen?’

Notice that in the case of (25) both sentences are ungrammatical, as expected with the parenthetical interpretation. In fact, extraction takes place from an adjunct in a preverbal position and both sentences are bad. However, under such a view (26) is problematic: only in the case of (26a) extraction is licensed, but not in (26b). In this case, the difference cannot be attributed to the placement of the adjunct given that in both cases it is postverbal. Crucially, the two sentences are very similar, in that the DP argument is extracted from prepositional adjuncts and it is the object of the matrix verb. Moreover, the constituent is a complex D-linked one, rather than a simple *wh*, and the verbs used in the matrix sentence and the adverbial clause are similar. Finally, the verb in the adjunct is in its nonfinite tense and both sentences have an overt subject shared by the matrix verb and the one in the adjunct.

This asymmetry is supported by experimental data presented in Dal Farra (to appear a, b). In two experimental tests I investigated the island effect on three different types of prepositional adjuncts in Italian, introduced by *dopo* (after), *prima* (before), and *senza* (without). The results of these studies showed that extraction from *without* has a much weaker effect than in the other cases, which tend to be consistently unaccepted. In this section, I will provide a first account regarding the optionality of having an opaque domain with some adjuncts. Remember that there is a difference with respect to the type of adjunct: some of them are opaque, and hence do not allow extraction, whereas in some others the opacification of the domain is rather optional.

It seems that adjuncts behave differently with respect to extraction phenomena. The island effect can be weaker (if not inexistent) or stronger, depending on the adjunct used. The fact that (some) adjunct islands are weaker was already detected by some authors, from both a theoretical point of view (see Cinque 1990) and from an experimental one (Heestand et al. 2012, Polinsky et al. 2013). Which adjuncts have a weaker effect, and especially why, is the main question at this point. Of course, this can be connected to several factors affecting the acceptability of extraction, such as the presence of tense, or the presence of an intervening subject. Here, however, the sentences were all equal and hence the difference should be attributed to the adjunct itself.

Given the similarities of the sentences seen above, I assume that adjuncts are not a uniform group, but a heterogeneous one that needs to be sorted according to some criteria. A suitable criterion regards their level of attachment to the structure.²⁶ Adjuncts are connected to different merging points in the structure, and their height influences the possibility of extraction and hence the opacification of the adjunct domain. When they are merged in a higher projection they are opaque domains, whereas more transparent adjuncts are connected to a lower point in the structure (see Sheehan 2010; Narita 2011; Brown 2017 for similar proposals).

I assume here that adjuncts can merge in two points in the structure: when the adjunct merges to a phase head, i.e. νP , we have an opaque domain and no extraction is licensed, whereas when it merges to a non-phase head, i.e. VP , the domain is transparent and no island effect arises.²⁷

²⁶ See also Haegeman (2012) for a similar proposal for adverbial clauses based on independent reasons. In Haegeman's analysis central adverbial clauses can have different point of merge that can affect either the νP or the TP .

²⁷ Although notice that there can be a different analysis of merging points based on a more fine grained level of attachment of the verbal domain, which also allows us to multiply the potential merging points. See the proposal of Sheehan (2010) for prepositional adjuncts, and the one by Fábregas & Jiménez-Fernández (2016a, b) based on bare present ►

In the Italian cases discussed in (26), it can be the case that *after* is attached to the phase head νP and is therefore an opaque domain not allowing extraction of any element, whereas *without* is in a lower projection such as VP and is thus transparent.

4.2 On the creation of a macroevent

Why should there be a difference connected to adjunct types, though? In this work I adopt Truswell's (2007, 2011) semantic account, which states that there is a connection between the internal structure of an event-describing constituent and extraction possibilities. In this approach, therefore, extraction is licensed depending not on the adjunct, but on the event(s) described by the matrix and the adjunct verb. If the event denoted by the latter occupies an even position in the argument structure of the matrix verb, then extraction is possible. Basically, the two events are to be analysed as a single macroevent. It is known that different events can combine to form complex structures and single macroevents, which can be further decomposed into simpler ones.²⁸ The possibility of extraction is connected to the possibility of forming macroevents. Here, the event introduced by the adjunct is combined with the one of the main verb, forming a (unique) complex event structure which is able to void the islandhood of the domain.

Notice that there is an interpretive difference between the two types of adjuncts, in that opaque adjuncts locate two separate events in relation to each other, whereas transparent ones modify aspect within a single event. In this approach, extraction is determined by aspectual properties of the matrix

participial adjuncts and adjectival secondary predicates. In their analysis the verbal domain is based on the decomposition of the Aktionsart in Ramchand (2008).

²⁸ Independent analyses of macroevents have also been proposed for the case of telic pairs (see Giorgi & Pianesi 2001; Higginbotham 2009).

predicate. In Truswell (2011:157) this property is defined as Single Event Condition and described as in (27):

- [27] *Single Event Condition* “a chain is legitimate only if the minimal constituent containing the head and the foot of the chain asserts the existence of a single event grouping.”

Notice however that such an approach by itself is not sufficient, in that it is not able to account for the asymmetries in (28) and (29):

- [28] a. Which man did you return home [**without** talking to _]?
b. Which man did you return home [**in order to** talk to _]?
c. *Which man did you return home [**because** you had talked to _]?

- [29] a. Which play did you fall asleep [watching _]
b. Which play did you fall asleep [**while** watching _]?
c. ?? Which play did you fall asleep [**after** watching _]?
d. * Which play did you fall asleep [**before** watching _]?

(Sheehan, 2010:140)

In these cases, the two verbs, and therefore the events connected to them, are the same. In the English examples above, the ungrammaticality of (28c) is easy to explain: extraction takes place from an adjunct which presumably is very high (Uriagereka 2011, Boeckx 2012) and moreover the verb in the adjunct has a finite form. But notice that in both sentences in (28a) and (28b) extraction is licensed and under conditions very similar to the Italian cases discussed in section 2: the island/non-island

effect is meant to be kept at its minimum. However, the asymmetries in sentences in (29) are not so straightforward: all the cases of extraction are very similar, but this is only licensed in the bare present participial adjunct in (29a) and in the prepositional adjunct introduced by *while* in (29b). The two cases of prepositional adjuncts in (29c) and (29d) are identical to (29b), but extraction is not so good in the case of the adjunct introduced by *after*, and totally ungrammatical in the one introduced by *before* in (29d).

Crucially, a semantic approach à la Truswell (2007, 2011) can be connected to syntactic reasons, i.e. the position of adjuncts in the structure (see Brown 2017 for a similar analysis). I propose that the possibility of having a single macroevent that allows extraction is connected to the level of attachment of the adjunct: it is an option only for lower adjunction sites, but not for higher ones. Therefore, opaque adjuncts that tend to locate two separate events in relation to each other are those attached to a phase head *vP*, whereas transparent ones that modify aspect within a single event are merged to a non-phase head *VP*.

I repeat the relevant examples of extraction in (30).

- [30] a. Quali dolci Luca è scappato [dopo aver rubato _]?
which sweets Luca run away after having stolen
 ‘Which sweets did Luca run away after having stolen?’
- b. Quale ragazzo Silvia è partita [senza salutare _]?
which boy Silvia has left without to.greet
 ‘Which boy did Silvia leave without greeting?’

A sentence like (30a) is judged unacceptable. Following the approach above, this is the case because the two events described in the matrix and

in the adjunct cannot form a complex structure due to the height of the merging point of the adjunct. In fact, as seen above, *dopo* is connected to the *v*P. The acceptability of (30b), on the other hand, depends on the fact that the adjunct is merged lower, in VP and thus the creation of a single event is possible.

Crucially, the analysis of extraction proposed here is made of two steps: (i) the level of attachment of the adjunct, which is connected to (ii) the possibility of forming a macroevent made by the matrix verb and the one of the adjunct. In order to explain extraction, both have to be considered.

Notice in fact that a semantic approach à la Truswell (2011) by itself is not enough. This can be seen in the English sentences presented in (28) and (29). Moreover, there are syntactic factors able to modulate the island effect which cannot be connected to single event grouping. Some of these factors are the ones I presented in section 2, especially as far as the placement of the adjunct is considered: Truswell's analysis is not able to capture the asymmetries in (19) and (20).²⁹ Finally, a major claim in Truswell (2011) is that extraction out of tensed adjuncts is impossible because "tense renders identification of event variables impossible." However, there are acceptable cases of extraction out of finite adjuncts in Swedish (Müller 2017), Czech (Biskup & Šimík 2018), and apparently in some cases in English as well (Chaves 2012).

²⁹ Another syntactic effect is the fact that in Spanish extraction from a bare present participial adjunct is not possible if the two verbs are not adjacent, as can be seen in (i):

- (i) a. ¿Qué entró [diciendo _] Juan?
 what entered saying Juan
 b. *¿Qué llegó Maria [silbando _]?
 what arrived Maria whispering

(Fábregas & Jiménez-Fernández, 2016a:1315)

5. Conclusion

In this paper I showed that extraction from adjuncts is sometimes licensed, i.e. that adjuncts are not exceptionless islands, contra the traditional analyses (Huang 1982, Uriagereka 1999 and Stepanov 2007 among others). This means that adjuncts have to be integrated in the structure and are not merged to a different plane. I discussed some of the factors that are able to influence the possibility of extraction, discussing in particular the placement of adjunct in the clause and their consequent interpretations, i.e. true adjuncts or parentheticals.

Interestingly, there is a difference among the class of adjuncts, in that some of them show weaker island effects. In this paper I discussed the asymmetries among prepositional adjuncts introduced by *senza* (without) and *dopo* (after), where the former seems to be a much more transparent domain than the latter, and thus allowing extraction. My claim is that such a difference can be accounted for if we assume that adjuncts have different points of merging in the structure, and that the adjunct category can be divided following this criterion. In this approach more transparent adjuncts are attached to the VP, whereas some others ban extraction because they are merged higher, i.e. in the ν P. The hypothesis should be tested with future analyses, extending the adjunct types investigated.

The merging point of the adjunct is able to influence a third factor concerning extraction: the possibility of forming a macroevent instead of two separate ones. This is possible only if the adjunct is merged to VP, otherwise, if they are in ν P, there will be two different events, and hence extraction will not be licensed.

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[CHAPTER 6]

Finite clauses associated with *convencer* in Brazilian Portuguese: complements or adjuncts?

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1. Introduction³⁰

Modesto (2000) presents a very interesting challenge to the movement approach to definite null subjects in Brazilian Portuguese – *BP* – (see e.g.

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Ferreira 2000, Rodrigues 2000, 2004, Nunes 2009), by examining their behavior with respect to object control verbs like *convencer* ‘convince’. As illustrated in (1) below, when *convencer* is associated with an infinitival clause, the antecedent of the embedded null subject must be the matrix object (see (1a)); when it is associated with a finite clause, the null subject is interpreted as the matrix subject, instead (see (1b)). Modesto (2000, 2011) observes that if the null subjects in (1) are both traces of A-movement, as defended by the movement approach to definite null subjects in BP, they should find their antecedents in the matrix object position, contrary to fact. In particular, the subject reading in (1b) should induce a minimality violation, for the putative movement of the embedded subject to the matrix subject position should cross the matrix object.

- [1] a. [O Paulo]₁ convenceu [a Maria]₂ a [PRO_{2/*1} sair]
the Paulo convinced the Maria to leave
 ‘Paulo convinced Maria to leave.’
- b. [O Paulo]₁ convenceu [a Maria]₂ [que Ø_{1/*2} tinha que ir embora]
the Paulo convinced the Maria that had that go away
 ‘Paulo convinced Maria that he had to go away.’

However, Rodrigues (2000, 2004) argues that the embedded clause in (1b) actually behaves as an adjunct, for extraction of an embedded subject leads to ungrammaticality, as shown in (2).

- [2] ??**Quem**₁ o João convenceu a Maria [que *t*₁ vem amanhã]?
who the João convinced the Maria that comes tomorrow
 ‘Who is *x* such that João convinced Maria that *x* will come tomorrow?’

If the embedded clause of sentences like (2) is an adjunct of sorts, Rodrigues points out, the subject orientation observed is indeed the expected

case, as it would be a case of adjunct control. Moreover, Hornstein (2001) has demonstrated that adjunct control can be captured under the Movement Theory of Control if one assumes sideward movement (Nunes 2001, 2004) and Merge-over-Move (Chomsky 1995). Under this view, the derivation of (1b), for example, should proceed along the lines of (3) below. Given the derivational step in (3a), Merge-over-Move enforces merger of a *Maria* in (3b), which is then followed by sideward movement of *o Paulo* in (3c). Crucially, at this derivational step *L* is still a root syntactic object and not an adjunct, for it has not merged with its target yet. Finally, after *L* adjoins to *K'*, *o Paulo* moves to the matrix Spec,TP, as shown in (3d), yielding the subject orientation reading of (1b).

[3] a. $N = \{a_1, \text{Maria}_1, \dots\}$

the Maria

$K = \text{convenceu}$ $L = [\text{que } [o \text{ Paulo}] \text{ tinha que ir embora}]$
convinced *that the Paulo had that go away*

b. $N' = \{a_0, \text{Maria}_0, \dots\}$

$K' = [\text{convenceu } [a \text{ Maria}]]$ $L = [\text{que } [o \text{ Paulo}] \text{ tinha que ir embora}]$

c. $K'' = [[O \text{ Paulo}]_i \text{ convenceu } [a \text{ Maria}]]$ $L = [\text{que } t_i \text{ tinha que ir embora}]$

d. $[_{TP} [O \text{ Paulo}]_i [_{VP} [_{VP} t_i \text{ convenceu } [a \text{ Maria}]] [\text{que } t_i \text{ tinha que ir embora}]]]$

The experiment presented here gained its motivation from judgment disagreements regarding sentences like (2). While Rodrigues (2000, 2004) judges (2) as unacceptable, Modesto (2011:15) judges the analogous sentence in (4a) as fully acceptable, in sharp contrast with (4b), where the embedded subject is extracted out of a standard adjunct clause.

- [4] a. Quem₁ (que) o Pedro convenceu a Cilene que *t₁* vai viajar?
who that the Pedro convinced the Cilene that goes travel
 ‘Who is the person such that Pedro convinced Cilene that he will travel?’
- b. *Quem₁ o Pedro viu a Cilene enquanto *t₁* fazia compras?
who the Pedro saw the Cilene while did shopping
 ‘*Who did Pedro see Cilene while was shopping?’

Solving this judgment conflict may thus help provide evidence for or against Rodrigues’s adjunct approach and more generally, the movement analysis for definite null subjects in BP. So, we designed an experiment to gather judgements on embedded subject extraction in sentences like (2) and (4a) with the goal of establishing if the finite embedded clause associated with *convencer* behaves as an adjunct or as a complement.

The paper is organized as follows. In section 2, we describe the experiment. In section 3, we present and analyze the results obtained. Section 4 concludes the paper.

2. The experiment

The experiment tried to gather participants’ judgments on embedded subject extraction out of finite clauses associated with *convencer* and compare them with their judgments on extraction out of standard complement and adjunct clauses (see Coelho, Nunes, and Santos forthcoming for details). It was applied to 20 participants, all native speakers of BP, born and raised in the state of São Paulo, from 20-30 years old.³¹ The participants were

³¹ The experiment was approved by the Ethics Committee of the Escola de Artes, Ciências e Humanidades da Universidade de São Paulo under protocol CAAE: 68901117.9.0000.5390.

told that they were going to listen to sentences produced by a computer software and their task was to evaluate the quality of the software by saying if the sentences produced were well formed, pressing the YES button, or not, pressing the NO button. The sentences were recorded in audio by a native speaker of BP and the different types of sentences were mixed. The experiment was developed and applied in the free software TP from Worken (http://www.worken.com.br/tp_regfree.php).

Before the experiment proper, there was a familiarization period consisting of eight sentences involving extraction (but not embedded subject extraction) – four with expected YES answers (see (5a)) and four with expected NO answers (see (5b)). This training helped ensure that the participants understood their tasks.

- [5] a. Que animal a Maria viu quando foi ao zoológico
which animal the Maria saw when went to-the zoo
 com o Pedro?
with the Pedro
 ‘Which animal did Maria see when she went to the zoo
 with Pedro?’
- b. *O que o João convidou a Maria pra comer o bolo?
what the João invited the Maria to eat the cake
 *‘What did João invite Maria to eat the cake?’

The test-sentences consisted of ten sentences with subject extraction out of a finite complement clause such as (6a) below, for which we expected YES answers, ten sentences with subject extraction out of a finite adjunct clause such as (6b), for which we expected NO answers, and ten sentences with subject extraction out of a finite clause associated with the verb *convencer* as (6c), whose behavior we aimed to investigate.

- [6] a. Quem a Maria contou pro Pedro que vem pra festa
who the Maria told to-the Pedro that comes to-the party
 de amanhã?
of tomorrow
 ‘Who_i did Maria tell Pedro [*t_i* will come to the party]?’
- b. *Quem a Maria encontrou o João depois que viajou pra
who the Maria met the João after that traveled to
 Nova York?
New York
 *‘Who_i did Maria meet João after *t_i* traveled to New York?’
- c. Quem o João convenceu a Maria que vai viajar pra
who the João convinced the Maria that goes travel to-the
 Holanda?
Netherlands
 ‘Who_i did João convince Maria [*t_i* will travel to Netherlands]?’

The experiment also had eight distractor sentences, four with expected YES answers (see (7a)) and four with expected NO answers (see (7b)).

- [7] a. Quem a Maria disse que o João chamou pra sair?
who the Maria said that the João called to leave
 ‘Who did Maria say that João asked to go out?’
- b. *Quem a Maria terminou com o Pedro depois que ela
who the Maria finished with the Pedro after that she
 conheceu na festa?
met in-the party
 *‘Who_i did Maria break up with Pedro after she met *t_i* at the party?’

From the total of 46 sentences (eight from familiarization and 38 from the actual experiment), three of them were excluded because they turned out to be outliers, as we can see in Graphic 1 below.

Graphic 1: Bloxplot for all the sentences

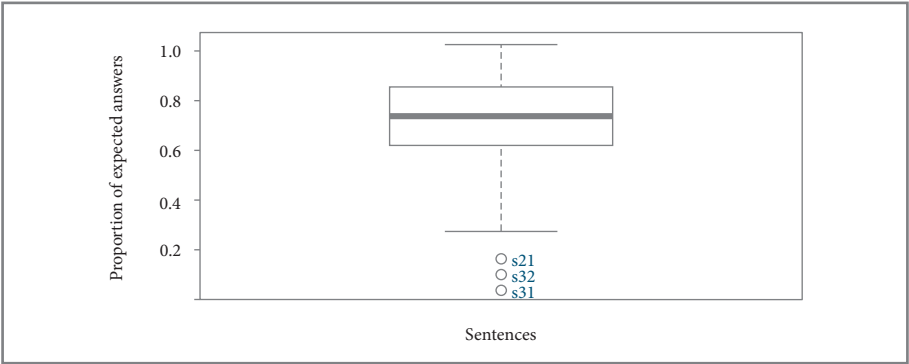


Table 1 below shows the distribution between simple and complex *wh*-phrases (*quem* ‘who’ vs. *que aluno* ‘which student’, for example) within the different types of sentences, after the outliers were excluded.

Table 1: Distribution of simple and complex *wh*-phrases across sentence types

Sentence type	Type of <i>wh</i> -phrase		
	Simple	Complex	Total
familiarization	6	2	8
complement	5	5	10
adjunct	6	4	10
<i>convencer</i>	3	4	7
distractor	3	5	8
Total	23	20	43

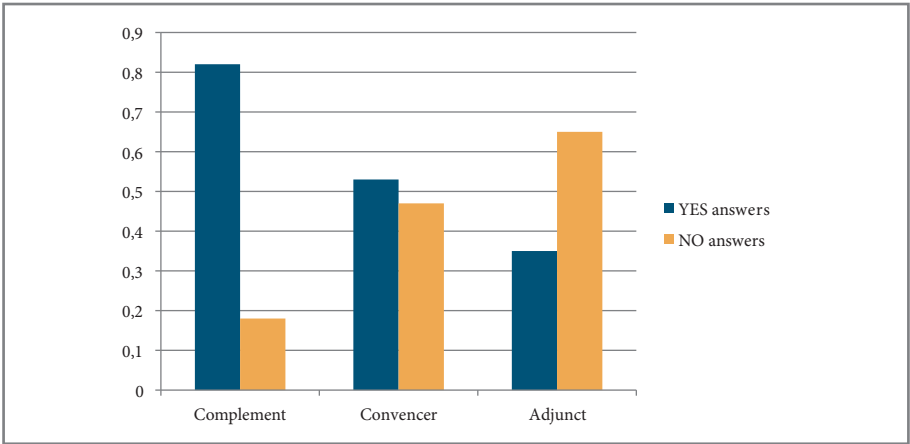
One participant was also excluded of the analysis because (s)he answered YES for all sentences, which indicated that (s)he did not understand the task. With the exclusion of a participant and three sentences, we had a total of 43 sentences and 19 participants, totalizing 817 answers. The analysis of these answers indicated that they were reliable, as there was no statistical correlation between the answers given by individuals participants for familiarization and distractor sentences and the answers given for *convencer*-sentences (see Coelho, Nunes, and Santos forthcoming for details). For instance, it was not the case that one participant was giving more YES or NO answers for *convencer*-sentences because (s)he did not understand the task or was not paying attention to the experiment. Additional statistical analyses (see Coelho, Nunes, and Santos forthcoming) also showed that the participants' answers were not affected by the order in which the sentences were presented, that is, there was no increase in YES or in NO answers for each sentence-type during the experiment.

3. Results

3.1 Overall pattern

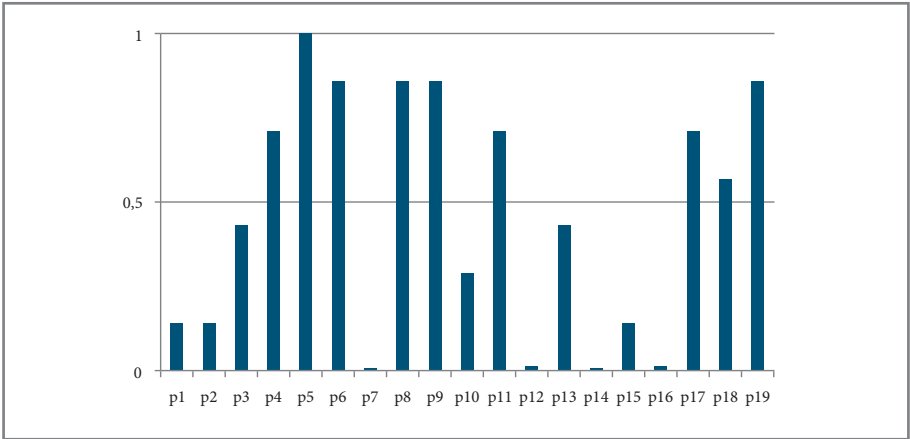
As shown in Graphic 2 below, the overall proportion between YES and NO answers for all the three types of sentences did not allow us to determine if the behavior of *convencer*-sentences is more similar to complements or adjuncts. It is as if *convencer*-sentences occupy a middle position between them.

Graphic 2: Proportion between YES and NO answers for test-sentences



The examination of how the participants behaved individually was not helpful either. Nine of them gave more NO answers for *convencer*-sentences and ten gave more YES answers, as shown in Graphic 3 below.

Graphic 3: Proportion of NO-answers with respect to *convencer*-sentences by individual participants

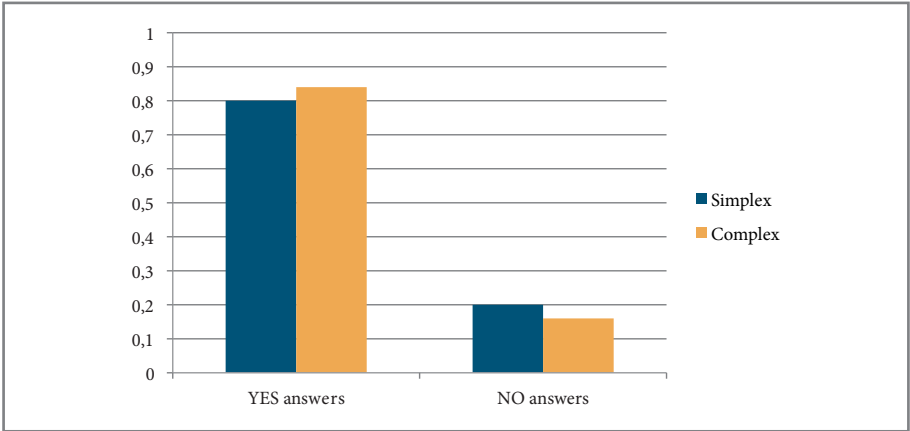


3.2 Syntactic complexity of *wh*-phrases

One potential interfering factor we examined was the syntactic complexity of the extracted *wh*-phrases (simple *wh*-words like *quem* ‘who’ vs. *wh*-phrases like *que homem* ‘which man’). Given that complex *wh*-phrases are more prone to a D-linking interpretation and attenuate island effects (see e.g. Pesetsky 1987), this factor could be masking the overall picture. As we will see below, this was actually the case.

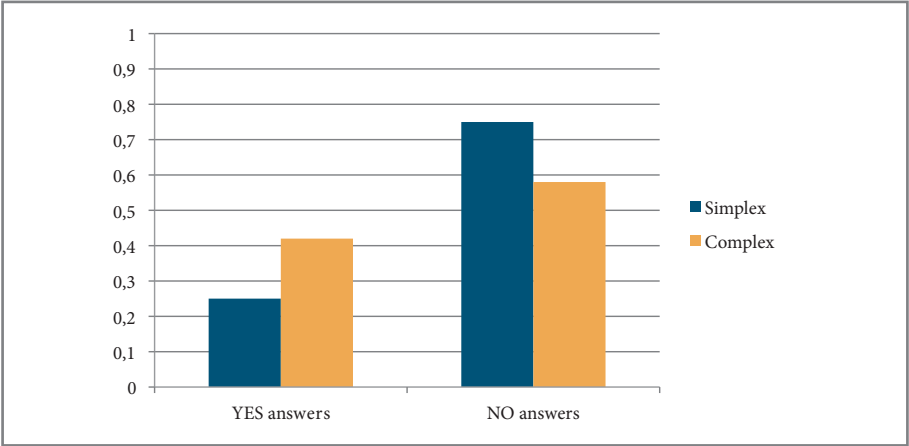
For complement sentences, Graphic 4 shows that the complexity of the *wh*-phrase was not statistically significant ($p = 0.5706$). This is expected since complements are not syntactic islands and, therefore, do not require the extra aid of D-linking.

Graphic 4: Proportion between YES and NO answers for complement sentences: Effect of the syntactic complexity of the *wh*-phrase



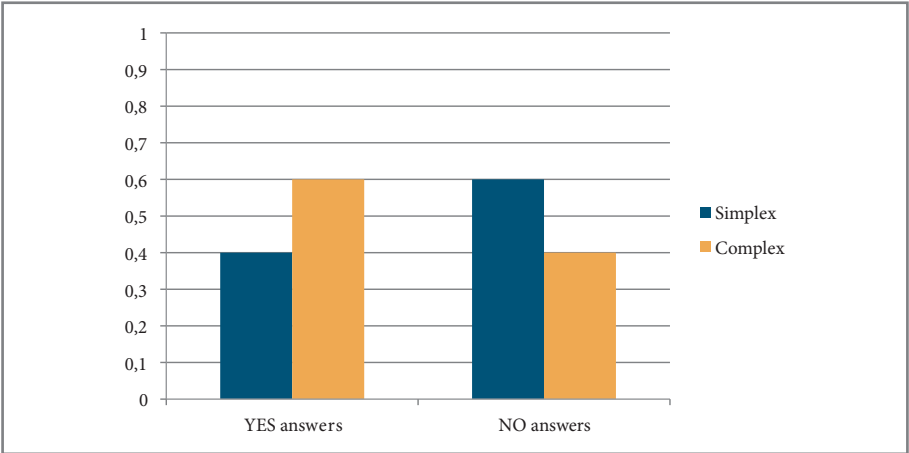
As for adjunct sentences, Graphic 5 below demonstrates that the complexity of the *wh*-phrase is statistically significant, with complex *wh*-phrases favoring YES answers ($p = 0.01801$).

Graphic 5: Proportion between YES and NO answers for adjunct sentences: Effect of the syntactic complexity of the *wh*-phrase



Crucially, *convencer*-sentences exhibited a behavior similar to adjunct-sentences regarding the complexity of the *wh*-phrases. As shown in Graphic 6 below, complex *wh*-phrases favored YES answers for *convencer*-sentences ($p = 6.801e-5$), arguably displaying the same kind of D-linking sensitivity observed in adjunct-, but not in complement-sentences.

Graphic 6: Proportion between YES and NO answers for *convencer*-sentences: Effect of the syntactic complexity of the *wh*-phrase



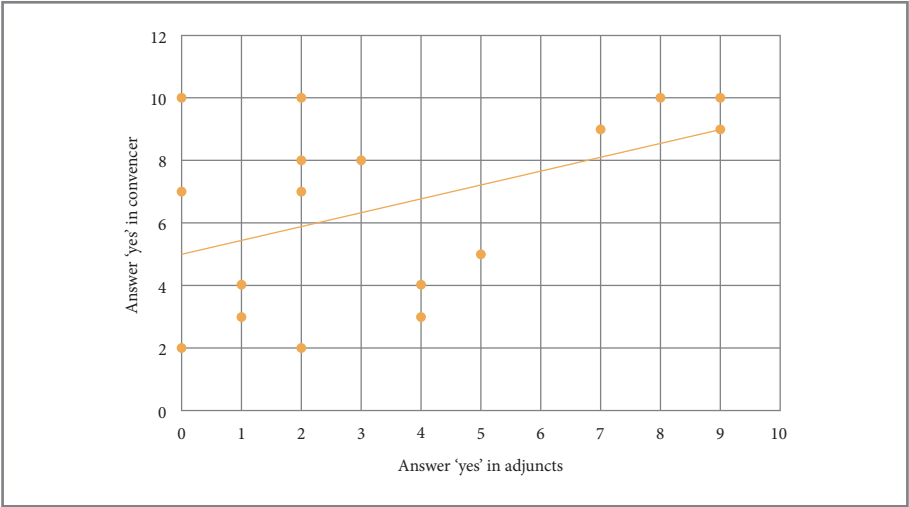
The fact that the *convencer*-sentences have a behavior similar to adjuncts concerning the complexity of *wh*-phrases indicates that the finite clauses associated with *convencer* are closer to adjuncts than to complements.

3.3 Correlations among answers

We also investigated if there was some correlation between the answers given by individuals participants for complement and adjunct sentences and the answers given for *convencer*-sentences. In particular, we checked if participants more prone to accepting extraction in adjunct or complement clauses were also more likely to accept it in *convencer*-sentences.

The only correlation found was between adjuncts and *convencer* (see Coelho, Nunes, and Santos forthcoming). As depicted in Graphic 7, the larger the number of YES answers a given participant provided to adjunct sentences, the larger the number of YES answers (s)he provided to *convencer*-sentences ($p = 0.03619$).

Graphic 7: Correlation between YES answers for adjunct- and *convencer*-sentences



Once again, this result shows that *convencer*-sentences behaved closely to adjunct- rather than complement-sentences.

4. Conclusion

The overall result of the answers given by the participants for *convencer*-sentences was not enlightening, as it positioned finite clauses associated with *convencer* in a middle ground between adjuncts and complements and, therefore, did not solve the judgement conflict that motivated the experiment.

However, when other factors were considered, we came to a better understanding of how *convencer*-sentences behave. Specifically, the answers for *convencer*-sentences exhibit the same sensitivity to the complexity of *wh*-phrases that was expected and observed for adjunct-sentences, as D-linking (induced by syntactic complexity) attenuates island effects. The complement-sentences, unsurprisingly, did not show this sensitivity.

Another aspect of the answers that helped us understand *convencer*-sentences was the correlation found between the YES answers given by individual participants for *convencer*-sentences and the answers given for adjunct clauses, while no correlation was found with the answers for complement sentences. This shows that participants who are more disposed to accept subject extraction from adjunct clauses are also more likely to accept extraction from the finite clauses associated with *convencer*.

In conclusion, the fact that the experiment demonstrated a stronger alignment between the behavior of *convencer*-sentences and the behavior of adjunct sentences provides confirming evidence for Rodrigues's (2000, 2004) adjunct analysis of *convencer*-sentences and indirectly, for the movement approach to definite null subjects in BP.

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