

Parasitic Gaps in Derivational Grammar

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Abstract

This master thesis will explore the properties, behaviour and theoretical implications of the syntactic phenomenon called “parasitic gaps”. The main aim of this thesis is to develop a theory of parasitic gaps that enables an explanation in terms of derivational grammar, i.e. the grammaticality of parasitic gap sentences will depend on the possibility of deriving them.

In the first part of the thesis (chapter 2 and 3), I will review the knowledge about parasitic gaps that has been collected over the last thirty years.

The second part of the thesis (chapter 4, 5 and 6) will develop and explore a new account of parasitic gaps which is fully derivational and provides an explanation for the properties of parasitic gaps. The new account will be in line with the principles of the minimalist framework (Chomsky (1995, 2000, 2001)). The main idea of this account will be that lexical items can be duplicated in the numeration, that these duplicates will independently enter the derivation and that the two duplicates have to come together again in the course of the derivation. By integrating these ideas into the island model of Müller (2010), I will derive the puzzling property of parasitic gaps that the parasitic gap and its antecedent can be separated by one barrier but not by more than one barrier. Additionally, the new system is able to derive several other properties of parasitic gaps. The new theory will then be compared to the operator-based account of Nissenbaum (2000) showing that his theory is inferior to mine in several aspects.

The final part of this thesis (chapter 7) is devoted to the question if parasitic gaps are a phenomenon that is only interesting for English (and other languages) or if they exist in German as well.

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Chapter 1

Introduction

In the beginning of the 80's, a new syntactic phenomenon attracted the interest of linguists. This new phenomenon was called "*Parasitic Gaps*". Parasitic gaps are gaps that are not licensed by its own antecedent but rather use the antecedent of an independently existing gap. In that sense, these gaps are parasitic. The best method to distinguish a parasitic from a real gap is to test if the gap in question can occur independently.

In the sentence in (1), two gaps occur which both refer to the same antecedent, that is, *who*. Since each gap usually has its own antecedent, one of the two gaps has to be parasitic.

(1) Who would you like to meet _ without first getting to know _?

The test in (2) reveals that the parasitic gap is the one in the *without*-clause.

- (2) a. Who would you like to meet _ without first getting to know *his mom*?
b. *Who would you like to meet *his mom* without first getting to know _?

Throughout this thesis, I will mark parasitic gaps with the notion *pg* while real gaps, or licensing gaps, are marked by *t*.

Constructions with parasitic gaps are subject to discussion for at least

the last five decades and attracted increasing interest of theoretical grammar especially in the last three decades. The phenomenon was probably first noted by Ross (1967:191ff.) even though the name “parasitic gap” was not assigned at this time.

The name “parasitic gap” comes from Engdahl (1983) (and independently from Taraldsen (1981)) who provided the first major study of these constructions.

Parasitic gaps have always presented a challenge to grammatic theories of any kind and the question has always been how such constructions like in (1) can be possible at all.

This question is particularly interesting from the point of view of derivational grammars which assume that sentences are constructed step by step and that syntactic constraints which rule out ungrammatical sentences are the outcome of rules and constraints about derivation.

The question of this thesis is, therefore, how parasitic gaps can be captured in a derivational grammar. More precisely, the questions are (i) what is a parasitic gaps in terms of derivational syntax, (ii) how can the dependence between the parasitic gap and the licensing gap be established and (iii) how can a theory explaining what parasitic gaps are and in which way they are dependent on the licensing gap account for the various properties of parasitic gaps. All these question should be answered in the course of this thesis. The theory that I will develop is carried out in the minimalist framework, as suggested by Chomsky (1995) and subsequent works.

The thesis is structured as follows. Chapter 2 provides the empirical description of parasitic gaps. I will provide an overview of the distribution of parasitic gaps using examples from different languages and summarize the main properties of parasitic gaps that have been noted since the topic was raised by Taraldsen (1981) and Engdahl (1983).

In chapter 3, I will summarize the most important theories of parasitic gaps that have been developed throughout the last thirty years. The main parameter

that distinguishes these theories will be the question if parasitic gaps are traces in the sense that they are created by movement of some category or if they are in fact empty categories that don't move. The overview of chapter 3 will contain theories of Chomsky (1982); Cinque (1990); Kayne (1983); Chomsky (1986); Nissenbaum (2000) and Nunes (2001). Even though each of these theories has various variants, it is beyond the scope of this thesis to explain every one in detail. Hence, theories like the ones of Longobardi (1985); Frampton (1990); Munn (1992); Manzini (1994); Postal (1998); Ouhalla (2001) cannot be considered here. The references of these theories are, however, given below.

After having summarized the existing knowledge about parasitic gaps, I will go through a new analysis of parasitic gaps in detail. The analysis that I suggest for parasitic gaps is different from the ones above in that it involves syntactic mechanisms that haven't been proposed before. In a nutshell, I propose that parasitic gaps are the result of a defective numeration, i.e., a numeration that has not enough items to guarantee a successful derivation. To avoid a new calculation of the numeration, material that is already present in the numeration is duplicated. The price of duplication is, however, that the duplicated material has to come together again with the original one during the course of the derivation. This process will be called *Fusion* because it strongly resembles the morphological operation Fusion (Halle and Marantz (1993)) That means, the properties of parasitic gaps fall out from the conditions when two elements can fuse.

Chapter 5 will, then, look back at the properties of parasitic gaps and compare the new theory's descriptive adequacy with the perhaps most challenging theory of Nissenbaum (2000) which is a minimalist version of Chomsky's (1986) theory. The result will mainly be that although the two theories work with totally different syntactic means, they make comparable predictions for the properties of parasitic gaps.

After revisiting the properties of parasitic gaps, chapter 6 shows that the new theory developed in chapter 4 is empirically superior to the theory of

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Nissenbaum (2000).

Finally, the last chapter is devoted to the question if parasitic gaps are not only part of the grammar of English and other languages but also relevant for German. The result of the discussion will be that although parasitic gap constructions and coordination constructions in German have a lot in common, an analysis of them as coordination constructions is highly problematic and therefore questionable.

Chapter 8 summarizes and concludes the discussion.

Chapter 2

Properties of Parasitic Gaps

The distribution of parasitic gaps is manifold on the one hand but restricted by several constraints on the other hand. This problematic distribution forces most theories to concentrate only on some properties.

In this section, I will provide a discussion of all the properties of parasitic gaps that are known to me.

2.1 Distribution

2.1.1 The Contexts

Parasitic gaps occur in constituents that are typical islands for movement. In English, parasitic gaps can be found in adverbial, relative and complement clauses. Furthermore, they can occur inside DPs. Examples of all these contexts are given in (1) to (5).

(1) *Untensed adverbial clause*

Which article did John file *t* without reading *pg*? *Engdahl (1983:5)*

(2) *Tensed adverbial clause*

Which colleague did John slander *t* because he despised *pg*?

Engdahl (1983:11)

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(3) *Complement clause*

Who did you tell *t* that we were going to vote for *pg*?

Engdahl (1983:11)

(4) *Relative clause*

He is a man that everyone who gives presents to *pg* likes *t*.

Chomsky (1986:58)

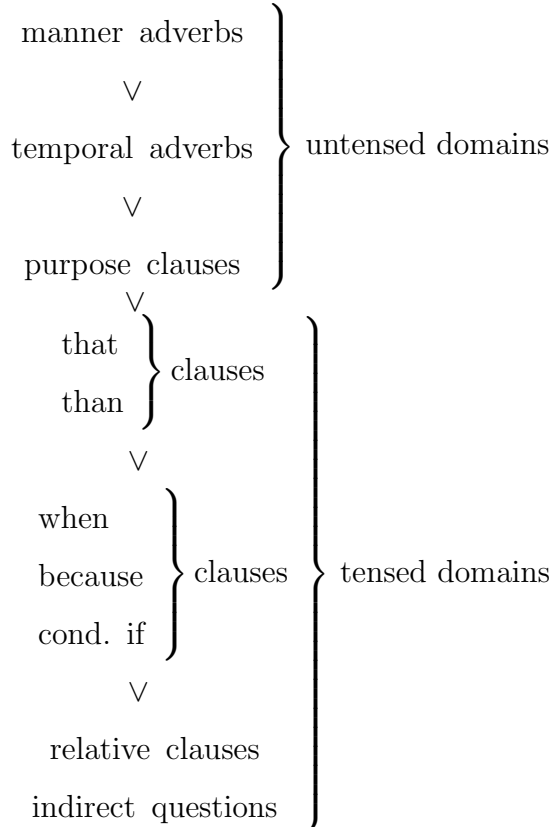
(5) *Determiner phrase*

Who did you give a picture of *pg* to *t*?

Culicover (2001:33)

According to Engdahl (1983), the acceptability of parasitic gaps differs between the various contexts they can appear in. She arranges the contexts in the following accessibility hierarchy. The hierarchy implies that when a parasitic gap can occur in a context that is low on the hierarchy it must also be able to occur in all contexts that are higher on the hierarchy.

(6) *Accessibility hierarchy for occurrences of parasitic gaps* (Engdahl (1983:9))



2.1. DISTRIBUTION

In languages other than English, the contexts for parasitic gaps are much more restricted. In German, for example, parasitic gaps can only occur in untensed adverbial clauses that are introduced by the conjunctions *um*, *ohne* or *anstatt*.

- (7) a. Wen hat er ohne *pg* zu kennen *t* geküsst?
Who has he without to know kissed
“Who did he kiss without knowing?”
- b. *Wen hat er bevor er *pg* kennengelernt hat *t* geküsst?
Who has he before he get.to.know has kissed?
“Who did he kiss before he got to know?”
- c. *ein Mann den [_{DP} jeder der *pg* kennt] *t* mag
a man who everyone who knows likes
“a man who everyone who knows likes”

As far as I know, the cross-linguistic distribution respects the accessibility hierarchy in (6).

2.1.2 Type of Movement

The next parameter of the distribution of parasitic gaps is the type of movement that can license parasitic gaps.

Parasitic gaps are licensed by types of movement that used to be characterized as \bar{A} -movement (Chomsky (1986)). These movements can be unbounded like wh-movement, relativization or topicalization or bounded like scrambling, heavy NP shift (HNPS) or clitic movement. Examples of each movement type are given in the following sentences.

- (8) *Wh-movement*
Which article did John file *t* without reading *pg*? Engdahl (1983:5)

- (9) *Relativization*
He is a man that everyone who gives presents to *pg* likes *t*.
Chomsky (1986:58)

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(10) *Topicalization*

The paper, we filed *t* before we could read *pg*.

Alexopoloulou and Kolliakou (2002:205)

(11) *Heavy NP shift*

John offended *t* by not recognizing *pg* immediately his favourite uncle from Cleveland.

Engdahl (1983:12)

(12) *Object raising*

These papers were hard for us to file *t* without reading *pg*.

Engdahl (1983:12)

(13) *Scrambling*

Peter hat den Mann [ohne *pg* zu kennen] *t* begrüßt.
Peter has the man without to know greeted
“Peter has greeted the man without knowing him.”

(14) *Clitic movement*

Lo archivaron *t* sin leer *pg*.
it they.file without to.read
“They filed it without reading (it).”

Campos (1991:118)

2.1.3 Grammatical Function of the Parasitic Gap

Finally, parasitic gaps can take over various functions in the clause. In most cases they are the direct object of the verb. This is the case for most examples above. But parasitic gaps can also occur in subject position like the following example shows.

(15) *Finite Subject P-Gap*

Which people did you invite *t* to the party without thinking *pg* would actually come?

Levine et al. (2001:186)

2.2. CONSTRAINTS OF THE DISTRIBUTION OF PARASITIC GAPS

It has been claimed that only NPs¹ can be antecedents for parasitic gaps (see below). However, Engdahl (1983) notes that Swedish allows for non-NP parasitic gaps. Furthermore, Levine et al. (2001) give examples showing that also English has non-NP parasitic gaps. The sentence in (16-a) shows that parasitic gaps can be non-verbal predicates, too.

- (16) *Non-NP parasitic gaps*
- a. I wonder just how nasty you can pretend to be *t* without actually becoming *pg*.
 - b. [That Robin is a spy] would naturally be difficult to refute *t* without (someone) having conjectured *pg*.

But even though parasitic gaps can be non-NPs (complement clauses, predicate adjectives), it seems that they cannot be modifiers.

- (17) *How long does John drink *t* before lecturing *pg*? *Postal (1994:64)*

After having discussed the three parameters of the distribution of parasitic gaps, the next part of this chapter will deal with the constraints that parasitic gaps are subject to.

2.2 Constraints of the Distribution of Parasitic Gaps

The wide distribution of parasitic gaps is additionally complicated by a big amount of constraints. The properties of parasitic gaps that result from these

¹The question if nominal categories are DPs or NPs is an orthogonal question to this thesis and cannot be discussed here. Because of the ongoing discussion which structure of nominal categories is right (see e.g. Georgi and Müller (2010)), I will refer to them sometimes as DP and sometimes as NP. The assumption of this thesis is, however, that structurally, nominal categories are headed by determiners, i.e., they are DPs.

constraints have sometimes even been used to define what is a parasitic gap and what is not a parasitic gap (e.g. Fanselow (2001)). In what follows, I will list all constraints about parasitic gaps that are known to me. Most constraints, however, are quite controversial and not accepted universally. So perhaps, they shouldn't been used to define the term parasitic gap.

2.2.1 Overt Movement

The first constraint about parasitic gaps is well known: Parasitic gaps must be licensed in narrow syntax by categories that are already antecedent for another gap, i.e. they must be licensed at S-Structure. (cf. Culicover (2001:5), Engdahl (1983)).

- (18) a. *I forget who filed which articles, without reading *pg*?
Engdahl (1983:14)
 b. *Who told whom that we were going to vote for *pg*?

The sentences in (18) are ungrammatical because the movement of the wh-operator happens at LF and not in narrow syntax or, in terms of GB theory (Chomsky (1986)), at S-Structure. The antecedent of the parasitic gap in (18-a) is *which article*. However, *which article* has not been moved to Spec,CP of the embedded sentence and, thus, the sentence is ungrammatical. The reason for the ungrammaticality of (18-b) is obviously the same as in (18-a).

One exception to this constraint should be mentioned: In some languages, for example in Spanish, parasitic gaps can be licensed by *in situ* elements (Campos (1991)).

- (19) ¿Tú archivaste cuál artículo sin leer *pg*?
 you filed which article without to.read
 “Which article did you file without reading?” *Campos (1991:120)*

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Campos (1991) claims that in Spanish, *wh*-movement is not necessary to form questions. If this is true, one could assume that *cuál artículo* has actually moved but it is spelled out *in situ*.

An important observation comes from Nissenbaum (2000) who argues that this licensing constraint for parasitic gaps is only partially correct. Sentences like (20) show that *in situ* elements can license parasitic gaps also in English.

- (20) a. ?[Which senator]₁ did you persuade t_1 to borrow [which car]₂ [after getting [an opponent of pg_1] to put a bomb in pg_2]?
b. *[Which senator]₁ did you persuade t_1 to borrow [which car]₂ [after putting a bomb in pg_2]?
(21) a. ?[Which kid]₁ did you give [which candy bar]₂ to t_1 [without first telling [a parent of pg_1] about the ingredients in pg_2]?
b. *[Which kid]₁ did you give [which candy bar]₂ to t_1 [without looking at the ingredients in pg_2]?

These examples show that if there are two *wh*-operators there have to be two parasitic gaps they license. The corresponding examples in (20-b) and (21-b) are bad because there is only one parasitic gap. These data will be extensively discussed in section 5.1.

2.2.2 Anti-c-command

The second constraint is, again, quite widely accepted. Parasitic gaps must not be *c*-commanded by the true gap. The consequence of this constraint is that the true gap can, in most cases, not be in subject position like (22) shows.

- (22) a. *Which articles t got filed by John without him reading pg ?
Engdahl (1983:20)
b. *Who t sent a picture of pg ?
Engdahl (1983:20)

And again, there seems to be an obvious exception to this constraint. In English, parasitic gaps can occur in complement sentences of ditransitive verbs.

- (23) Who did you tell t that we were going to vote for pg ?

2.2.3 Island Sensitivity

The next constraint (also known as subjacency effects) has been first noticed by Kayne (1983). Although parasitic gaps occur in constituents that are islands for movement, the island with the parasitic gap must not be embedded in another island. Hence, (24-a) is grammatical while (24-b) is not.

- (24) a. the article [which we filed t [without reading pg]]
Culicover (2001:27)
 b. *the article [which we filed t [without meeting the person [who wrote pg]]]
Culicover (2001:27)

But as usual, there is an exception to this constraint. Lee (1988, 1998) notes that Korean parasitic gaps have nearly the same behaviour like their English counterparts but that Korean doesn't exhibit this effect.

- (25) a. *the man who I decided to interview t [without calling you [before I spoke to pg]]
Lee (1998:350)
 b. ney-ka pg mal-ul kelepoki ceney ne-eykey cenwhahaci anhko t
 I-NOM speak to before you-DAT telephone not
 intebyuw hakiro kyelcenghan salam
 to interview decide man
Lee (1998:350)

2.2.4 \bar{A} -Movement

Furthermore, the antecedent of a parasitic gap has to be in an \bar{A} -position, i.e., A-movement like passive or raising doesn't license a parasitic gap (cf. Engdahl (1983:13)).

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- (26) a. *John was killed *t* by a tree falling on *pg*.
b. *Mary tried *t* to leave without John's hearing *pg*.²
c. *Mary seemed *t* to disapprove of John's talking to *pg*.

As far as I know, there is no exception to this constraint.

2.2.5 Referential Nominals

Parasitic gaps are claimed to be only licensed by referential nominals (Cinque (1990); Frampton (1990); Emonds (1985); Aoun and Clark (1985); Koster (1987); Postal (1993, 1994, 2001)).

The following English examples from Postal (1993:736) show that non-NPs cannot license parasitic gaps.

- (27) a. *Sick_{*i*} though Frank was *t*, without looking *pg*, he didn't visit a physician.
b. *How₂ did Deborah cook the pork *t*₂ after cooking the chicken *pg*₂?

Furthermore, Cinque (1990) gives the following Italian examples that should prove that parasitic gaps do not only have to be nominals but also referential.

- (28) a. *Quanti chili pesa *t* [senza credere di pesare *pg*]?
how.many kilos he.weighs without to.believe in to.weigh

²The structure in (26-b) is a case of control. Basically, there are two theories which account for this phenomenon. One of these theories involve an empty category that is inserted in the subject position of the embedded clause and bound by the matrix subject (Chomsky (1981)) and one theory assumes that the subject of the embedded clause moves into the position of the matrix subject (cf. Boeckx et al. (2009)).

- (i) a. Mary₁ tried [PRO₁ to leave].
b. Mary tried [~~Mary~~ to leave].

Only if control is movement, control structures are relevant for the discussion.

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“How many kilos does he weigh without believing he weighs?”

Cinque (1990:104)

- b. *Quante settimane ha passato *t* a Berlino [senza aver
how.many weeks he.has spend in Berlin without have
voluto passare *pg* a Londra]?
wished to.spend in London
“How many weeks did he spend in Berlin without wanting to spend
in London?”

Cinque (1990:104)

- c. *Che posso fare *t* stasera per cena [senza esser in obbligo di
what I.can do tonight for dinner without be in debt to
mangiare *pg*]?
eat
“What can I do tonight for dinner without having to eat?”

Cinque (1990:126)

In all examples in (28), the antecedents of the parasitic gaps are non-referential. In (28-a) it is an amount, in (28-b) it is a duration and in (28-c) the antecedent is the non-referential *che*.

Nevertheless, it has also been argued that the constraint that parasitic gaps have to be referential nominals maybe doesn't exist.

First of all, it seems to be the case that some languages allow non-referential NP parasitic gaps (Engdahl (2001); Chao and Sells (1983)).

- (29) I met every/each/no influential professor that John sent his book to *t*
in order to impress *pg*.

However, such sentences don't present a challenge for the claim that parasitic gaps have to be referential because Chao and Sells's (1983) understanding of referentiality differs from the one of Cinque's (1990).³

Furthermore, there seems to exist data that obviously involve parasitic gaps licensed by a non-NP antecedent. The following data are from Engdahl (1983).

³Thanks to Gereon Müller for pointing that out to me.

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- (30) a. [PP Till himlen] är det inte säkert att [NP alla [S' som
To heaven it is not certain that everyone who
längtar [PP *pg*/dit]] kommer [PP *t*].
longs --/there get
“It is not certain that everyone who longs to (go to) heaven gets to
go there.” *Engdahl (1983:17)*
- b. [AP Fattig] vill [NP ingen [S' som någonsin varit [AP
Poor wants no-one who ever been
pg/det]] bli [AP *t*] igen.
--/it become again
“No one who ever has been poor wants to become poor again.”
Engdahl (1983:17)

The claim that parasitic gaps have to be referential nominals is closely tied to the claim that they involve resumption. Since resumptive pronouns can only be bound by referential nominals, various scholars have argued that parasitic gaps are actually empty resumptive pronouns (see below). Now, Engdahl (1983) claims that the possibility of non-NP antecedents is given in Swedish because Swedish has more pro-forms than English. This would explain why in Swedish PPs and APs can be antecedents of parasitic gaps.

But there are some data that can't be captured with this explanation. Levine et al. (2001:185) provide English sentences that show that also English allows for non-nominal antecedents.

- (31) a. How harshly do you think we can treat them *t* without in turn
being treated *pg* ourselves?
b. That's the kind of table on which it would be wrong to put
expensive silverware *t* without also putting *pg* a fancy centerpiece.
c. I wonder just how nasty you can pretend to be *t* without actually
becoming *pg*.
d. [That Robin is a spy] would naturally be difficult to refute *t*
without (someone) having conjectured *pg*.

2.2.6 Antipronominal Contexts

One very interesting constraint of parasitic gaps brought up by Cinque (1990) (see also Postal (1993, 1994, 2001)) is that they are blocked in antipronominal contexts. The distribution of parasitic gaps seems to show the same behaviour as weak definite pronouns, i.e., all contexts that doesn't allow weak pronouns also prohibit the occurrence of parasitic gaps. Postal (2001:225) shows this property, amongst others, with the following examples.

- (32) a. It was *her/HER that the drug helped.
 b. *Which child did everyone who believed it was *pg* that the drug had helped see *t* the hospital?
- (33) a. Mirabelle dyed her sheets purple/*it.
 b. *the color that everyone who dyed their sheets *pg* praised *t*.

Postal (1993), nevertheless, points out that the distribution of definite pronouns and parasitic gaps is not identical.

- (34) a. *Frank attends Yale, but Sandra does not attend it.
 b. Which college did she apply to *t* without really wanting to attend *pg*? *Postal (1993:745)*

He suggests that there is a distinction between surface and nonsurface antipronominal constraints. Parasitic gaps are, however, only subject to non-surface constraints.

The whole situation is further complicated by the data in (35) (cf. Postal (2001:227)).

- (35) a. Which child did everyone who saw *pg* believe that the drug had helped *t*?
 b. *Which child did everyone who saw *pg* believe it was *t* that the drug had helped *t*?

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- c. Which child did everyone who saw Gail believe it was t that the drug had helped t ?

Sentence (35-b) shows that it is not only the parasitic gap that is incompatible with antipronominal contexts. The licensing gap t in (35-b) is in a cleft position which is an antipronominal context.

Postal (2001:227), therefore, formulates the following constraint in (36).

- (36) No parasitic gap, even in an otherwise licit parasitic gap position, is licit if its licensing gap is one of a large class of antipronominal contexts.

2.2.7 No Reflexives or Reciprocals

There are three more constraints about parasitic gaps that I want to mention here. The first one is about possible antecedents of parasitic gaps. Postal (2001:224f.) notes that reflexives or reciprocals can never be antecedents for parasitic gaps.

- (37) a. *Himself₁, Mike₁ praised t after describing pg_1 to Mary.
b. *It was herself₁ that₁ studying pg_1 led Sonia₁ to appreciate t_1 .
c. *Himself₁, I talked to John₁ about t_1 after describing him₁ to pg_1 .
- (38) a. Each other₁, they₁ (never) praised t_1 .
b. *Each other₁, they₁ (never) praised t_1 after describing pg_1 .
c. *It was each other₁ that₁ their₁ getting to know pg_1 led them₁ to respect t_1 .

However, one counterexample seems to exist in German. In German, reflexive pronouns are able to scramble and are, so, in principle able to be an antecedent of a parasitic gap. This, in fact, seems to be true (see also Fanselow (2001)).

- (39) a. Lisa sagt Markus, dass er sich [anstatt *pg* mit so einem
 Lisa tells Markus that he himself instead.of with such a
 Mist zu beschäftigen] *t* lieber um die Haustiere kümmern
 rubbish to deal better about the pets care
 sollte.
 should
 “Lisa tells Markus that he should better care about the pets instead
 of dealing with such rubbish.”
- b. Lisa findet es eklig, dass Markus sich [ohne *pg* vorher
 Lisa finds it disgusting that Markus himself without before
 zu waschen] *t* rasiert hat.
 to wash shaved has
 “Lisa finds it disgusting that Markus has shaved himself without
 washing before.”

The sentence in (39-a) involves two verbs that are inherently reflexive (‘*sich beschäftigen*’ (to deal) and ‘*sich kümmern*’ (to care)) while the examples in (39-b) have two verbs that are not inherently reflexive (‘*waschen* (to wash) and ‘*rasieren* (to shave)).

2.2.8 Antipassivizability

The next constraint is a more intricate problem. Parasitic gaps are incompatible with object positions of verbs that are antipassivizable (Postal (1993, 2001)).

- (40) a. Their relations involved abuse.
 b. *Abuse was involved by their relations.
 c. [What kind of abuse] did their relations involve *t*?
 d. [What kind of abuse] did his constantly discussing *pg* suggest that
 their relations involved *t*?
 e. *[What kind of abuse] did your discovering that their relations
 involved *pg* lead him to discuss *t*?
 f. *[What kind of abuse] did their relations lead to condemnation of *t*
 without involving *pg*? *Postal (2001:224)*

2.2. CONSTRAINTS OF THE DISTRIBUTION OF PARASITIC GAPS

Postal (1993) lists up a big set of examples that confirm his observation. The contexts that disallow parasitic gaps can be categorized along the following categories: lexical exceptions, verbs with inversion structures, unaccusatives, verbs that are already passivized, unmarked infinitives, subject control verbs, verbs that allow expletive subjects and *from*-PPs, i.e., pseudo-passivization. The examples that Postal (1993) gives for these contexts are listed in (41).

- (41)
- | | | |
|----|-----------------------------------------------|-------------------------------|
| a. | catch/contract/get/have some disease | <i>lexical exception</i> |
| b. | bother someone with something | <i>lexical exception</i> |
| c. | spoke/belong to someone | <i>inversion structure</i> |
| d. | appeal to someone (ask someone for something) | <i>inversion structure</i> |
| e. | sleep/die under something | <i>unaccusative</i> |
| f. | appear to someone | <i>inversion structure</i> |
| g. | was given something | <i>multiple passivization</i> |
| h. | feel something move | <i>unmarked infinitives</i> |
| i. | swear to someone | <i>allows subject control</i> |
| j. | it amuses someone to do something | <i>expletive subject</i> |
| k. | steal from someone | <i>object of from</i> |
| l. | owe something to someone | <i>lexical exception</i> |

However, the diversity of the examples in (41) indicate that the antipassivization constraint on parasitic gaps is likely to be a bunch of constraints.

2.2.9 Multiple Wh-Questions

The next constraint that I want to mention here was observed by Kim and Lyle (1996). They realized that parasitic gaps cannot occur in multiple wh-questions.

- (42)
- | | |
|----|-------------------------------------------------------------------------|
| a. | Which parcel did you give <i>t</i> to Susan without opening <i>pg</i> ? |
| b. | *Which parcel did you give <i>t</i> to whom without opening <i>pg</i> ? |

The difference between (42-a) and (42-b) is unexpected and puzzling at first sight. The constraint will be further discussed in section 5.9.

2.2.10 Reconstruction

Finally, parasitic gaps are claimed to show asymmetrical reconstruction. The fact is shown in (43).

- (43) a. [Which books about himself₁]₂ did John₁ file t_2 before Mary read pg_2 ?
- b. *[Which books about herself₁]₂ did John file t_2 before Mary₁ read pg_2 ? *Kearney (1983)*

The sentences illustrate that the antecedent *which books about himself/herself* can only reconstruct into the position of the true gap. Hence, the sentence in (43-b) is ungrammatical because *herself* can neither be bound by *John*, due to a φ -feature mismatch, nor by *Mary*, due to asymmetrical reconstruction.

The constraints I have listed in this section are the most important ones about parasitic gaps. The next chapter will provide an overview about the most important accounts to parasitic gaps that have been developed during the last thirty years and about how they can capture the properties of parasitic gaps discussed above.

Chapter 3

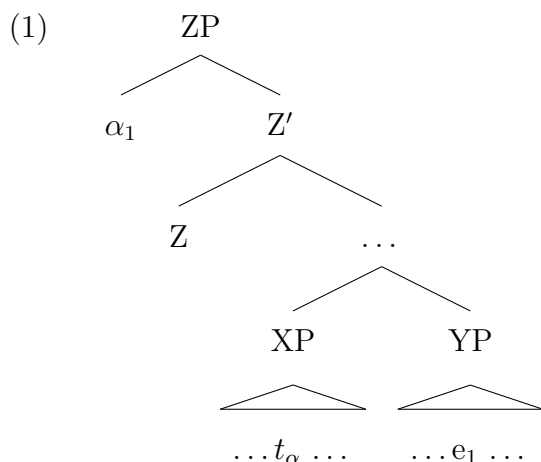
Existing Theories about Parasitic Gaps

During the last three decades, various ideas about parasitic gaps have been developed. These ideas basically differ in their answer to the question if parasitic gaps are real gaps in the sense that they are the result of movement or if parasitic gaps are covert categories that are identified with the antecedent of the true gap (Lee (1998)).

In this section, I will shortly review the most important theories.

3.1 Non-Movement Theories

The main claim of non-movement theories is that what seems to be a parasitic gap is, in fact, some covert category (e) that is bound by the antecedent of the true gap. (Chomsky (1982); Kayne (1983); Engdahl (1985); Cinque (1990); Frampton (1990))



The exact nature of the covert category that is bound by the antecedent is, however, disputable. Some theories (e.g. Chomsky (1982); Engdahl (1985); Cinque (1990)) assume that parasitic gaps are empty pronouns that are bound by an operator. In other theories, the covert category is simply a gap and is, then, subject to the same constraints as the licensing gap (Kayne (1983); Frampton (1990)).

The first part of this section will, therefore, deal with what I call *pronoun theories*¹ while the second part will introduce the theory of *Connectedness* developed by Kayne (1983).

3.1.1 Pronoun Theories

There are two quite convincing arguments that assertors of pronoun theories always mention. The first one is that parasitic gaps have to be nominals.²

- (2) a. *Sick_i though Frank was *t*, without looking *pg*, he didn't visit a physician.
 b. *How₂ did Deborah cook the pork *t*₂ after cooking the chicken *pg*₂?

¹Note that there are theories about pronominalization that involve movement of pronouns to its binder (See e.g. Postal (1998); Ouhalla (2001)).

²For the discussion of this argument see sections 2.2.5 and 5.5.

3.1. NON-MOVEMENT THEORIES

This behaviour seems to coincide with the property of resumptive pronouns to refer only to nominals.

The second argument for parasitic gaps to be pronouns are the antipronominal contexts in which they are forbidden.

- (3) a. There are spiders/*them in the soup.
b. What kind of spiders, are there t_1 in the soup?
c. *It was such spiders₂ that everyone who said there were pg_2 in the soup refused to eat t_2 .
d. *What kind of spiders₃ did he praise t_3 before learning there were pg_3 in the soup? *Postal (1993:744)*

- (4) a. Blake painted his house green/*it.
b. What color₁ did Blake paint his house t_1 ?
c. *It was that color₂ that everyone who painted their house pg_2 wanted to paint their car t_2 .
d. *What color₃ did they criticize t_3 after painting their house pg_3 ? *Postal (1993:744)*

If parasitic gaps are simply pronouns, this behaviour follows naturally. In all other theories this property of parasitic gaps seems to play a minor role and is, in most cases, not even mentioned.

Another argument for a pronoun analysis of parasitic gaps is that in some languages, a resumptive pronoun is used instead of a parasitic gap. This is true, for example, for Moroccan Arabic (Ouhalla (2001)). The English sentences in (5) correspond to the Arabic sentences in (6).

- (5) a. Which article did he criticize before reading?
b. This is the article he criticized before reading? *Ouhalla (2001:148)*

CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

- (6) a. Shmen maqal ntaqd qblma yqra h?
 which article he-criticized before reading it
 “Which article did he criticize before reading?”
- b. Hada huwwa l-maqal lli ntaqd qblma yqra h?
 this is the-article that he-criticized before reading it
 “This is the article he criticized before reading?”

Ouhalla (2001:148)

Hornstein (1995) adds an additional semantic argument for the pronoun analysis of parasitic gaps. The difference between the sentences in (7) is that the first sentence allows pair-list and individual reading while in the sentence in (7-b), only individual reading is possible. Hornstein (1995), refining the idea of Chiercha (1991), proposes that individual reading is due to a hidden bindable pronoun in the wh-phrase.

- (7) a. What did everyone review t ? *pl-reading or i-reading*
- b. What did everyone review t before I read pg ? *i-reading*

If the parasitic gap is indeed nothing else but a pronoun, this would explain the unambiguous reading of (7-b).

Finally, pronoun theories are able to account for reconstruction (Culicover (2001)). The parasitic gap, which is a pronoun, is simply bound by the wh-phrase and not affected by the reflexive pronoun just like its overt counterpart in (8).

- (8) [Which books about himself]₁ did John₁ file t_2 before Mary read them₂?
Culicover (2001:30)

Culicover (2001) notes, however, that asymmetric reconstruction is also known for ATB configurations. Interestingly, Nissenbaum (2000:30ff.) talks about the same data.³ He, however, acts on the assumption that the sentence in (9-a) is

³The original sentences given by Nissenbaum (2000) are in (i). But the difference is only in the chosen vocabulary.

3.1. NON-MOVEMENT THEORIES

ungrammatical.

- (9) a. ✓/*[Which books about himself₁]₂ did John₁ file t_2 and Mary read t_2 ?
b. *[Which books about herself₁]₂ did John file t_2 and Mary₁ read t_2 ?

The different grammaticality judgement leads Nissenbaum (2000) to the result that parasitic gap constructions, in contrast to ATB constructions, cannot be derived by the same mechanism.

On the other hand, Culicover (2001) assumes that parasitic gaps and ATB gaps behave alike. However, he provides no discussion of the problem but refers to Munn (2001).⁴

There is, however, one serious problem for all pronoun theories not involving movement, namely island sensitivity or subjacency (Kayne (1983); Chomsky (1986); Nissenbaum (2000)). If parasitic gaps can be explained simply by binding of an empty pronoun, it shouldn't matter how many barriers exist between the antecedent and the parasitic gap. Hence, the two sentences in (10) should be equal contrary to fact.

- (10) a. ?a person [who [close friends of pg] admire t]
b. *a person [who you admire t [because [close friends of pg] become famous]] *Kayne (1983:228)*

Though subjacency is a problem for pronoun theories, it is not a problem for non-movement theories in general. In the next section, I will summarize Kayne's (1983) theory of connectedness which is able to account for the difference in (10).

-
- (i) a. *Which pictures of himself did John sell and Mary buy?
b. *Which pictures of himself did Mary sell and John buy?

⁴For further discussion of the reconstruction behaviour of parasitic gaps, see also section 5.10.

3.1.2 Connectedness

A quite different non-movement approach to parasitic gaps comes from Kayne (1983). He claims that parasitic gaps that occur in sentences are simply gaps just like the licensing gap. These gaps must then be *connected* with the antecedent. In this sense, the whole theory can be considered to be representational and not derivational.

Kayne (1983) proposes that a gap and its antecedent are only connected if they are both in the same *g-projection*. G-projection is defined as in (11) (cf. Kayne (1983:225)).

- (11) Y is a *g-projection* of X iff
- a. Y is a projection of X (in the usual sense of X-theory) or of a g-projection of X or
 - b. X is a structural governor and Y immediately dominates W and Z, where Z is a maximal projection of a g-projection of X, and W and Z are in a canonical government configuration.
- (12) W and Z (Z a maximal projection, and W and Z immediately dominated by some Y) are in a *canonical government configuration* iff
- a. V governs NP to its right in the grammar of the language in question and W precedes Z or
 - b. V governs NP to its left in the grammar of the language in question and Z precedes W.

Now, Kayne (1983) defines a set G_β that contains all g-projections of some category β .

- (13) *G-projection set* G_β (Kayne (1983:229))
- a. $\forall \pi, \pi = \text{a g-projection of } \gamma \rightarrow \pi \in G_\beta$; where γ is a governor of β
 - b. $\beta \in G_\beta$

3.1. NON-MOVEMENT THEORIES

and

- c. δ dominates β and δ does not dominate $\gamma \rightarrow \delta \in G_\beta$

As parasitic gaps are in most cases objects, let's assume that β is an object and γ is a verb. The definition in (13), then, simply says that the g-projection set of an object contains the object itself, all categories inside the object and all g-projections of the verb.

With these definitions in mind, Kayne (1983) redefines the *Empty Category Principle* which finally excludes certain ungrammatical parasitic gap constructions.

(14) *Empty Category Principle* (Kayne (1983:229))

Let $\beta_1, \dots, \beta_j, \beta_{j+1}, \dots, \beta_n$ be a maximal set of empty categories in a tree T such that \exists a c-commanding $\alpha, \forall j, \beta_j$ is locally bound by α . Then

- a. $\bigcup_{1 \leq j \leq n} G_{\beta_j}$ must constitute a subtree of T
and
- b. there must exist a ρ such that $\rho \in \bigcup_{1 \leq j \leq n} G_{\beta_j}$ and ρ dominates α .

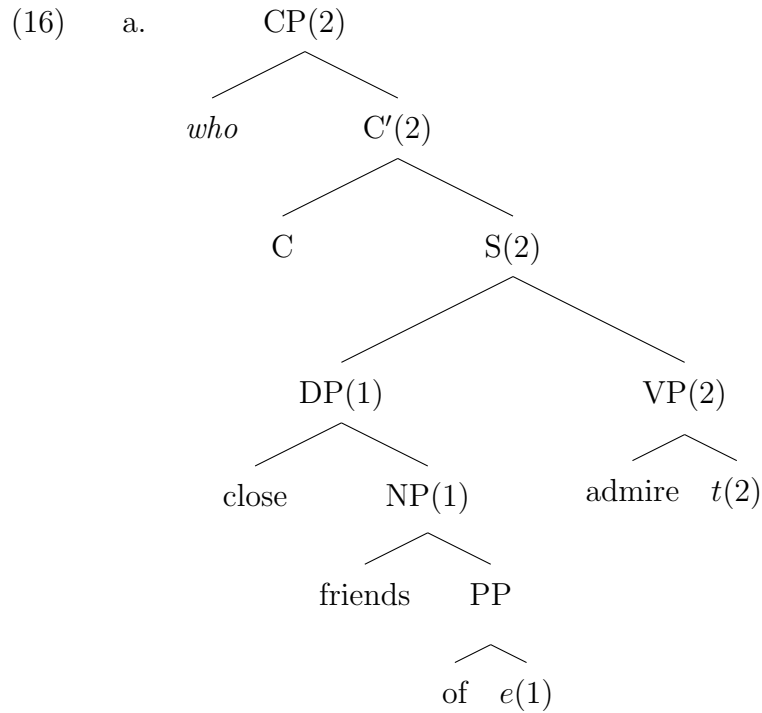
In terms of parasitic gap constructions, the new definition Kayne (1983) proposes says three things: First, there has to be an antecedent of the true and the parasitic gap. Second, the g-projection sets of the true and the parasitic gap constructions must form a subtree. Third, a category which is in the g-projection set of the true as well as of the parasitic gap must dominate the antecedent.

Now, let's have a look at the two sentences in (15). The sentence in (15-b) is ungrammatical because there are two barriers between the gap and the antecedent.

- (15) a. ?a person [who [close friends of *pg*] admire *t*]
b. *a person [who you admire *t* [because [close friends of *pg*] become famous]] *Kayne (1983:228)*

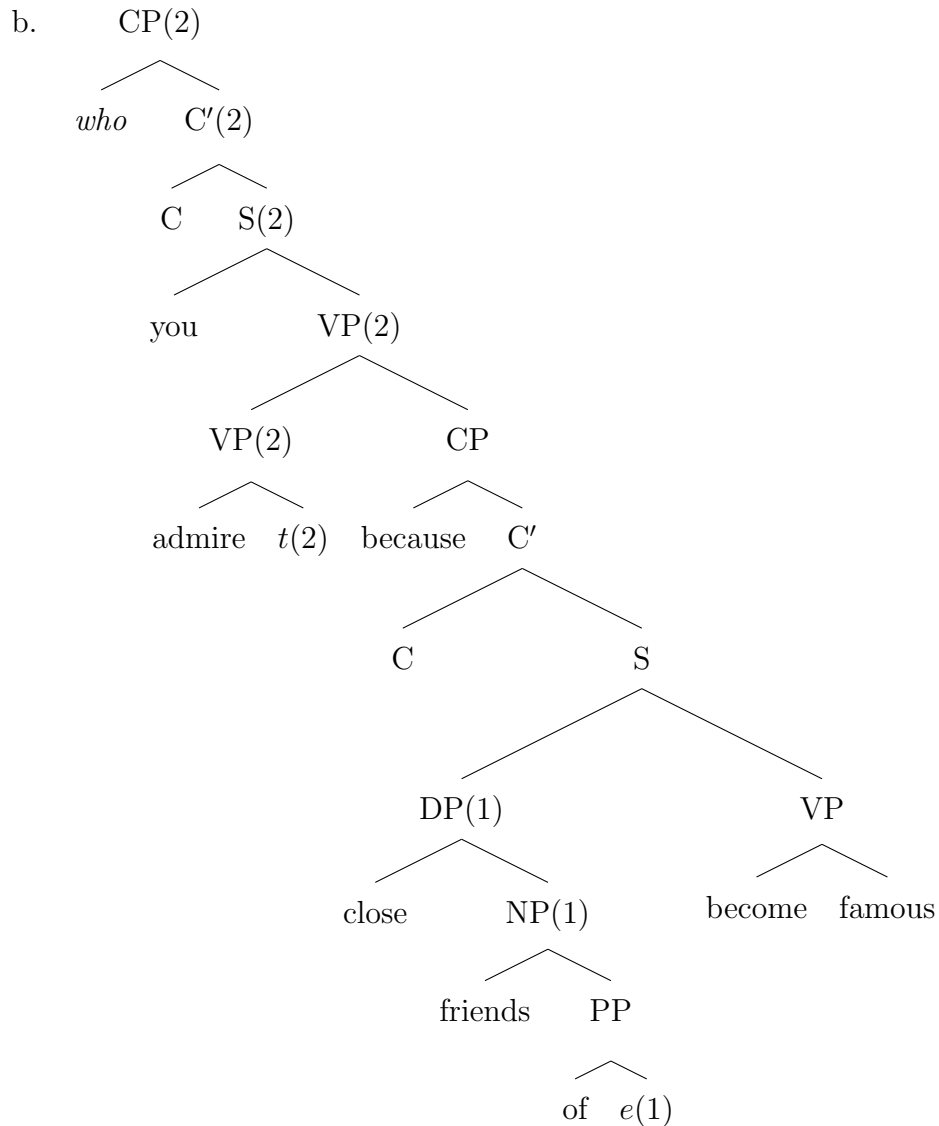
CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

The difference between the sentences in (15), which have been a problem for pronoun theories, can now be accounted for⁵.



⁵Three notes to the structures shown in (16): First, the labeling of the tree nodes is not important. Second, the numbers in brackets mark the corresponding g-projection sets. Nodes with the same number are members of the same set. Third, although the gaps have different names here (*e* for the parasitic gap, *t* for the true gap), both gaps are equal in status, i.e., there is no difference between parasitic and true gaps. Both gaps are equally subject to the ECP in (14).

3.1. NON-MOVEMENT THEORIES



Now, as the structure in (16-b) shows, the reason for the ungrammaticality in (15-b) is due to the violation of condition (14-a), i.e., the g-projection sets of the gaps don't constitute a subtree.

In sum, the theory of *Connectedness* (Kayne (1983)) is able to derive subadjacency effects of parasitic gap constructions. To do so, Kayne (1983) defines g-projection and g-projection sets and modifies the *Empty Category Principle* in a way that it makes use of g-projection sets. However, the drawback of the theory in respect to the aim of this thesis is the fact that it is purely representational.

3.2 Movement Theories

Now, I will review another type of parasitic gap theories, namely movement theories.

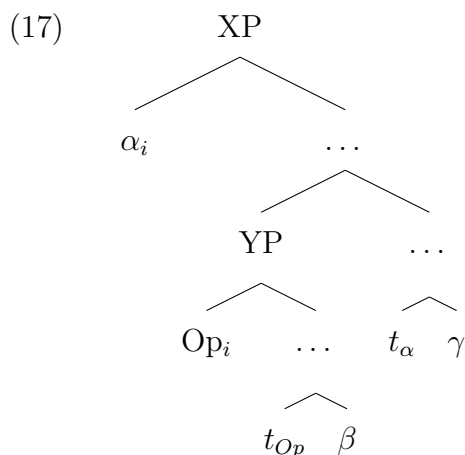
Theories that consider parasitic gaps to be real gaps which result from movement can be further categorized into two types: One type of theory assumes null operators which are merged in the position of the parasitic gap and move then to the highest possible position inside the island in which the parasitic gap occurs. These operators will, then, be identified with the antecedent of the true gap. (See e.g. Kiss (1985); Chomsky (1986); Frampton (1990); Nissenbaum (2000); Lee (1998)) In this sense, Nissenbaum (2000) calls such theories *Non-Shared Antecedent* theories. These theories will be dealt with in the first part of this section.

The other type of theory dispenses with operators that are antecedents of parasitic gaps, but develops the idea that parasitic gap constructions can be derived along the lines of constructions involving ATB movement. (Grosu (1980); Huybregts and Van Riemsdijk (1985); Williams (1990); Munn (1992, 1994, 2001); Nunes (1995, 2001)) However, since the accounts of ATB-movement are manifold themselves, I will restrict the discussion in the second part of this section to Sideward Movement.

3.2.1 Operator Theories

The crucial idea of all operator theories is shown in (17). A null operator in argument position moves to a higher position in the embedded category, i.e., it doesn't move out of the island, and leaves a trace — the parasitic gap. This operator is, then, identified with the antecedent of the true gap (Stowell (1985)).

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How identification proceeds exactly, differs from theory to theory. Chomsky (1986), for example, uses the mechanism of Chain Composition in (19). A chain consists of a head and a set of traces in which each element (except the tail) locally binds its successor. The chains that exist in the structure in (17) are given in (18).

- (18) a. $C_1 = (\alpha, t_\alpha)$
 b. $C_2 = (Op, t_{Op})$

(19) *Chain Composition* (Chomsky (1986:56))

If $C = (\alpha_1, \dots, \alpha_n)$ is the chain of the real gap, and $C' = (\beta_1, \dots, \beta_n)$ is the chain of the parasitic gap, then the *composed chain* is
 $(C, C') = (\alpha_1, \dots, \alpha_n, \beta_1, \dots, \beta_n)$

Chain composition causes the identification of the operator and the antecedent α . Since the head of the composed chain (C_1, C_2) is α , the status of Op is changed. Now, it is no longer a head itself but bound by α just like t_α and t_{Op} .

- (20) $(C_1, C_2) = (\alpha, t_\alpha, Op, t_{Op})$

Furthermore, Chomsky (1986) proposes 0-subjacency as a licensing condition for composed chains. 0-subjacency says that there must not be a bounding

CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

node between two elements. Bounding nodes are maximal projections that are either non-theta-marked itself or immediately dominate a non-theta-marked maximal projection. In that sense, VP is, amongst others, a bounding node. Chomsky (1986) proposes that 0-subjacency must hold between α_n and β_1 . Additionally, 1-subjacency must hold between two members of a chain that are in a successor relation. Only if two chains obey 0-subjacency, they can compose under the principle in (19).

With these assumptions, subjacency effects like in (21) (repeated from section 2.2.3) can be derived.⁶

- (21) a. the article which we [_{VP} filed t [_{PP} Op without [_{VP} reading t_{Op}]]]
b. *the article which we [_{VP} filed t [_{PP} Op without [_{VP} meeting the person [_{CP} who [_{VP} wrote t_{Op}]]]]]

Both sentences in (21) fulfill 0-subjacency because there is no barrier between t and Op. The reason why (21-b) is bad is simply that 1-subjacency between Op and pg is not given since there are at least two bounding nodes between them.

In addition, 0-subjacency is able to explain the anti-c-command condition on parasitic gaps. The sentences are given in (22) (repeated from section 2.2.2) with the corresponding structures.

- (22) a. *Which articles t got [_{VP} filed by John [_{CP} Op without him [_{VP} reading t_{Op}]]]?
b. *Who t [_{VP} sent [_{DP} Op a picture of t_{Op}]]?

In both sentences in (22), the bounding node VP is between t and Op, thereby violating 0-subjacency.

However, the great disadvantage of Chomsky's (1986) theory seems to be that Chain Composition as well as 0-subjacency are stipulated rules that cannot be used for anything else but parasitic gap constructions.

⁶The constituency is in line with the one suggested by Chomsky (1986:64).

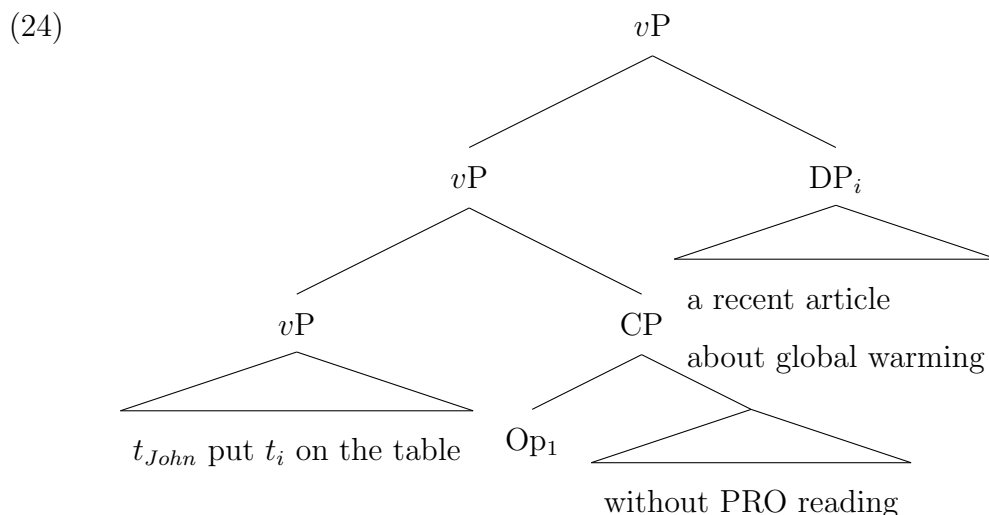
3.2. MOVEMENT THEORIES

Although the theory of Chomsky (1986) seems stipulative at first sight, the idea that parasitic gaps are the result of operator movement was further developed by other scholars. Nissenbaum (2000), for example, reinvents the operator theory in a minimalist framework. Because of its up-to-dateness and simplicity, it is the most challenging rival for the theory developed in the next chapter.

The difference to Chomsky (1986) is that the identification of the null operator and the antecedent happens at LF via *predicate abstraction* and *predicate modification* (Heim and Kratzer (1998)).

Just like in the analysis of Chomsky (1986), Nissenbaum (2000) assumes an operator in the adjunct clause which moves to a higher position. This is exemplified in the structure in (24) (cf. Nissenbaum (2000:43)). The sentence to be derived is given in (23) (cf. Nissenbaum (2000:46)).

(23) John put t_i on the table [without reading pg] [a recent article about global warming] $_i$.



The two semantic rules that finally enable the operator identification are given in (25) and (26).

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(25) *Predicate Abstraction* (Heim and Kratzer (1998:186))

Let α be a branching node with daughters β and γ , where β dominates only a numerical index i . Then, for any variable assignment a , $\llbracket \alpha \rrbracket^a = \lambda x \in D . \llbracket \gamma \rrbracket^{a^{x/i}}$

(26) *Predicate Modification* (Heim and Kratzer (1998:95))

If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment a , if $\llbracket \beta \rrbracket^a$ and $\llbracket \gamma \rrbracket^a$ are both functions of type $\langle e, t \rangle$, then $\llbracket \alpha \rrbracket^a = \lambda x \in D . \llbracket \beta \rrbracket^a(x) = \llbracket \gamma \rrbracket^a(x) = 1$

As the empty operator is an element that only dominates a numerical index, operator movement results in predicate abstraction, changing the type of the embedded clause from t to $\langle e, t \rangle$. Now, the sentence in (23), exemplifies a parasitic gap that is licensed by heavy-NP-shift. Nissenbaum (2000) argues that HNPS is the result of movement that has the full vP as its landing site. He, furthermore, proposes that any movement relation results in predicate abstraction. This has the consequence that also the vP is changed from t to $\langle e, t \rangle$. Now, if vP and the adjunct clause are merged, this results in predicate modification since both categories have the type $\langle e, t \rangle$. Semantically, this means that the meaning of the mother node is the logical conjunction of the meaning of the vP and the meaning of the adjunct, and has the type $\langle e, t \rangle$ as well.

The last step is now simple functional application. The DP *a recent article about global warming* has the type e and the modified vP the type $\langle e, t \rangle$. The resulting type is, therefore, t .

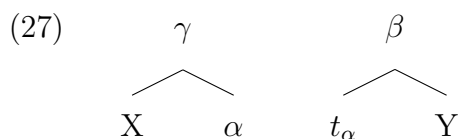
To ensure that vP is really a $\langle e, t \rangle$ type, movement must precede Merge of the adjunct. To enable countercyclic Merge, Nissenbaum (2000) uses the tucking-in mechanism of Richards (1997). That is, first the DP moves to a position above the clausal vP and then, the adjunct tucks-in under the DP. The exact sequence of Move and Merge will be relevant in sections 5.1 and 5.9.

3.2. MOVEMENT THEORIES

The behaviour of operator theories⁷ towards parasitic gaps will be subject of chapter 5 and 6 where it will be compared with a new analysis of parasitic gaps developed in chapter 4. But before finally turning to my own analysis of parasitic gaps, I will summarize another approach to parasitic gaps which is closer to my own one in that the antecedent of the licensing gap is also the antecedent of the parasitic gap.

3.2.2 Sideward Movement

The main idea of sideward movement (Nunes (1995, 2001); Hornstein and Nunes (2002)) is to allow movement of a phrase α inside a complex category β to another complex category γ without the two having a dominating node in common and without the problem of β having already required an island status. This process is illustrated in (27).



Now, Nunes (1995, 2001) assumes the copy theory of movement (Chomsky (1995)). In this understanding of movement, movement consists of the two operations *Copy* and *Merge*. The copies that occur in a syntactic object build a chain under c-command and are then subject to deletion on the two interface levels PF and LF. Only certain deletions (as induced by (28)) result in syntactic objects that can be linearized according to (29).

(28) *Chain Reduction* (Nunes (2001:308))

Delete the minimal number of constituents of a nontrivial chain CH that suffices for CH to be mapped into a linear order in accordance with the LCA.

⁷If I speak of operator theories in the next chapters, I will always refer to the account of Nissenbaum (2000).

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(29) *Linear Correspondence Axiom* (LCA) (Kayne (1994:33))

Let X, Y be nonterminals and x, y terminals such that X dominates x and Y dominates y. Then, if X asymmetrically c-commands Y, x precedes y.

Now, the derivation of a sentence with a parasitic gap like in (30) can be derived as follows: First, there are two distinct syntactic objects. One of these constitute the adverbial clause before it becomes an adjunct, the other one is the starting point of the matrix clause.

(30) Which paper did you file without reading?

(31) a. $K = [_{CP} C [_{TP} PRO_j [_{T'} T [_{vP} t_j [_{v'} v [_{VP} reading [\text{which paper}]]]]]]]$
 b. $L = \text{file}$

In the next step, *which paper* is copied and merged with *file*. This copy is then moved to Spec,CP of the matrix clause. The final configuration is given in (32).

(32) $[_{CP} [\text{which paper}] did+Q [_{TP} you [_{vP} [_{vP} file [\text{which paper}]]] [_{PP} without PRO reading [\text{which paper}]]]]]$

Now, the only possibility for linearization to be successful is to delete both occurrences of *which paper* in their object positions. If none of the copies or only one copy is deleted, asymmetry is violated and the final syntactic configuration cannot be linearized.

Nunes (1995, 2001) uses the same mechanism to explain ATB-movement. A sentence like (33) has, therefore, (nearly) the same derivation as the sentence in (30).⁸

(33) Which paper did John file and Mary read?

⁸Relevant for the discussion is only the sideward movement of *which paper*. Nevertheless, also *did* sideward-moves from the second conjunct to the first conjunct.

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- (34) a. K = [TP did [_{vP} Mary *v* [_{VP} read [which paper]]]]
 b. L = file

- (35) [_{CP} [which paper] did+Q [_{andP} [TP John ~~did~~ file [~~which paper~~]] [_{and'}
 and [TP Mary ~~did~~ read [~~which paper~~]]]]]]

This analysis of parasitic gaps is, according to Nunes (1995, 2001) (cf. Nunes (2001:325)), able to derive four important properties of parasitic gaps, which are the ones in (36).

- (36) a. Parasitic gaps show subjacency effects.
 b. Parasitic gaps are licensed at S-Structure.
 c. Parasitic gaps must not be c-commanded by the licensing gap.
 d. Parasitic gaps cannot be licensed by A-movement.

The first property in (36-a), illustrated in (37), is explained by the derivation in (38).

- (37) *Which book did you borrow *t* [after leaving the bookstore [without finding *pg*]]? *Nunes (2001:327)*

- (38) a. K = [_{CP} PRO [_{vP} [_{vP} leaving the bookstore] [_{PP} without PRO finding [which book]]]]
 b. L = borrow

At the point, where sideward movement could apply, the PP *without finding which book* has already become an adjunct. Therefore, *which book* is no longer accessible and cannot be merged with *borrow*.

The next property in (36-b) is again easily explained as shown in (39).

- (39) a. *Who filed which report without reading?
 b. [who [[filed [which report]] [without PRO reading [which report]]]]

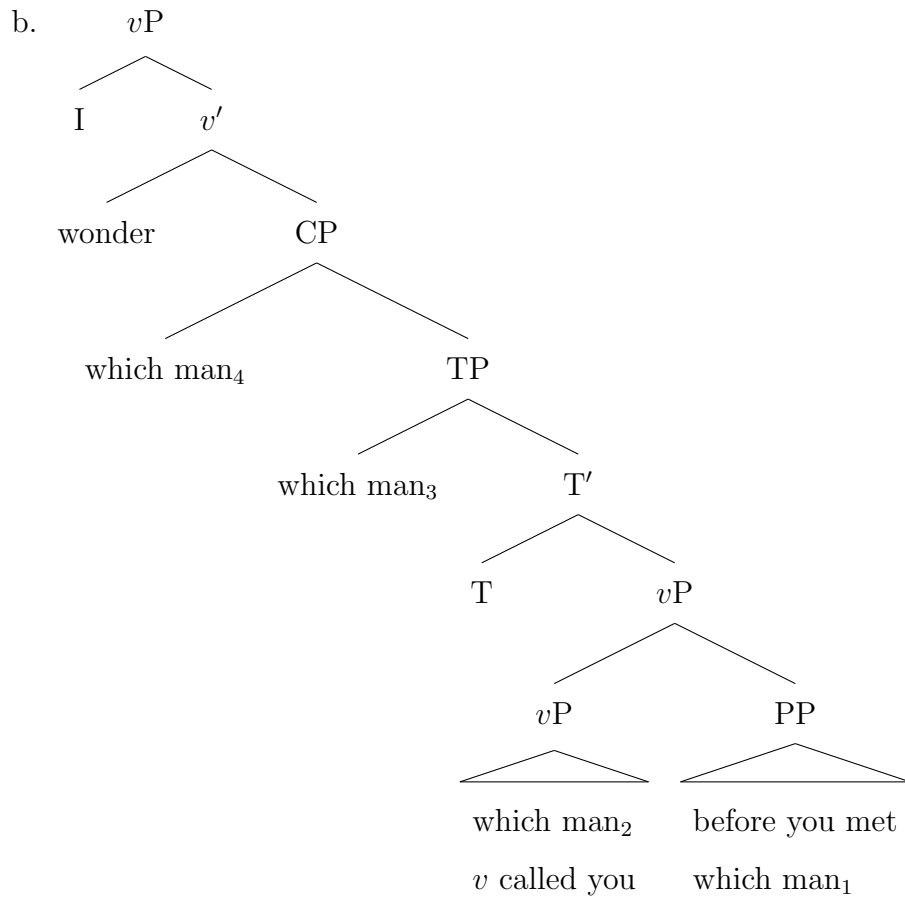
CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

Here, the two occurrences of *which report* cannot form a chain because of the lack of c-command. Therefore, the two occurrences of *which report* are trivial chains and non of them can be deleted.

The next property in (36-c) is more difficult to explain. To illustrate the anti-c-command condition of parasitic gaps, the structure for the sentence in (40-a) is given in (40-b)⁹.

- (40) a. *I wonder which man called you before you met.

Nunes (2001:332)



For the derivation to be successful, it is necessary that *which man₃* and *which man₁* can form a chain. This, however, is impossible because there are “nonlocal Case-checking and Case-bearing elements” (Nunes (2001:333)) between the two copies, i.e. in this case the subject in the adjunct clause.

⁹Indices indicate the sequence of copy steps.

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The same explanation is used by Nunes (2001) to derive the property in (36-d). In the sentence in (41), *my* intervenes between the two occurrences of *the book* in the adjunct and the subject position of the matrix clause.

- (41) a. *The book was filed without my reading first.

Nunes (2001:335)

- b. [_{TP} [the book] was [_{vP} [_{vP} filed [the book]] [_{PP} without my reading [the book] first]]]

Although, the theory of Nunes (1995, 2001) can explain some of the most important properties of parasitic gaps, it fails to explain others. First of all, the theory cannot per se account for the fact that parasitic gaps are restricted to nominals. Nunes (2001), however, notes that this restriction is not specific for parasitic gap constructions but rather for operator-variable constructions in general (Nunes (2001:fn. 32)).

Furthermore, just like any theory of parasitic gaps that dispenses with the idea of parasitic gaps being pronominals, antipronominal contexts remain unexplained.

As mentioned above, reconstruction effects can differ between parasitic gap and ATB constructions. The data are repeated in (42).

- (42) a. Which books about himself did John file *t* before Mary read *pg*?
b. *Which books about herself did John file *t* before Mary read *pg*?

These data show that reconstruction into the parasitic gap is impossible. Obviously, this is a problem for Nunes's account since he assumes that in case of (42), it is the full DP *which books about himself/herself* that is sideward-moved. However, as mentioned by Nunes (2001:fn. 35), Munn (1994) shows that the apparent reconstruction asymmetry in (42) is due to other factors. Evidence that reconstruction is not asymmetrical is given by (43). Here, reconstruction into the licensing gap is impossible.

CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

- (43) a. *Which picture of herself did every boy who saw *pg* say Mary liked *t*?
- b. Which picture of himself did every boy who saw *pg* say Mary liked *t*?

So, it is unclear if reconstruction is an argument against sideward movement.

Finally, the question remains whether an account that treats parasitic gap and ATB constructions alike is warrantable. Despite the fact that ATB and parasitic gap constructions differ in many aspects (see especially Engdahl (1983); Postal (1993)), they share a lot of properties as well (Munn (1992, 1994, 2001)).

The arguments against the equal treatment of both constructions are mainly the following ones: First, ATB movement affects constituents of the same type that are coordinated while the parasitic and the licensing gap occur in categories that are different in their syntactic and semantic type. Next, as Postal (1993) has shown, the syntactic properties of parasitic gap and ATB constructions differ in several aspects: constituent restrictions (parasitic gaps can only be NPs while ATB gaps can correspond to several types), finite subject restrictions (parasitic gaps cannot occur in the position of a finite clause subject¹⁰), passivizability restrictions (parasitic gaps cannot occur in positions that are inherently unpassivizable), antipronominal contexts, predicate nominal restrictions (parasitic gaps cannot be predicate nominals) and infinitival complement positions (parasitic gaps cannot occur in the position of postverbal NPs of verbs like e.g. *believe*).

Although this huge amount of arguments against an ATB account of parasitic gaps exists, several scholars like (Williams (1978); Grosu (1980); Sag (1983); Cowper (1985); Huybregts and Van Riemsdijk (1985); Williams (1990); Munn (1992, 1994, 2001); Nunes (1995, 2001)) have argued for an analysis that covers both ATB and parasitic gap constructions. Munn (2001), for example,

¹⁰For a different view, see Levine et al. (2001)

3.2. MOVEMENT THEORIES

observes the following properties: First, both constructions show island effects. Next, he argues that both constructions show anti-c-command restrictions.¹¹ Further similarities of the two constructions can be found in respect to weak crossover and the occurrence of resumptive pronouns.

Now, after having reviewed and discussed some important theories about parasitic gaps, it is time for a new account of parasitic gaps. In the next chapter, I will present a detailed derivation of a parasitic gap sentence exemplifying what I will call the *Duplication Theory* of parasitic gaps.

¹¹Possible counterexamples like in (i) are ruled out because they involve, according to Munn (2001), VP coordination rather than *v*P or TP coordination.

- (i) a. Who read the paper and filed it?
b. Who *t* [_{andP} [_{VP} read the paper] and [_{VP} filed it]]?

CHAPTER 3. EXISTING THEORIES ABOUT PARASITIC GAPS

Chapter 4

Analysis

In this section, I want to develop a new analysis of parasitic gaps that don't involve operators and LF but that works exclusively in narrow syntax. The main idea is that parasitic gaps result from two operations: a duplication operation in the numeration and a fusion operation in the derivation.

The two operations together with the whole derivation will be exemplified by the sentence in (1).

- (1) Which article did you file *t* [without reading *pg*]?

4.1 The Duplication Operation

I assume that the element that is inserted in the position of the parasitic gap is identical to the element that is inserted in the position of the true gap. This is due to a duplication operation that is made in the numeration.

Suppose the numeration of the sentence in (1) is the following one given in (2).^{1,2}

¹For simplicity, I assume that referential indexing is tied to the categorial feature D since only DPs can have referential indices. Therefore, all D items of the numeration possess an index (here *i* or *j*).

²The two markings **••** and ****** are to be understood in the sense of Müller (2010), i.e., **••** is the structure-building property of features triggering Merge while ****** is the probe property

- (2) $N = [\mathbf{which}[D_i, \mathbf{wh}, \bullet N \bullet, \mathbf{acc}, \varphi, *acc*^3, \dots, \mathbf{phon}^4, \mathbf{sem}], \mathbf{article}[N, \mathbf{acc}, \dots], \mathbf{C}[C, \bullet \mathbf{wh} \bullet, \bullet T \bullet, \dots], \mathbf{you}[D_j, \varphi, \mathbf{nom}, \dots], \mathbf{T}[T, \mathbf{EPP}, \bullet v \bullet, * \varphi *, * \mathbf{nom} *, \dots], \mathbf{v}[v, \bullet V \bullet, \bullet D \bullet, * \varphi *, * \mathbf{acc} *, \dots], \mathbf{file}[V, \bullet D \bullet, \dots], \mathbf{without}[\dots], \mathbf{C}[C, \bullet T \bullet, \dots], \mathbf{T}[T, \mathbf{EPP}, \bullet v \bullet, \dots], \mathbf{PRO}[D_j, \dots], \mathbf{v}[v, \bullet V \bullet, \bullet D \bullet, * \varphi *, * \mathbf{acc} *, \dots], \mathbf{read}[V, \bullet D \bullet, \dots]]$

This derivation is obviously supposed to crash since there are not enough D elements to fill all argument positions of the verbs. Assuming that PRO can only be inserted in subject position (and the pronoun *you* will be inserted in subject position) either *file* or *read* is missing an object.

The two possibilities are now to cancel the whole thing and calculate a new numeration or to let a repair mechanism apply to this numeration.

Here, I want to suggest that there is indeed such a repair mechanism, namely *Duplication*. Duplication can be applied to lexical items in case that the derivation based on its numeration is supposed to crash. The preliminary definition of Duplication is given in (3).

- (3) *Duplication* ($N = [L, \dots]$)
- a. There are structure-building and probe features $[\bullet F_1 \bullet], \dots [\bullet F_i \bullet], [*F_j *], \dots [*F_n *]$ in the numeration N that don't have matching features $[F_1], \dots [F_n]$.
 - b. There is a lexical item L in N that has such features $[F_1, \dots, F_n]$.
 - c. An item L' with the features $[F_1, \dots, F_n]$ of L is added to N.

triggering Agree. All features with the properties $\bullet\bullet$ or $**$ must be deleted at the end of the derivation. Furthermore, I assume here that Agree is bare feature checking and that no feature valuation takes place. Hence, all feature values are already present in the numeration.

³Like other D heads, *which* plays a double role when it comes to case. On the one hand, it must be able to check the case feature of *v*, and on the other hand, it has a case feature which must be checked by its complement noun. This double role will be neglected during the derivation here but becomes important again in section 6.2.1.

⁴The features *phon* and *sem* are to be understood as feature sets. “*phon*” encompasses all phonological features and “*sem*” all semantic features.

4.1. THE DUPLICATION OPERATION

- d. All duplicated features on L are marked by $\triangleright\triangleleft$.

This definition needs some clarification. The first condition in (3-a) describes exactly the situation of the numeration above. One of the verbs — let’s say *read* — has a structure-building feature $[\bullet D \bullet]$ that doesn’t have a matching feature [D]. (Altogether, the two verbs have four features $[\bullet D \bullet]$ but there are only three matching features [D].) Furthermore, $[\ast\varphi\ast]$ needs a matching feature $[\varphi]$ and $[\ast\text{acc}\ast]$ a matching feature [acc].

The second condition in (3-b) says that for Duplication to be able to apply, the features [D],[φ] and [acc] must be already present in the numeration. (This condition together with the condition in (3-a) makes sense because it eliminates the possibility of useless duplications.) The consequence for our numeration above is that only elements with the features [D], $[\varphi]$ and [acc] can be duplicated. In our example above, this can only be *which*.

Now, the next two conditions regulate the operation. The numeration is expanded by another item that has the features $[D_i, \varphi, \text{acc}]$.

Finally, the duplicated features of *which* are marked by $\triangleright\triangleleft$. The task of $\triangleright\triangleleft$ will be clarified in the following subsections. The nature of $\triangleright\triangleleft$, however, is that it is a property of features in the same sense as $\bullet\bullet$, which is the structure-building property, and $\ast\ast$, which is the probe property.⁵ I will refer to the new property $\triangleright\triangleleft$ as the *fusion property* of features. Two things about the fusion property should be mentioned: First, the fusion property doesn’t change the way the features interact with matching features that have the properties $\bullet\bullet$ or $\ast\ast$. That is, a feature $[\triangleright D \triangleleft]$ can cause the deletion of a feature $[\bullet D \bullet]$ just as fine as [D]. Second, features with the property $\triangleright\triangleleft$ must be deleted just like features with the properties $\bullet\bullet$ or $\ast\ast$.

Now, after having clarified the meaning of Duplication, *which* is duplicated. The numeration after Duplication is given in (4).

⁵See also Lahne (2009) who assumes that feature properties can be inserted on features via specific rules.

- (4) $N = [C[\dots], \text{you}[\dots], T[\dots], v[\dots], \text{file}[\dots], \mathbf{which}[\triangleright \mathbf{D}_i \triangleleft, \mathbf{wh}, \bullet \mathbf{N} \bullet, \triangleright \mathbf{acc} \triangleleft, \triangleright \varphi \triangleleft, \dots], \text{article}[\dots], \text{without}[\dots], C[\dots], T[\dots], \text{PRO}[\dots], v[\dots], \text{read}[\dots], \emptyset[\mathbf{D}_i, \mathbf{acc}, \varphi]]$

Now, that the failure of the derivation is averted, both *which* and its duplicate \emptyset can enter the derivation, during which they are independent from each other, i.e., they can freely enter into Agree and Merge operations.

4.2 The Derivation

Before I start going through the derivation of the sentence in (1), I should clarify which assumptions I make about derivations in general.

At first, I assume a phase-based model which has been suggested by Chomsky (2000, 2001), i.e., non-defective *v*P and CP (and additionally DP (see Svenonius (2004))) are phases.

Furthermore, I adopt the model suggested by Müller (2010) to derive (CED-based) island effects. In a nutshell, the crucial idea is that CED effects can be derived from the PIC in (5).

- (5) *Phase Impenetrability Condition* (Chomsky (2001), Müller (2010:36))
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations.
- (6) *Condition on Extraction Domain*⁶
- a. Movement must not cross a barrier.
 - b. An XP is a barrier iff its is not a complement.

The assumptions Müller (2010) makes to derive CED effects are *Last Resort*, the assumption that all features on phase heads are ordered (whereby structure-building and probe features appear on separate lists), the assumption that

⁶The CED is due to Huang (1982). The version in (6) is taken from Müller (2010:36).

4.2. THE DERIVATION

all phrases are phases⁷ and a modified version of the edge feature condition saying that edge features (proposed by Chomsky (2000, 2001)), which guarantee successive-cyclic movement (and thereby the accessibility of elements), can only be inserted on heads that still have features which trigger syntactic operations.

(7) *Last Resort* (Müller (2010:40))

- a. Every syntactic operation must discharge either $[\bullet F \bullet]$ or $[*F*]$.
- b. Only features on the top of a feature list are accessible.

(8) *Edge Feature Condition* (Müller (2010:42))

An edge feature $[\bullet X \bullet]$ can be assigned to the head γ of a phase only if (a) and (b) hold:

- a. γ has not yet discharged all its structure-building or probe features.
- b. $[\bullet X \bullet]$ ends up on top of γ 's list of structure-building features.

In principle, edge features can trigger the movement of any (accessible) element. However, derivations will only be successful if the “right” elements are moved to the edge of a phase in order to be accessible. To restrict the power of edge features, a constraint like *Phase Balance*, suggested by Müller and Heck (2000), can be adopted.

(9) *Phase Balance* (Müller and Heck (2000:221))

Phases must be balanced: If P is a phase candidate, then for every feature F in the numeration there must be a distinct potentially available checker for F.

(10) *Potential Availability* (Müller and Heck (2000:222))

Syntactic material is potentially available for material outside a phase P if it is

- a. part of the numeration or

⁷This is an assumption which I will not adopt in my system. Nevertheless, the system works just as well if only *vP*, CP and DP are phases.

- b. at the left edge of P.

Phase Balance, therefore, regulates which elements must be moved to the edge of a phase.

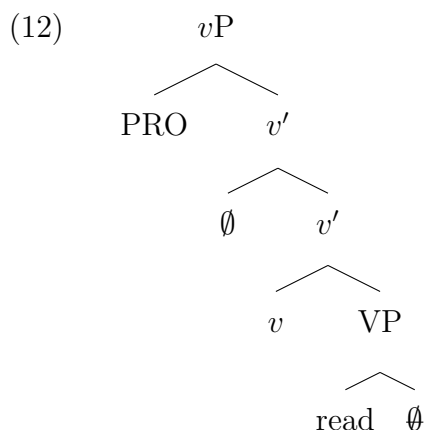
Now, let's turn to a sample derivation of the sentence in (1).

The first step of the derivation is to merge *read* and \emptyset . Afterwards, *v* is merged, \emptyset is moved to the phase edge (in line with Phase Balance) and the subject is merged. The single steps are shown in (11) and the tree in (12).⁸

- (11) a. *Merge of read and \emptyset*
 $[_{VP} \text{read}(\bullet\mathcal{D}\bullet) \emptyset_i]$
- b. *Merge of v and VP*
 $[_{v'} v(\bullet\mathcal{V}\bullet \succ \bullet\mathcal{D}\bullet, *\phi* \succ *acc*) [_{VP} \text{read}(\bullet\mathcal{D}\bullet) \emptyset_i]]$
- c. *Agree and case checking between v and \emptyset*
 $[_{v'} v(*\phi* \succ *acc*, \bullet\mathcal{D}\bullet) [_{VP} \text{read}(\bullet\mathcal{D}\bullet) \emptyset_i]]$
- d. *Insertion of an edge feature*
 $[_{v'} v(\bullet\mathcal{X}\bullet \succ \bullet\mathcal{D}\bullet) [_{VP} \text{read}(\bullet\mathcal{D}\bullet) \emptyset_i]]$
- e. *Movement of \emptyset and deletion of the edge feature*
 $[_{v'} \emptyset_i [_{v'} v(\bullet\mathcal{X}\bullet \succ \bullet\mathcal{D}\bullet) [_{VP} \text{read} \emptyset_i]]]$
- f. *Merge of PRO*
 $[_{vP} \text{PRO} [_{v'} \emptyset_i [_{v'} v(\bullet\mathcal{D}\bullet) [_{VP} \text{read} \emptyset_i]]]]]$

⁸In order to increase the readability of the bracket structures, features of elements are written inside round brackets rather than squared ones. Furthermore, only relevant features will occur inside brackets.

4.2. THE DERIVATION



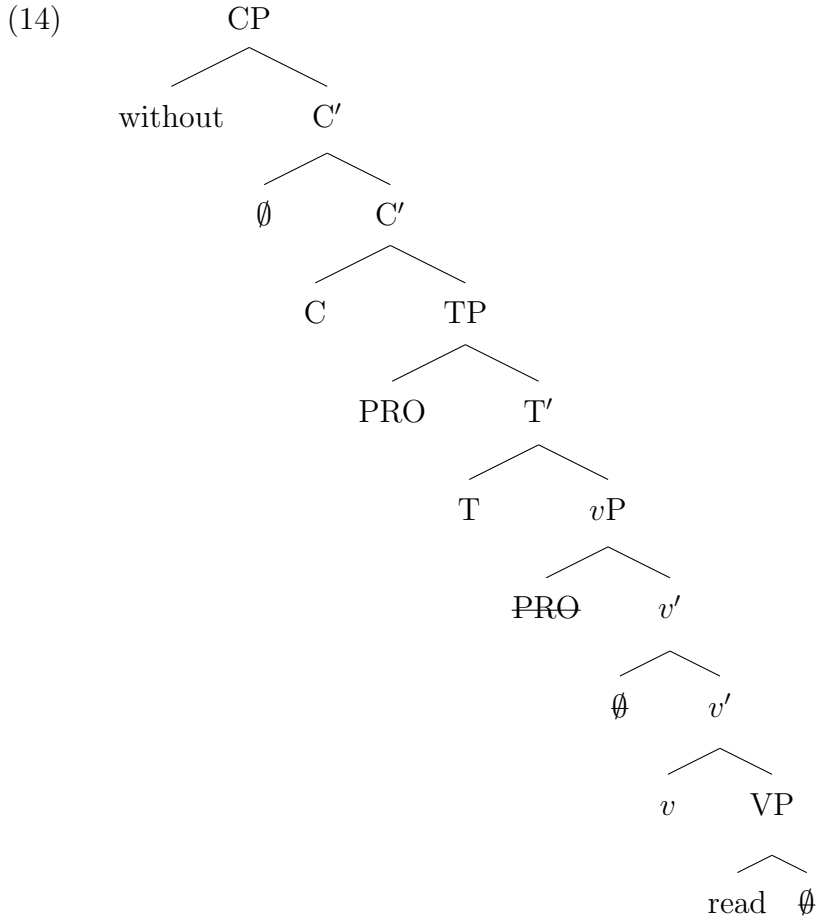
The next part of the derivation consists of constructing the embedded CP. At first, T is merged. Then, PRO is EPP-moved to Spec,TP and C is merged. Finally, \emptyset is moved to Spec,CP and *without* is merged.⁹

- (13)
- a. *Merge of T and vP*
 $[_{T'} T(\bullet v \bullet \succ EPP) [_{vP} PRO [_{v'} \emptyset_i [_{v'} v [_{VP} read \emptyset_{\bar{i}}]]]]]]$
 - b. *EPP-movement of PRO*
 $[_{TP} PRO [_{T'} T(EPP) [_{vP} PRO [_{v'} \emptyset_i [_{v'} v [_{VP} read \emptyset_{\bar{i}}]]]]]]]]$
 - c. *Merge of C and TP*
 $[_{C'} C(\bullet T \bullet \succ \bullet Op \bullet) [_{TP} PRO [_{T'} T(EPP) [_{vP} PRO [_{v'} \emptyset_i [_{v'} v [_{VP} read \emptyset_{\bar{i}}]]]]]]]]]]$
 - d. *Insertion of an edge feature*
 $[_{C'} C(\bullet X \bullet \succ \bullet Op \bullet) [_{TP} PRO [_{T'} T(EPP) [_{vP} PRO [_{v'} \emptyset_i [_{v'} v [_{VP} read \emptyset_{\bar{i}}]]]]]]]]]]$
 - e. *Movement of \emptyset and deletion of the edge feature*
 $[_{C'} \emptyset_i [_{C'} C(\bullet X \bullet \succ \bullet Op \bullet) [_{TP} PRO [_{T'} T(EPP) [_{vP} PRO [_{v'} \emptyset_{\bar{i}} [_{v'} v [_{VP} read \emptyset_{\bar{i}}]]]]]]]]]]$

⁹Standardly, elements like *without*, *after* or *before* are assumed to be prepositions which take CPs as their complements (e.g. Nunes (2001)). In such structures one can often find additional empty temporal, logical or negation operators which stand in Spec,CP (see e.g. Munn (2001)). For simplicity, I will stick to the structure where the alleged prepositions stand in Spec,CP.

f. Merge of the operator and C'

$[_{CP}$ without $[_{C'} \emptyset_i [_{C'} C(\bullet\text{Op}\bullet) [_{TP}$ PRO $[_{T'} T(\text{EPP}) [_{vP}$ PRO $[_{v'} \emptyset_i [_{v'} v [_{VP}$ read $\emptyset_i]]]]]]]]]]$

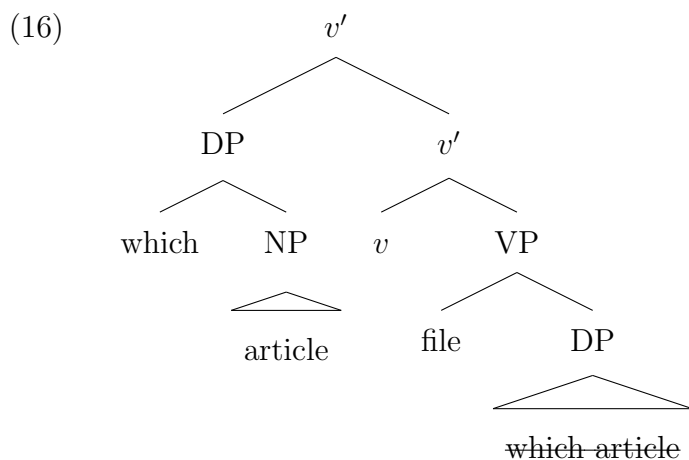


Now, the original *which* enters the derivation. It is first merged with *article* and then merged in the complement position of *file*. Then, after v has merged and Agree has taken place, an edge feature is inserted on v that allows for *which* to move to Spec, vP . I assume that adjunct clauses are merged in Spec, vP . (See Nissenbaum (2000) for discussion and convincing evidence.) The adjunction of the adverbial clause is clearly a syntactic operation and, hence, it must discharge a feature. In the following derivation, I assume therefore, that this feature is simply $[\bullet C \bullet]$ which is optionally present on v . This has the effect that adjunction is reduced to Merge.

The steps of the derivation are shown in (15).

4.2. THE DERIVATION

- (15) a. *Merge of which article and file*
 $[_{VP} \text{ file } \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]$
- b. *Merge of v and VP*
 $[_{v'} v(\bullet V \bullet \succ \bullet D \bullet \succ \bullet C \bullet, * \varphi * \succ * \text{acc} *) [_{VP} \text{ file } \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]]$
- c. *φ and case checking between v and which*
 $[_{v'} v(* \varphi * \succ * \text{acc} *, \bullet D \bullet \succ \bullet C \bullet) [_{VP} \text{ file } \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]]$
- d. *Insertion of an edge feature*
 $[_{v'} v(\bullet X \bullet \succ \bullet D \bullet \succ \bullet C \bullet) [_{VP} \text{ file } \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]]$
- e. *Movement of which and deletion of the edge feature*
 $[_{v'} \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article } [_{v'} v(\bullet X \bullet \succ \bullet D \bullet \succ \bullet C \bullet) [_{VP} \text{ file } \text{which}_i(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]]]$



At this point, the derivation has almost reached the point where the fusion features of *which* can be deleted. Nevertheless, some preparations still have to be done.

Till now, we have reached a point in the derivation where *which* and its duplicate have entered the derivation. As I sketched in section 4.1, the two instances of *which* have to come together again since one instance of *which* has features marked by $\triangleright \triangleleft$ which have to be discharged to circumvent a crash of

the derivation.

Now, the problem which arise by the configuration in (15-e) is that these features are only present on *which* and not on *v*. If the derivation would proceed now, the final two structure-building features of *v* would be deleted. Thus, after merging the CP, no edge feature could be inserted on *v* anymore and subsequently no element could be moved out of the CP. But, as we will see in a short while, movement of \emptyset out of the CP is necessary.

This problem, however, can be avoided by a slight modification of feature percolation. The standard view of feature percolation is that only features present on the head daughter can percolate to the mother node. However, if one allows features to percolate also from non-head daughters, the fusion features of *which* can percolate to a projection of *v*.^{10,11}

Now, because features are organized in lists, it is necessary to percolate not only bare features but rather feature lists. Müller (2010) explicitly claims that phase heads can have more than one feature list. (He assumes that structure-building and probe features are distributed on different lists.) So, the only addition that I want to add to Müller's framework is that feature lists cannot only percolate from head daughters but also from non-head daughters. The mechanism is schematized in (17).

¹⁰This understanding of feature percolation is probably best known from representational frameworks like GPSG (Gazdar et al. (1985)) or HPSG (pollard/sag94). There, feature percolation is guaranteed by the Nonlocal Feature Principle.

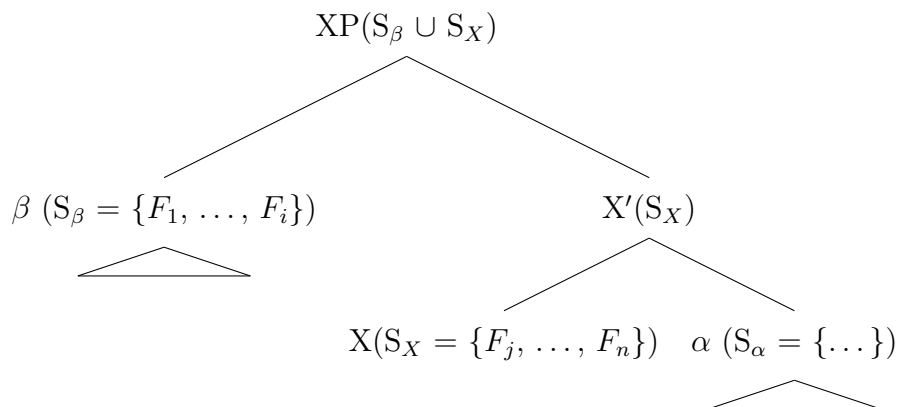
(i) *Nonlocal Feature Principle* (Pollard and Sag (1994:162))

The value of each nonlocal feature on a phrasal sign is the union of the values on the daughters.

¹¹Feature percolation from specifier positions have been independently suggested for analyzing Pied-Piping, for example by Horvath (1997), Ortiz de Urbina (1993) or Yoon (2001).

4.2. THE DERIVATION

(17) Feature List Percolation

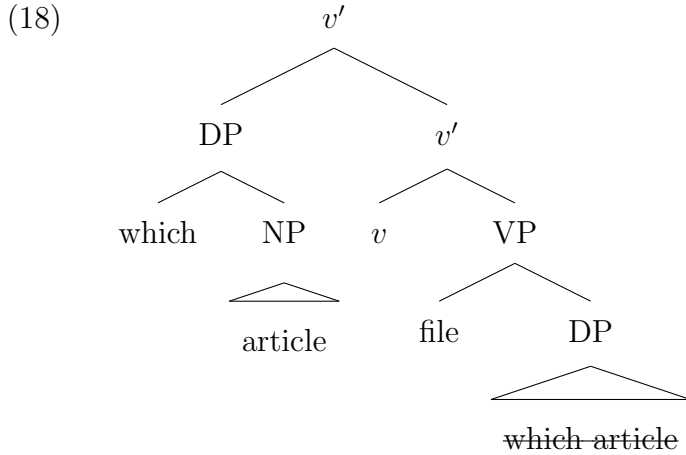


The tree in (17) simply says that the set of feature lists of specifiers project just the same way as the set of feature lists of the head.

The effect of this modification of feature (list) percolation is that it is indeed the $[\triangleright D_i \triangleleft]$ feature, the $[\triangleright \text{acc} \triangleleft]$ feature and the $[\triangleright \varphi \triangleleft]$ feature of *which* that keeps the *v*-head active and allows the insertion of an edge feature.

Two things should be mentioned before we go on with the derivation. First of all, I assume that features can only percolate if it has an effect on outcome. That is, only features that have to be checked can percolate. Thus, percolation of features or feature lists is justified because it prevents a crash of the derivation. Second, percolated features are only present on the mother node. That means, if the fusion features of *which* percolate to *v'* they are no longer present on *which*.

Now, we can continue with the derivation. The point where we stopped above is illustrated by the tree in (18).



The first step now is the feature percolation of $[\triangleright D_i \triangleleft]$, $[\triangleright \text{acc} \triangleleft]$ and $[\triangleright \varphi \triangleleft]$ from *which* to a projection of v . Afterwards, the subject and the adverbial clause are merged. Although the structure-building features that were originally present on v are deleted, the fusion features of *which* still reside on v (or rather a projection of v). So now, an edge feature can be inserted on v and the parasitic counterpart of *which* can be moved out of the adjunct clause.

(19) a. *Feature list percolation*

$[_{v'} \text{which}_i (\triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) \text{article}] [_{v'} v (\bullet D \bullet \triangleright \bullet C \bullet, \triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) [_{VP} \text{file which}_i (\triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft)]]]$

b. *Merge of the subject and the adverbial clause*

$[_{v'} [_{v'} \text{you} [[_{v'} \text{which}_i \text{article}] [_{v'} v (\bullet D \bullet \triangleright \bullet C \bullet, \triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) [_{VP} \text{file which}_i (\triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) \text{article}]]]]]] [_{CP} \text{without} [_{C'} \emptyset_i [_{C'} C (\bullet Op \bullet) [_{TP} \text{PRO} [_{T'} T [_{vP} \text{PRO} [_{v'} \emptyset_i [_{v'} v [_{VP} \text{read } \emptyset_i]]]]]]]]]]]]$

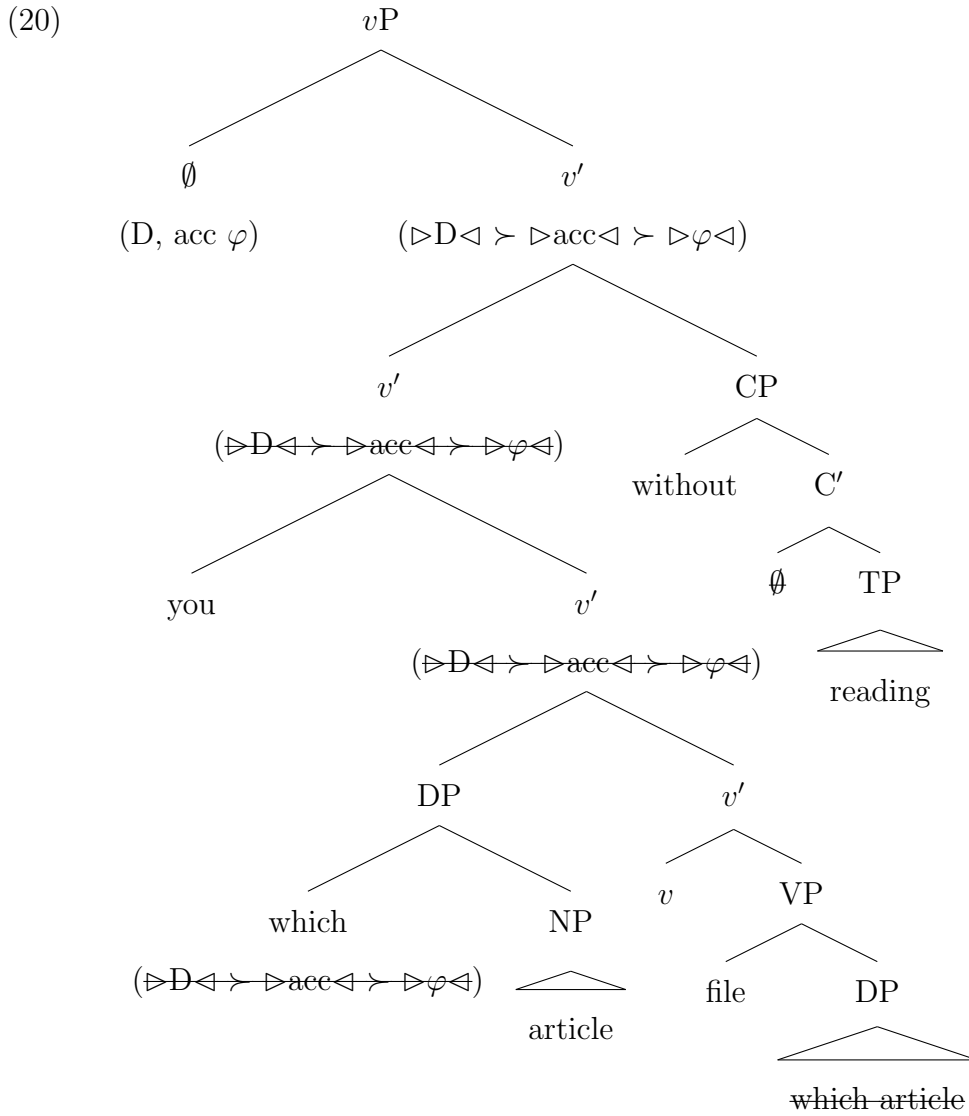
c. *Insertion of an edge feature*

$[_{v'} [_{v'} \text{you} [[_{v'} \text{which}_i \text{article}] [_{v'} v (\bullet X \bullet \triangleright \triangleright D_i \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) [_{VP} \text{file which}_i (\triangleright D \triangleleft \triangleright \triangleright \text{acc} \triangleleft \triangleright \triangleright \varphi \triangleleft) \text{article}]]]]]] [_{CP} \text{without} [_{C'} \emptyset_i [_{C'} C (\bullet Op \bullet) [_{TP} \text{PRO} [_{T'} T (\text{EPP}) [_{vP} \text{PRO} [_{v'} \emptyset_i [_{v'} v [_{VP} \text{read } \emptyset_i]]]]]]]]]]]]$

d. *Movement of \emptyset and deletion of the edge feature*

4.2. THE DERIVATION

$[_{vP} \emptyset_i [_{v'} [_{v'} you [_{v'} which_i \text{ article } [_{v'} v(\bullet X \bullet \succ \triangleright D_i \triangleleft \succ \triangleright acc \triangleleft \succ \triangleright \varphi \triangleleft) [_{VP} \text{file } which(\triangleright D \triangleleft \succ \triangleright acc \triangleleft \succ \triangleright \varphi \triangleleft) \text{ article}]]]]]] [_{CP} \text{without } [_{C'} \emptyset_i [_{C'} C(\bullet Op \bullet) [_{TP} PRO [_{T'} T(EPP) [_{vP} PRO [_{v'} \emptyset_i [_{v'} v [_{VP} \text{read } \emptyset_i]]]]]]]]]]]]$



After all these steps, both *which* and its *duplicate* are located in *Spec,vP*. At this point, the fusion operation can take place.

4.3 The Fusion Operation

The idea of the fusion operation is to unify two nodes in a tree. Fusion plays a big role in *Distributed Morphology* (Halle and Marantz (1993)). The morphological operation Fusion is part of the morphological component and is applied at the PF interface after the syntactic computation is finished.

The idea of the fusion operation I use is essentially the same one as Fusion suggested by Halle and Marantz (1993). According to them, Fusion can apply under sisterhood and is schematized in (21). The only difference that I want to suggest is that Fusion, just like any other syntactic operation, has to result in feature checking, i.e., be triggered by a feature with a certain property, which I suggest to be exactly $\triangleright\triangleleft$.

$$(21) \quad \textit{Fusion}$$

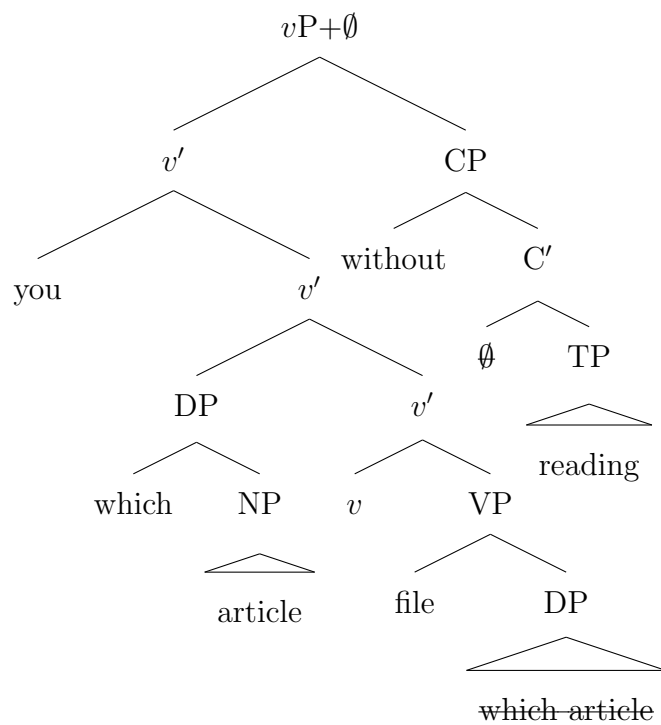
$$\begin{array}{ccc} X & \Rightarrow & xY \\ \begin{array}{c} \diagup \quad \diagdown \\ x(F) \quad Y(\triangleright F \triangleleft) \end{array} & & \begin{array}{c} \diagup \quad \diagdown \\ y \quad z \end{array} \\ & & \begin{array}{c} \diagup \quad \diagdown \\ y \quad z \end{array} \end{array}$$

After Fusion is applied to v' and \emptyset , the structure given in (20) looks like in (22). Note that all three fusion features of v' can be deleted in one step since the structural configurations are given for all features.¹²

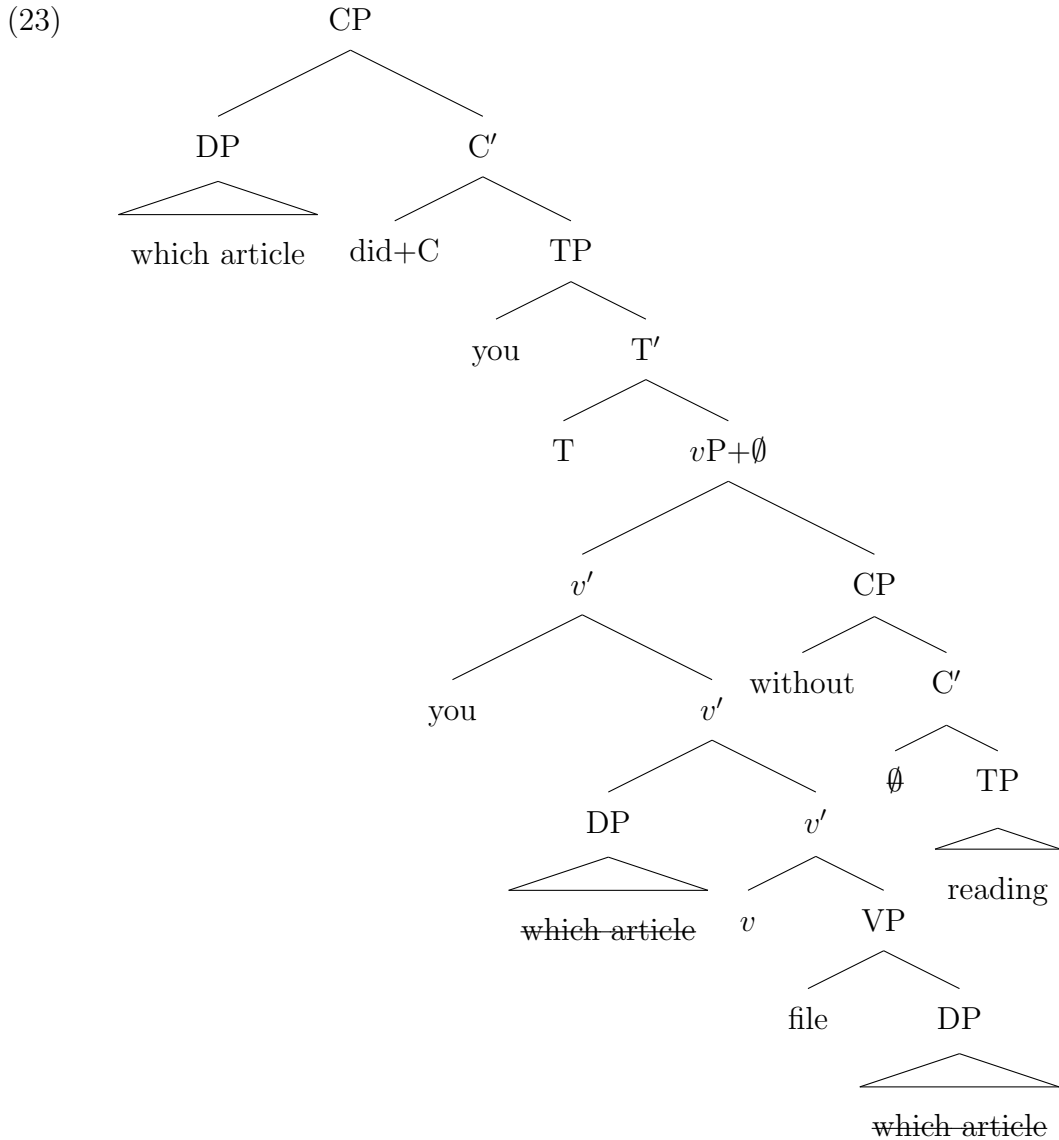
¹²Multiple feature checking also occurs in φ agreement contexts since φ features are actually three single features. Hence, I assume that also Fusion can check more than one feature at the same time.

4.3. THE FUSION OPERATION

(22)



At this point, the derivation proceeds as usual. After C is merged, the fused DP *which article* moves to Spec,CP. The final structure is shown in (23).



4.4 Interim Summary

In this chapter so far, I have introduced a new derivational method to derive parasitic gap constructions which differs from all previous accounts in that it assumes two new syntactic operations: *Duplication* and *Fusion*. While Fusion is well known from the morphological component, Duplication has never been suggested before. The main idea of Duplication is that features in the numeration can be duplicated only if it is necessary to ensure a successful derivation. Duplicated features are, then, marked by the feature property

4.5. QUESTIONS

$\triangleright\triangleleft$ on the original lexical item. These features are then later able to keep the phase head in which specifier the island is merged active in the sense of Müller (2010) because they are percolated to this phase head. As long as phase heads are active, i.e., possess features that trigger syntactic operations, edge features $[\bullet X \bullet]$ can be inserted which allow movement of any constituents to the phase edge. This enables the duplicate which has been merged inside an island to move out of it. Now, Fusion can apply under sisterhood, whereby the duplicated features $[\triangleright F_1 \triangleleft, \dots \triangleright F_n \triangleleft]$ are deleted and the duplicate is fused with a projection of the phase head. After that, the derivation can proceed as usual.

4.5 Questions

In the last part of this chapter, I want to address some important questions that arise from my analysis of parasitic gaps.

1. The first question that is of importance is about the referential identity of the licensing and the parasitic gap.¹³ Thus, in a sentence like (24), the picture that Peter liked is exactly the one that he had seen before. The picture he had seen before cannot be different from the one he liked.

(24) [Which picture]_{*i*} did Peter like *t_i* after he has seen *pg_i*?

In the derivation above, referential identity was enabled by the assumption that referential indices are tied to the categorial feature D. So if *which* is duplicated in the numeration, the duplicate must necessarily have the same index. Thus, referential identity is guaranteed.

Another possibility to guarantee referential identity would be to assume an index feature [i] which is independent from the categorial feature

¹³Thanks to Gereon Müller for asking this question and suggesting a solution.

and an index feature [$*i*$] on the verb that must be checked by [i]. Then, the index feature [i] must be duplicated as well in order to ensure a successful derivation. However, the difference between the two possibilities is reduced to the question if the index is tied to categorial features and is so orthogonal to the topic of this thesis. In the former case, the original element in the numeration would have a fusion feature [$\triangleright D_i \triangleleft$], while in the latter case, it would have two fusion features [$\triangleright D \triangleleft$] and [$\triangleright i \triangleleft$]. In either case, referential identity is guaranteed.

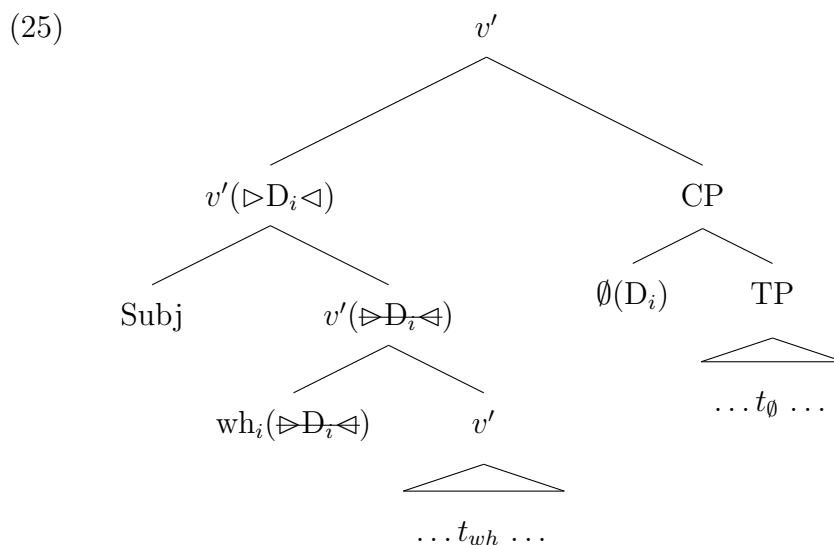
2. The next question is closely connected to the discussion above. Can fusion features like [$\triangleright D \triangleleft$], [$\triangleright \varphi \triangleleft$], etc. be checked by a category different than the duplicate?¹⁴ The answer to this question is clearly, no. Due to the referential index, the fusion feature [$\triangleright D_i \triangleleft$] of the original element can only be checked by a matching feature [D_i]. So, the duplication of the index does not only guarantee referential identity but also that categories can only be fused with its duplicates.

3. Next, I want to discuss the question, why the duplicate has to move out of its island in order to undergo Fusion with v' .¹⁵ The configuration in question is sketched in (25).

¹⁴Thanks to Doreen Georgi for bringing this issue up.

¹⁵Again, thanks to Doreen Georgi for asking this question.

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Since both elements that have to undergo Fusion are moved to specifier positions, their features should be percolated to the respective mother nodes. If this is true for any feature, the categorial feature of \emptyset_i should be percolated to CP and the fusion feature of wh_i to v' . Then, a configuration would be given in which Fusion could take place. Thus, no movement of \emptyset_i out of the CP is needed. However, this would mean that v' and CP are the categories to be fused which is obviously not the case.

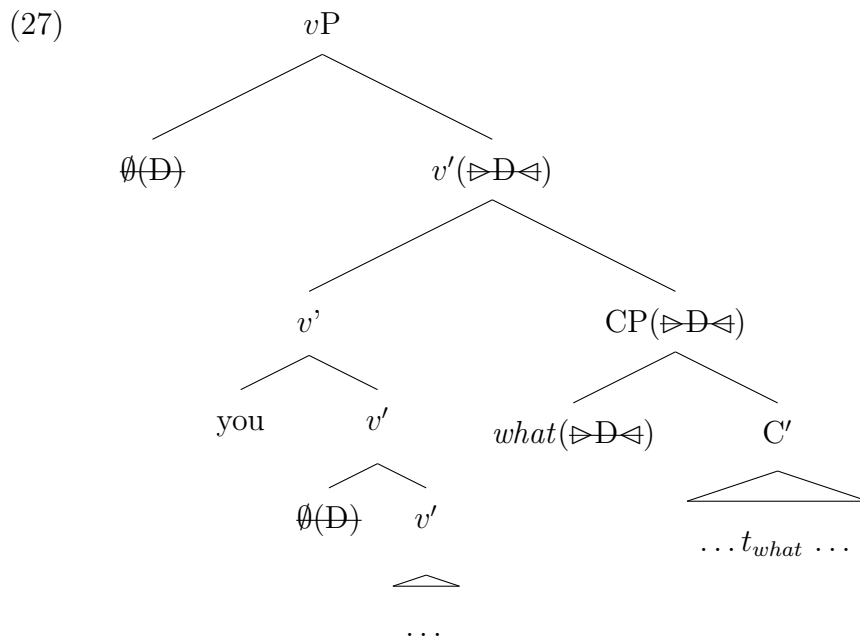
This scenario is, however, prevented by the function of feature percolation discussed above. Feature percolation was introduced above as a mechanism that prevents the crash of a derivation by copying unchecked features from specifiers to projections of their heads. Hence, it is reasonable to assume that not all features percolate but only features which cannot be checked otherwise. This assumption in turn means that simple categorial features like [D] cannot percolate with the consequence that \emptyset_i in (25) must move out of the adjunct in order to enable fusion.

4. The next question that I want to answer is of particular interest: what happens if the original element having fusion features and the duplicate having the matching features are merged in the position of their respective counterpart, that means in the example in (26), *what* is merged with *read*

and \emptyset is merged with *file*.

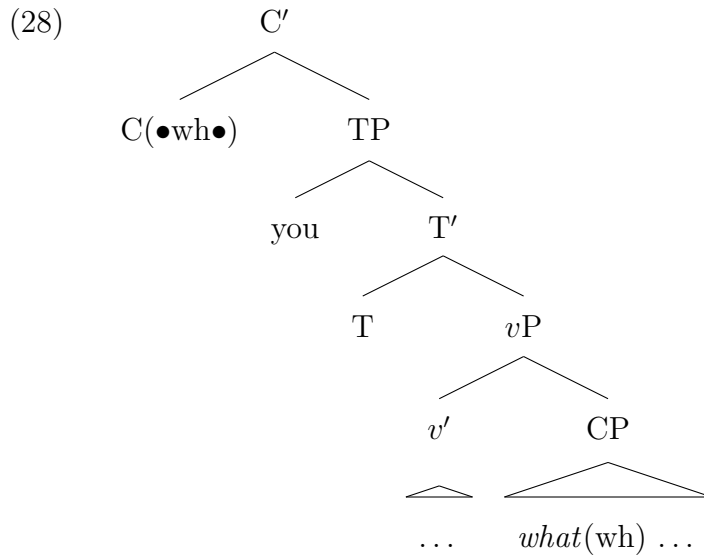
(26) What did you file *t* without reading *pg*?

The derivation of the sentence in (26) would be like in (27). First, *what*, having a fusion feature $[\triangleright D \triangleleft]$ is merged inside the adjunct clause and moved to the edge of the clause. The duplicate \emptyset would be merged in the matrix clause and move to Spec,*v*P. From its specifier position the fusion features of *what* can percolate to CP. Since the adjunct clause is in a specifier position, the fusion features can further percolate to *v*'. Now, an edge feature can be inserted on *v*' and \emptyset can move to a higher specifier position (assuming that such local movement is possible). In this position fusion can take place.



However, even though the fusion operation will be successful, the derivation will crash at a later step. The structure-building feature $[\bullet wh \bullet]$ of the matrix C cannot be deleted because *what* is not accessible for C due to its position in the adjunct.

4.5. QUESTIONS



Hence, the only possibility for a successful derivation is to merge the original D element in the matrix clause and the duplicate in the adjunct clause.¹⁶

5. The last question has a very short answer, but is nevertheless important. The question concerns the optionality of parasitic gaps.

- (29) a. What did you file *t* without reading *pg*?
 b. What did you file *t* without reading it?

In my theory, the difference between the the sentences in (29) arise from different numerations. In case of (29-a) the numeration is defective, and Duplication has to apply and in case of (29-b) a pronoun is already part of the numeration.

This chapter have provided a new theory about parasitic gaps that assumes that parasitic gaps are duplicates of lexical items in the numeration. After

¹⁶Later, we will see that fusion features of the CP cannot percolate from its specifier position in the *vP* because feature percolation is only possible from specifiers that are created by movement. Then, the derivation will crash already at the point where the adjunct is merged and the *vP* phase is completed.

CHAPTER 4. ANALYSIS

having given a detailed analysis of the sentence “*Which article did you file without reading?*”, I have addressed some important questions that results from my assumptions.

The next two chapters of this thesis will discuss evidence for the new theory comparing it with Nissenbaum’s (2000) operator theory.

Chapter 5

Properties of Parasitic Gaps Revisited

In this chapter, I will, again, review the properties of parasitic gaps and compare my analysis to an analysis that uses null operators.

5.1 Overt Movement

The first property of parasitic gaps that I mentioned in section 2.2 was the fact that parasitic gaps must have a licensing gap, i.e. a category which is created by movement in narrow syntax. The data exemplifying this fact are repeated in (1).

- (1) a. *I forget who filed which articles without reading *pg*?

Engdahl (1983:14)

- b. *Who told whom that we were going to vote for *pg*?

Operator theories of parasitic gaps could say that the sentences in (1) are ungrammatical because no movement to Spec,*v*P takes place and so no predicate abstraction of the *v*P. But wh-operators are supposed to move at LF too, so that this explanation fails.

CHAPTER 5. PROPERTIES OF PARASITIC GAPS REVISITED

The explanation Nissenbaum (2000) suggests for the ungrammaticality of the data in (1) is, therefore, much more complex. He suggests that nothing precludes parasitic gaps to be licensed by LF-movement. Data that show this fact are given in (2) (repeated from section 2.2.1).

- (2) a. ?[Which senator]₁ did you persuade t_1 to borrow [which car]₂ [after getting [an opponent of pg_1] to put a bomb in pg_2]?
b. *[Which senator]₁ did you persuade t_1 to borrow [which car]₂ [after putting a bomb in pg_2]?
- (3) a. ?[Which kid]₁ did you give [which candy bar]₂ to t_1 [without first telling [a parent of pg_1] about the ingredients in pg_2]?
b. *[Which kid]₁ did you give [which candy bar]₂ to t_1 [without looking at the ingredients in pg_2]?

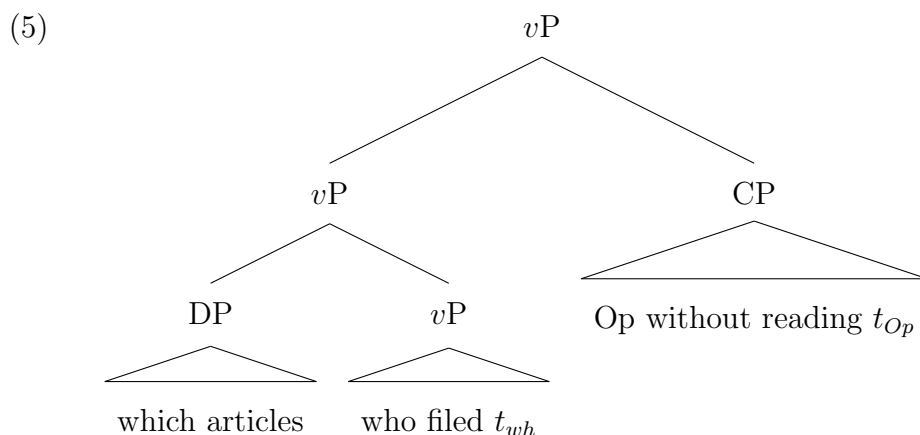
Nissenbaum (2000) argues that movement of any kind results in tucking in (see Richards (1997)). Nissenbaum (2000) summarizes tucking-in by the following condition in (4).

- (4) *Tucking-in Condition* (Nissenbaum (2000:101))

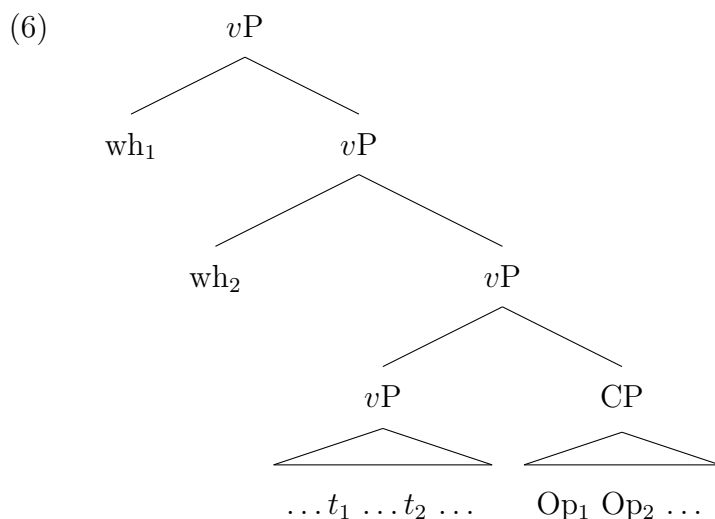
Movement does not extend the tree if an alternative exists (it must tuck in below the outermost segment whenever possible).

So, if wh-phrases are moved to an intermediate position in Spec, vP in order to license parasitic gaps in an adjunct, they must move to a position above the adjunct. This is only possible if movement is realized before the adjunct is merged in Spec, vP . Now, covert movement must necessarily follow overt movement, that is, in sentences like (1), movement of the lower wh-phrase must tuck in below the adjunct. Then, the configuration in which parasitic gaps can be licensed is not given and such sentences must be ungrammatical.

5.1. OVERT MOVEMENT



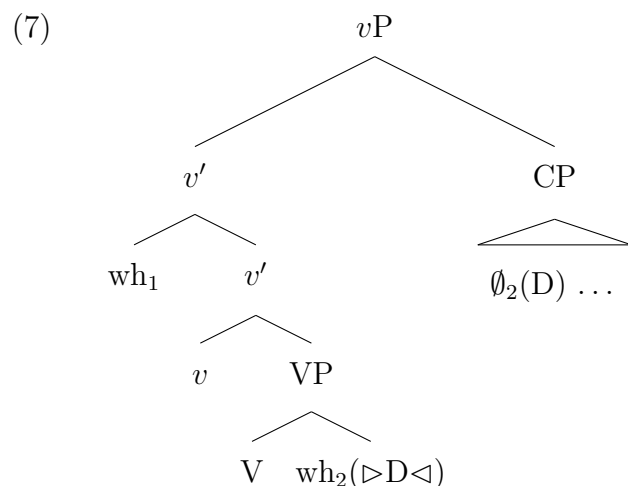
Now, the grammatical sentences like in (2-a) and (3-a) can be explained as follows: First, the higher wh-operator moves overtly to Spec,*vP*. Then, the adjunct containing two parasitic gaps is merged just below the operator. Next, the second wh-phrase is moved to Spec,*vP*. Nissenbaum (2000) suggests that it is not clear into which position the second wh-phrase is tucked in. It could be located right under the first wh-operator yielding the correct structure or under the adjunct where it couldn't license the second parasitic gap. That means that parasitic gaps in multiple questions are only possible if each wh-operator licenses one parasitic gap.



Now, turning to my theory using duplication and fusion as two primitive operations, the data in (1) can be explained just as well. This time, the

ungrammaticality is not an outcome of the semantics, but of the syntax. In (1-a), *which* is the lexical item that is duplicated in the numeration. The derivation is quite similar to the derivation I went through in chapter 4. The only problem now is that the original *which* having a fusion feature [$\triangleright D \triangleleft$] cannot move to Spec,*v*P because of the subject *who*.¹

The consequence of all this is that the duplicated *which* cannot be moved out of the adjunct because this is only possible if there is at least one unchecked feature left on *v*P that enables the insertion of an edge feature. And this feature can only be the [$\triangleright D \triangleleft$] feature of the original *which*.² (All other structure-building and probe features on *v* are already checked and deleted.)



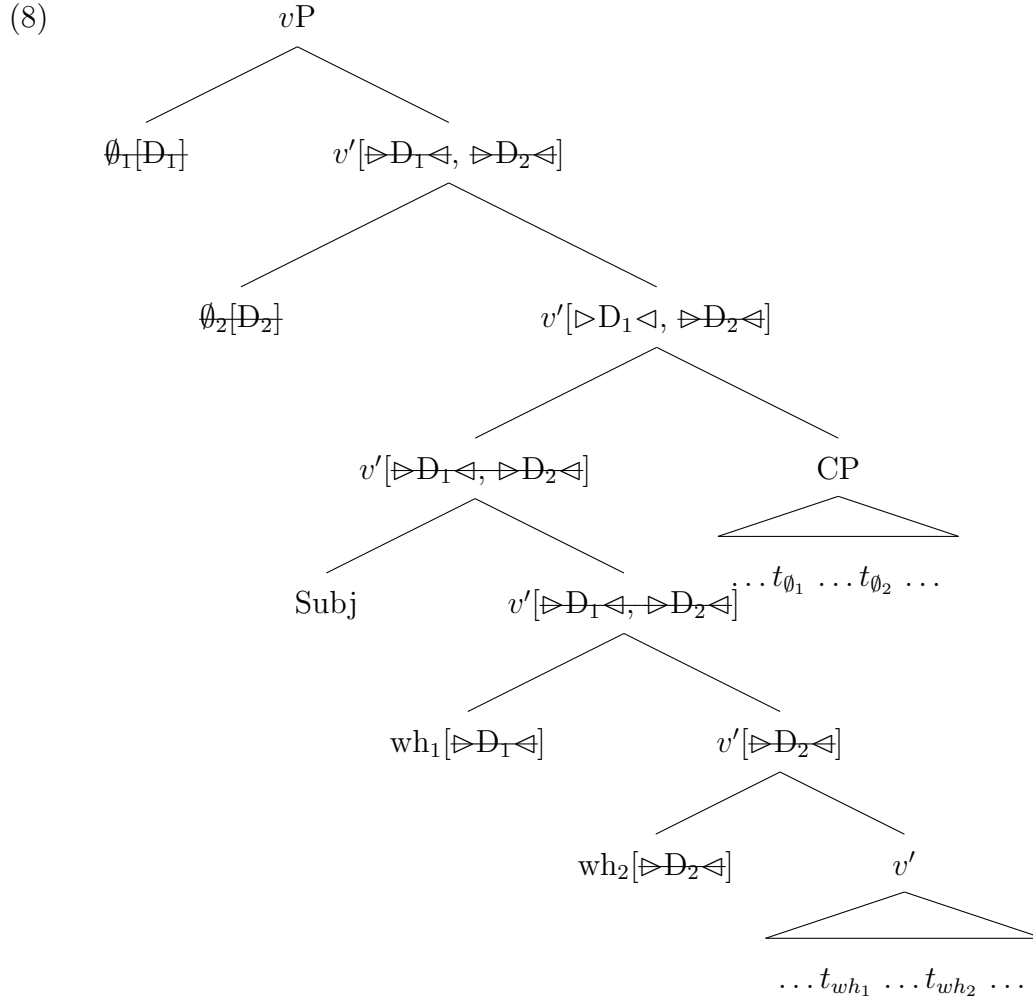
The sentences in (2-a) and (3-a), however, seem to be more problematic for me if I assume that the presence of a *wh*-operator in specifier position of a phase blocks the movement of another *wh*-element. If this is, however, not the case, my new theory is perfectly able to derive the differences in grammaticality: In both sentences, Duplication has to apply twice in the numeration. To ensure a successful numeration, both *wh*-operators have to move to Spec,*v*P and both [$\triangleright D \triangleleft$] features are percolated to (a projection of) *v*. Now, both duplicated

¹The blocking of the movement of *which* to Spec,*v*P could be due to the feature [*wh*] which is present on both the subject and the object.

²Of course, *which* also has features [$\triangleright \varphi \triangleleft$] and [$\triangleright \text{acc} \triangleleft$] that could keep the phase active. This is ignored here because nothing hinges on that.

5.1. OVERT MOVEMENT

elements can be moved out of the adjunct and Fusion can apply twice.³



However, if both objects can move to $Spec, vP$, the ungrammaticality of (2-b) and (3-b) can hardly be explained. This time, only one wh -phrase is duplicated and hence Fusion takes place only once. It is indeed not clear to me what blocks Fusion here.

Nevertheless, leaving the intricate data brought up by Nissenbaum (2000) beside, the two theories make equal predictions for the licensing of parasitic gaps in this aspect.

³This derivation is based on the assumption that Fusion can apply at LF as well.

5.2 Anti-c-command

The next constraint in section 2.2 was the anti-c-command condition first discussed by Chomsky (1982). The constraint says that the true gap may not c-command the parasitic gap.

- (9) a. *Which articles t got filed by John without him reading pg ?
 b. *Who t sent a picture of pg ?

In operator theories, this fact has the following explanation: There cannot be movement inside the vP because the subject, that serves as the antecedent this time, is already in $Spec, vP$. The operator theory has to assume, therefore, that movement from a specifier position to a higher specifier position of a phase head is impossible (maybe because it doesn't change the accessibility status of the element in question). Consequently, the vP sticks to the type t and no predicate modification can take place.

Now, Culicover (2001), citing Haegeman (1984)⁴, notes the following difference between the two sentences in (10).

- (10) a. a note which [unless we send back pg] t will ruin our relationship
 b. *a note which t will ruin our relationship [unless we send back pg]

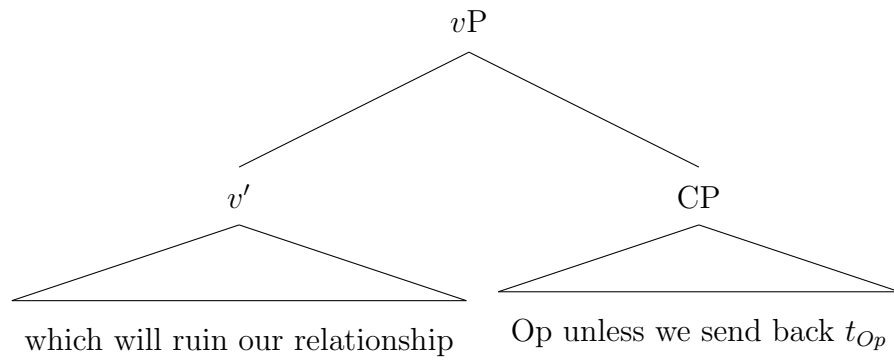
The sentence in (10-a) is grammatical while the sentence in (10-b) is ungrammatical. If the anti-c-command condition of parasitic gaps is right, the sentences in (10) must have different structures. Thus, (10-a) would be good because the adjunct clause is in a structurally higher position than in (10-b) with the consequence that the trace c-commands the adjunct in (10-b) but not in (10-a).

These sentences don't argue against an operator theory but rather fit into this account. Compare the derivation in (11) (derivation for (10-a)) with the derivation in (12) (derivation for (10-b)).

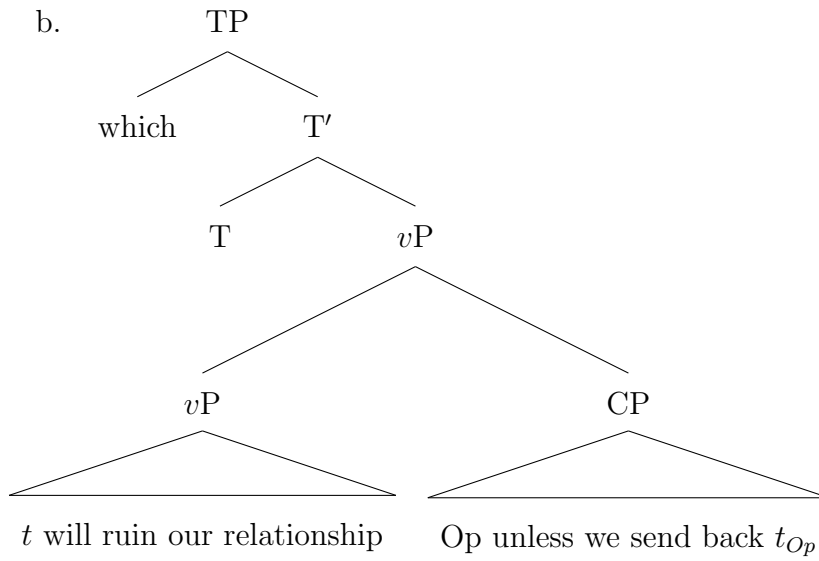
⁴See also Chomsky (1986); Longobardi (1985)

5.2. ANTI-C-COMMAND

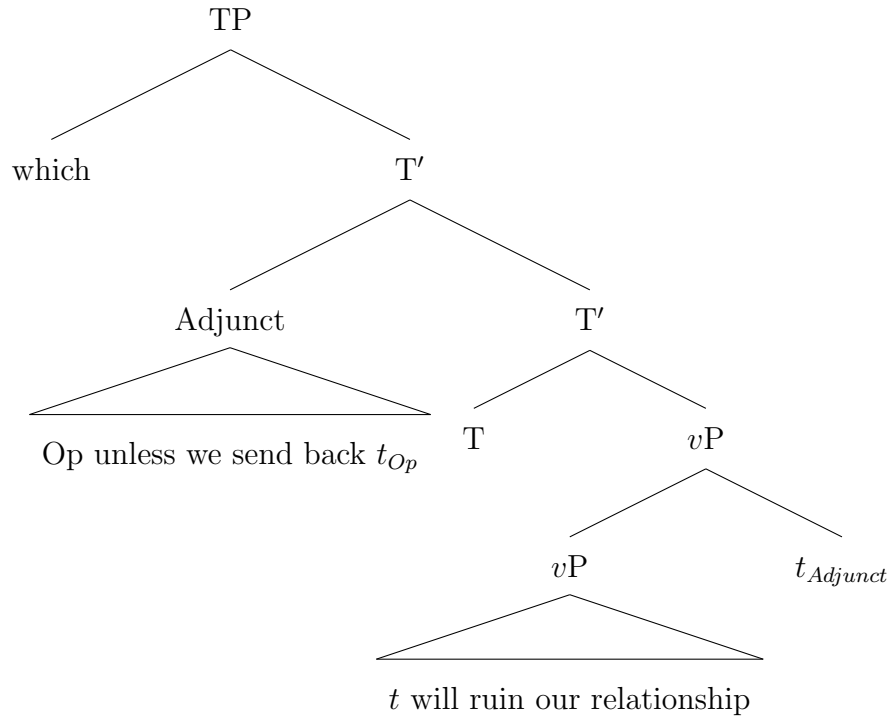
(11) a.

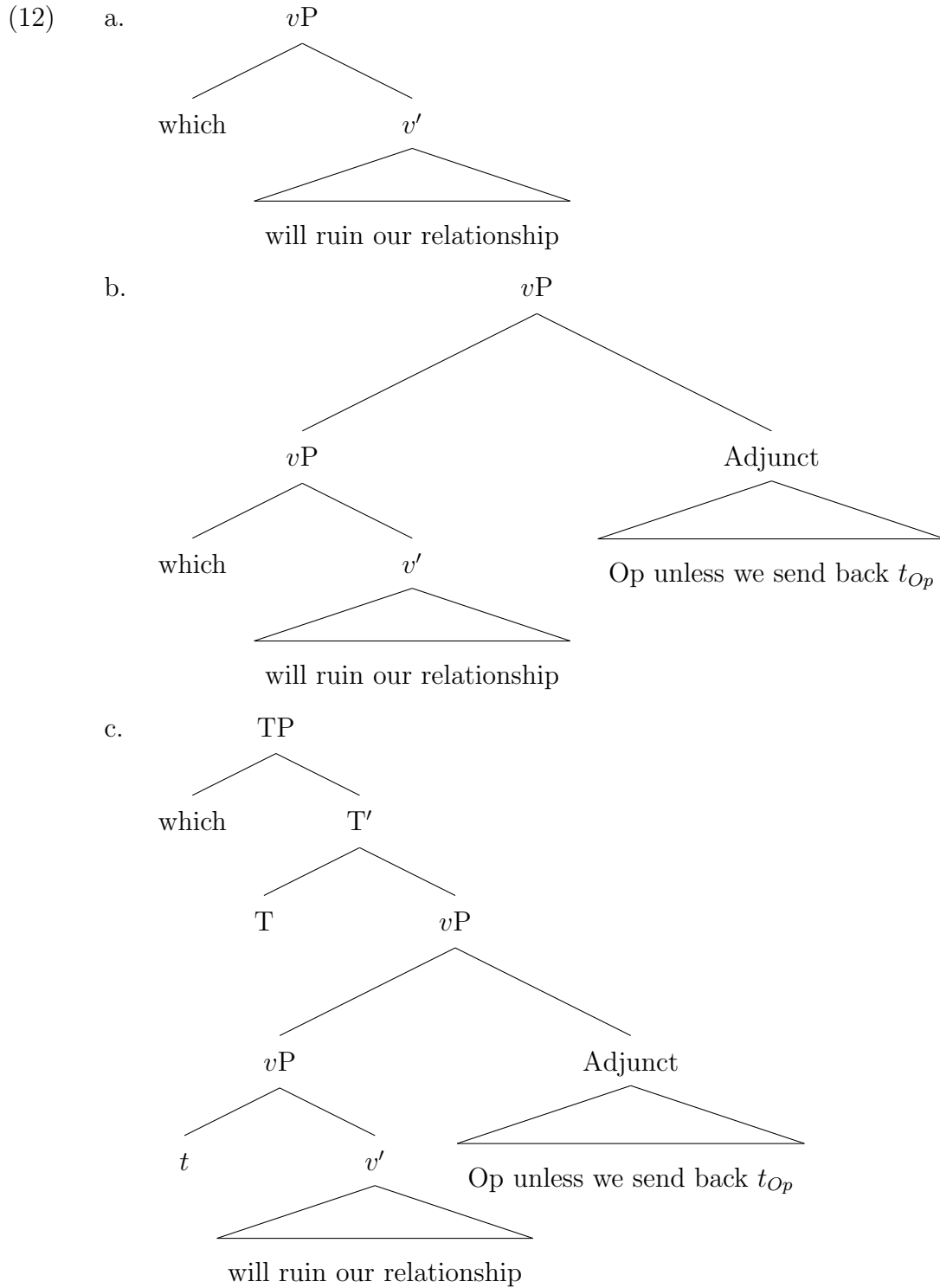


b.



c.





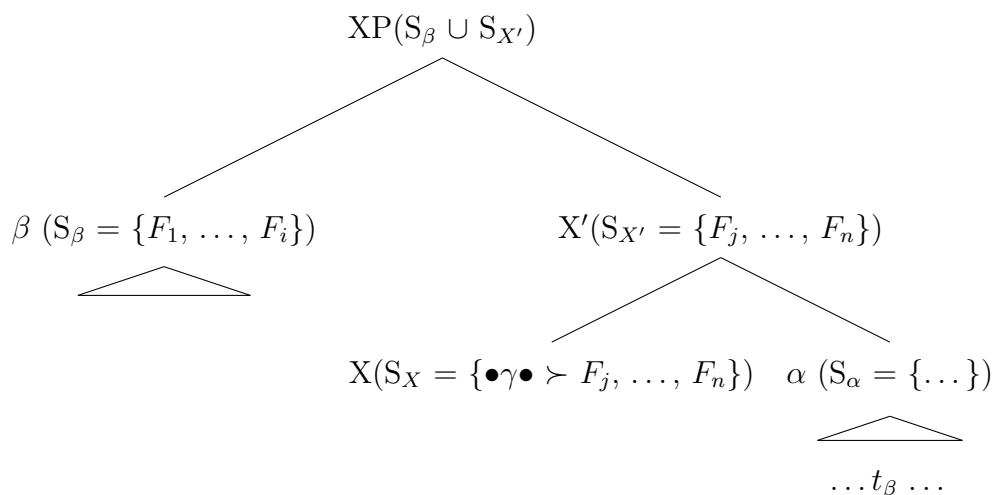
The derivation in (11) yields a structure that allows the licensing of a parasitic gap because the adjunct and the subject are in exactly the same configuration like in the examples before. This time, predicate abstraction and modification

5.2. ANTI-C-COMMAND

takes place in the TP rather than in the vP . In (12), on the other hand, the adjunct clause remains the sister of vP and so, no predicate modification in the TP can take place. In that sense, the constraint of parasitic gaps is no longer an anti-c-command constraint, since the trace in (12-c) doesn't c-command the adjunct, but rather a constraint about type compatibility.

To overcome this dilemma, the definition of feature percolation must be slightly changed.

(13) *Feature List Percolation* (Revised)



The difference to the version in section 4.2 is that, now, features can only be percolated from specifiers that are created by movement.⁵

Now, the data in (9) can be explained. Because the subject is a specifier of v that is created by Merge rather than Move, fusion features cannot percolate to v' .

This also explains why the sentence in (10-b) is ungrammatical. At the point when the adjunct is merged, no fusion feature is present on v and so, the duplicated category cannot be moved out of the adjunct. However, if the subject is moved to CP, the fusion feature can percolate to C because this

⁵This understanding of feature percolation is at odds with the view of Yoon (2001) who explicitly states that features can percolate from any specifier position, i.e., also from base-generated ones.

time, it has been moved to a specifier position. Hence, an edge feature can be inserted on C. Now, if the adjunct clause remains in its position in the *vP* it is not accessible for C. That's why, the adjunct must move up to Spec,TP. Then, the duplicate can be moved out of the adjunct and Fusion can take place. Hence, (10-a) is supposed to be grammatical while (10-b) should be bad.

In sum, the anti-c-command condition cannot distinguish between the two theories. Both theories are able to derive the empirical situation correctly, although the duplication theory needs a modified understanding of feature percolation.

5.3 Island Sensitivity

Next, parasitic gaps are subject to subjacency effects as is shown in the examples in (14).

- (14) a. This is the man [Op John interviewed *t* [before meeting *pg*]]
 b. *This is the man [Op John interviewed *t* [before expecting you to
 leave [without meeting *pg*]] *Chomsky (1986:55)*

This property is clearly a big argument for all movement theories because subjacency violations occur only in movement contexts. Hence, if parasitic gaps were actually (resumptive) pronouns that are bound by the antecedent of the true gap, the number of barriers between binder and bindee should not matter.⁶

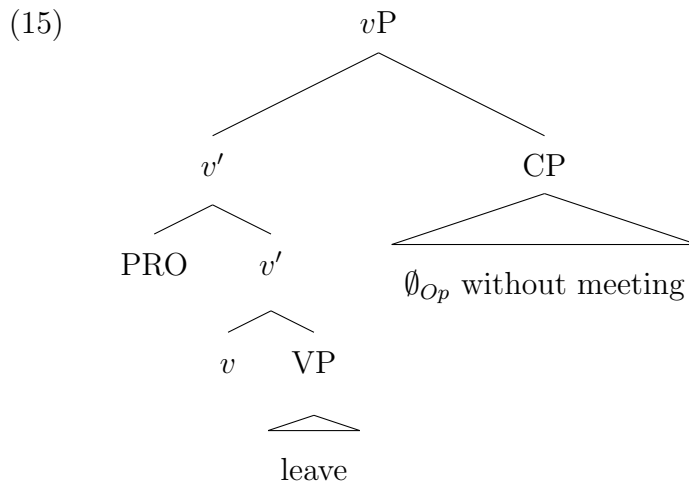
Operator theories assume that an empty operator would be inserted in the complement position of *meet* in (14-b) and then be moved to Spec,CP of the *without*-clause. Now, the *without*-clause being type $\langle e,t \rangle$ would modify the *vP* of *leave* in the *before*-clause where no movement has taken place, i. e., which is

⁶Postal (1994, 1998); Ouhalla (2001), however, assume that pronouns are inserted in the position of parasitic gap and, then, moved to a higher position in the adjunct just like operators.

5.4. \bar{A} -MOVEMENT

type t. Predicate modification is, therefore, impossible and the sentence can have no meaning.⁷

In my theory, the ungrammaticality of (14-b) simply follows from Müller’s system to derive CED-based island effects. More precisely, the duplicate of *Op* would be merged with *meet* but cannot be moved to a position outside of the *without*-clause. The structure is given in (15).



The *without*-clause is merged in the *vP* when all structure-building and probe features are already deleted. And because no fusion features are present on *v'*, since the original item *Op* is later merged in the matrix clause, no edge feature can be inserted on *v'* and thus, no extraction of \emptyset_{Op} out of the *without*-clause can take place. The sentence in (14-b) should, therefore, be impossible.

That means both theories can account for the island sensitivity of parasitic gaps.

5.4 \bar{A} -Movement

The next property of parasitic gaps concerns the position of the antecedent. Only categories in \bar{A} -positions can license parasitic gaps. The sentences in (16)

⁷Alternatively, the operator theories can use a syntactic explanation for subjacency effects.

are, therefore, ungrammatical.

- (16) a. *John was killed *t* by a tree falling on *pg*.
 b. *Mary tried *t* to leave without John's hearing *pg*.
 c. *Mary seemed *t* to disapprove of John's talking to *pg*.

The landing site in all three examples in (16) is Spec,TP. Furthermore, in all three cases, *v* doesn't subcategorize a subject.

Defenders of the operator theory have to assume that no movement to Spec,*v*P takes place in the examples in (16). In the case of raising, no problem occurs since the raised DP is the subject of the embedded clause and so, the raising problem can be subsumed under the anti-c-command condition.

Passive, on the other hand could, pose a problem for this theory since movement from VP to Spec,TP requires a stop-over at Spec,*v*P. Chomsky (2000), however, has suggested that the underlying structure of passive doesn't involve a *v*P, but a bare VP. This would mean that there is no phase head in between and the complement of the verb is directly accessible for T.

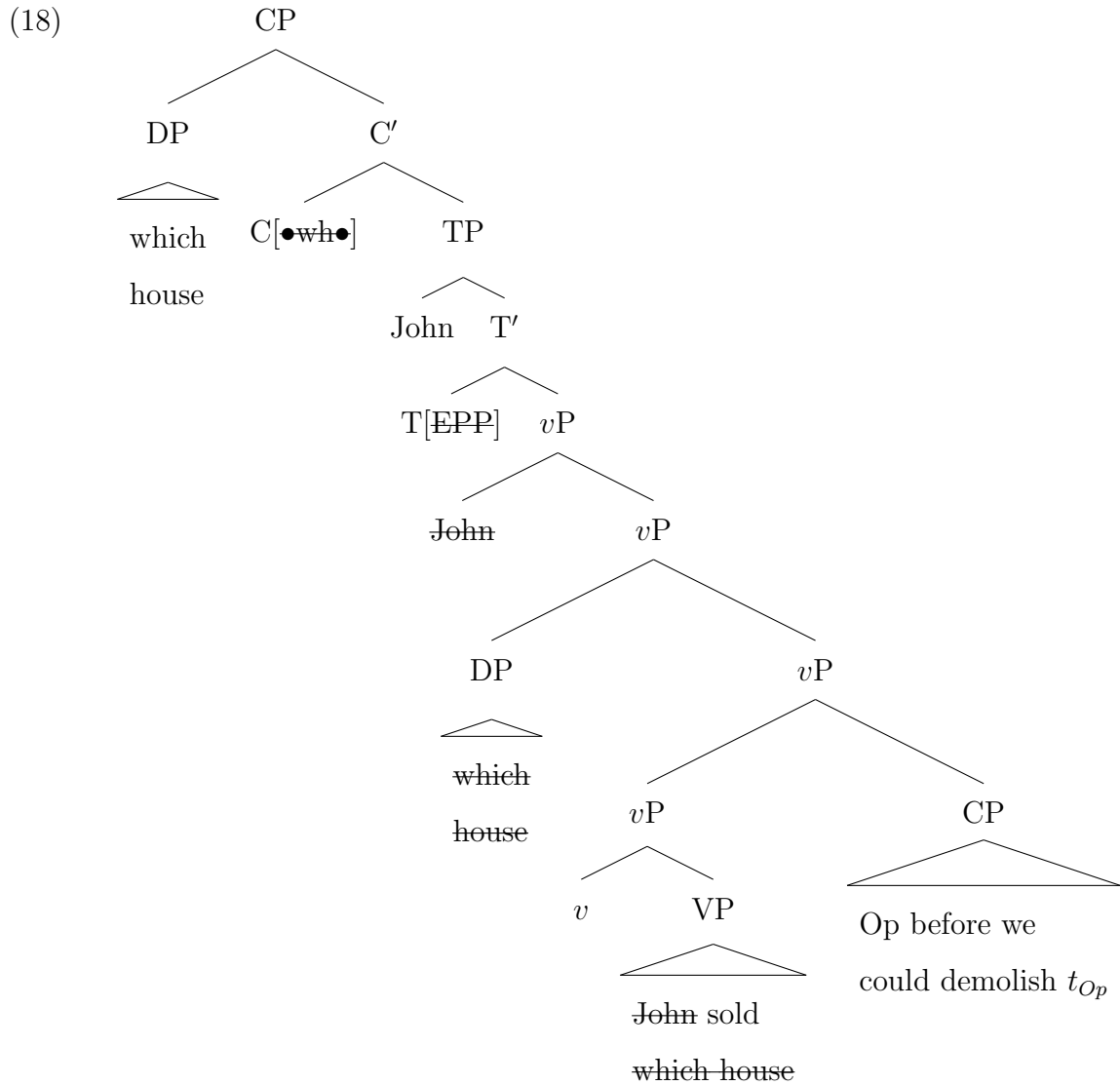
Interestingly, examples like (17) (cf. Legate (2003)) show that passive constructions must involve a *v*P phase, where the wh-operator can stop over in order to license a parasitic gap.

- (17) a. ?Which house did John buy *t* [before we could demolish *pg*]?
 b. ?Which house was John sold *t* [before we could demolish *pg*]?
 c. ?Which story did John show the editor *t* [without anyone verifying *pg*]?
 d. ?Which story was the editor shown *t* [without anyone verifying *pg*]?
Legate (2003:511)

The sentences in (17-b) and (17-d) involve passive movement of the goal as well as wh-movement of the theme. But if the wh-operator can license the parasitic gap in all cases, all structures must be equal except as for passive

5.4. \bar{A} -MOVEMENT

movement, i. e., they must have a v P phase. The structure of (17-b) is given in (18).



But then, operator theories have difficulties in explaining the contrast between (17-b) and (19). Nothing should prevent passivized wh -operators to license parasitic gaps if they intermediately stop at a phase edge. Hence the structures of (19) must be like in (20).

(19) *Which house was sold t [before we could demolish pg]?⁸

- (20) $[_{CP} \textit{which house was} + C [_{TP} \textit{which house was} + T [_{vP} \textit{which house} [_{vP} v [_{VP} \textit{sold which house}]]] [_{CP} \textit{Op before we could demolish } \Theta_P]]]]$

If passive structures, however, involve a phase just like active structures, operator theories cannot explain the ungrammaticality of neither (19) nor (16-a).

My theory, however, makes some interesting predictions with respect to this phenomenon. The answer to the difference between (19) and (17-b) must be due to the feature structure. First, in the numeration, a wh-operator like *which* has the following feature specification.

- (21) $\textit{which} [D, \bullet N \bullet, \varphi, \textit{case}, * \textit{case} *, \textit{wh}, \dots]$

Now, if Duplication applies, the feature specification changes to the one in (22).

- (22) a. $\textit{which} [\triangleright D \triangleleft, \bullet N \bullet, \triangleright \varphi \triangleleft, \triangleright \textit{case} \triangleleft, \textit{wh}, \dots]$
 b. $\emptyset [D, \varphi, \textit{case}]$

The original *which* and its duplicate can now enter the derivation. The structure-building and the probe features of *which* are deleted during the derivation. Now, if Fusion applies to *which* and \emptyset , the remaining feature specification is given in (23).

- (23) $\textit{which} [\textit{wh}, \dots]$

So, the categorial feature of *which* is no longer present. But assuming that the EPP property of T can only be satisfied by categorial features, *which* in (19) cannot delete the EPP feature of T. In (17-b), it is *John* that checks the EPP feature and *which*, still having the [wh] feature, checks [$\bullet \textit{wh} \bullet$] on C.

⁸Thanks to Marc Richards for native speaker judgements and helpful discussion of (17-b) and (19).

5.5. REFERENTIAL NOMINALS

Hence, (17-b) is correctly predicted to be grammatical while (19) must be ungrammatical.

In sum, the property that parasitic gaps cannot be licensed by passive is mysterious under operator theories but is naturally explained under the duplication theory.

5.5 Referential Nominals

The third property that I listed relates to the sentences in (24) (repeated from section 2.2.5).

- (24) a. *Sick_i though Frank was *t_i*, without looking *pg_i*, he didn't visit a physician.
b. *How₂ did Deborah cook the pork *t₂* after cooking the chicken *pg₂*?

Cinque (1990) has claimed that parasitic gaps have to be referential nominals. Thus, the sentences in (24) must be ungrammatical. This property, if true, poses a serious problem for both theories since it cannot be derived without additional assumptions about operators or the type of lexical items that can be duplicated.⁹

However, as I have already mentioned, this constraint on parasitic gaps is not uncontroversial. Some of the data, that argue the converse are repeated in (25).

- (25) a. How harshly do you think we can treat them *t* without in turn being treated *pg* ourselves?

⁹Nunes (2001) suggests that the compatibility only with NPs is not restricted to parasitic gaps:

“The fact that the restrictions in (i) [*Parasitic Gaps can only be licensed by (nonreferential) NPs*] are also found in constructions involving *wh*-phrases in situ suggests that they should be viewed as general conditions on operator-variable constructions, rather than specific properties of parasitic gap constructions [...]” (Nunes (2001:325,fn. 32))

- b. That's the kind of table on which it would be wrong to put expensive silverware *t* without also putting *pg* a fancy centerpiece.
- c. I wonder just how nasty you can pretend to be *t* without actually becoming *pg*.
- d. [That Robin is a spy] would naturally be difficult to refute *t* without (someone) having conjectured *pg*.

Levine et al. (2001:185)

So, the status of this constraint is not quite clear to me and the constraint we are faced with here is perhaps much more complex than a simple categorial one.¹⁰ If Levine et al. (2001) are right and parasitic gaps can be licensed by any category, the constraint about referentiality is harmless for both theories.

5.6 Antipronominal Contexts

Next, antipronominal contexts, as observed by Cinque (1990) and Postal (1993), are not compatible with parasitic gaps. Some of the sentences that exemplify this incompatibility are repeated in (26).

- (26) a. It was *her/HER that the drug helped.
- b. *Which child did everyone who believed it was *pg* that the drug had helped see *t* the hospital?
- (27) a. Mirabelle dyed her sheets purple/*it.
- b. *the color that everyone who dyed their sheets *pg* praised *t*.

This property is really puzzling if parasitic gaps are *not* empty pronouns. Obviously, operator theories can hardly handle this fact. But theories that

¹⁰See Levine et al. (2001) for details. They bring up the idea that the putative ungrammaticality of non-nominal parasitic gaps is due to the working memory. They cite Kluender (1998) who has shown that referential fillers remain longer in the working memory than non-referential fillers.

5.6. ANTIPRONOMINAL CONTEXTS

simply identify parasitic gaps with empty pronouns get a problem with data which show that also the licensing gap may not occur in an antipronominal context.

- (28) *Which child did everyone who saw *pg* believe it was *t* that the drug had helped *t*?

A clear solution to this problem has, however, not been found yet. Postal, who recognized this problem, also tries to find a solution. In fact, he even offers two solutions.

Postal (1998) distinguishes two types of extractions in English: *A-extraction* and *B-extraction*. B-extractions (topicalization, clefting and nonrestrictive relative extraction) are incompatible with antipronominal contexts. Postal, therefore, concludes that B-extraction always involves the insertion of a resumptive pronoun. However, there remains the question why the sentence in (29) is ungrammatical.

- (29) *[How many spies] did the committee include *t* before the secret police eliminated *pg*?

Here, wh-extraction from an antipronominal context (*include someone/*it*) took place which is actually an A-extraction. Postal (1998), therefore, suggests that every extraction that licenses a parasitic gap is a B-extraction.

Postal (2001), however, rejects this idea, since there is no further evidence for this stipulation and, furthermore, it doesn't suffice to explain subtle differences between antipronominal contexts. There are antipronominal contexts which are compatible with licensing but not with parasitic gaps.

- (30) a. *What situation did no one [who minded *pg*] discuss *t*?
b. What situation did no one [who discussed *pg*] mind *t*?

CHAPTER 5. PROPERTIES OF PARASITIC GAPS REVISITED

Therefore, Postal (2001) dispenses with his old theory and suggests that the complex behaviour of parasitic gap constructions towards antipronominal contexts can be better explained in *Metagraph Grammar*. (See Postal (2001) for details.)

The exact nature of antipronominal contexts is, however, still unclear. Postal (2001) remarks that verbs like *mind* s-select features that contradict the features of pronouns. That means in general, some of the antipronominal contexts can be explained on semantic grounds.

Levine et al. (2001:193f.) discuss this aspect of parasitic gaps extensively. Their conclusion is that the evidence showing that parasitic gaps (and licensing gaps) are incompatible with antipronominal contexts is not conclusive. They quote grammatical examples for different antipronominal contexts in which parasitic gaps can occur.

(31) *Second dative object*

- a. *I sent Robin it for his birthday.
- b. I found a really nice card that I decided to keep *t* for myself [instead of sending Robin *pg* for his birthday].

(32) *Color context*

- a. *We painted the walls it.
- b. Mint green is a color that you might paint your ceiling *t* [without necessarily wanting to paint the surrounding walls *pg*].

(33) *Predicate nominals*

- a. *Robin wants to be a doctor but I don't think he'll ever become it.
- b. Anybody can become a bureaucrat, but a doctor, one could spend one's whole life studying to be *t* [without ever becoming *pg*].

(34) *Specialized spatial/locative contexts*

- a. *He talked a lot about the Greek Army but had never entered it.

5.7. NO REFLEXIVES OR RECIPROCAL

- b. The Greek Army is one national service that I would certainly want to assess carefully before entering.

To me, these data seem to be convincing to prove that the incompatibility of parasitic gaps with antipronominal contexts is much more complex than Postal claims it to be. What factors play a role for this exactly is still obscure and hence, this property can be no real counterevidence for both the operator and the duplication theory.

5.7 No Reflexives or Reciprocals

The next property of parasitic gaps is, again, very mysterious: parasitic gaps cannot be licensed by categories that are subject to binding principle A, i.e. reflexives and reciprocals. The relevant data are repeated in (35).

- (35) a. *Himself₁, Mike₁ praised *t* after PRO₁ describing *pg*₁ to Mary.
- b. *It was herself₁ that₁ PRO₁ studying *pg*₁ led Sonia₁ to appreciate *t*₁.
- c. *Himself₁, I talked to John₁ about *t*₁ after describing him₁ to *pg*₁.
- (36) a. Each other₁, they₁ (never) praised *t*₁.
- b. *Each other₁, they₁ (never) praised *t*₁ after PRO₁ describing *pg*₁.
- c. *It was each other₁ that₁ their₁ getting to know *pg*₁ led them₁ to respect *t*₁.

This property is clearly problematic for operator theories of parasitic gaps and is, probably therefore, not noted in these analysis.¹¹

Let's discuss the possibilities of the duplication theory. The ungrammaticality of the sentences in (35) and (36) cannot be accounted for in my theory. Let's have a look at the sentence in (35-a). Here, it is the reflexive *himself* that

¹¹In fact, the only source of information for these data is, to my knowledge, Postal (2001).

is duplicated. If binding is an instance of Agree, as Fischer (2004) (see also Fischer (2006)) has proposed, *himself* has a feature specification as in (37).

(37) *himself*[D, φ , *case*, top, β , ...]

The binding feature β will be the goal for a feature [$*\beta*$] located on the binder of *himself*. Now, let's assume that only *John* has a feature [$*\beta*$]. Then, the duplicate of *himself* would not have a binding feature and couldn't be bound. So far, so good. Nevertheless, whether the binding feature is copied or not shouldn't determine the success of the derivation.

Even worse, Fischer (2004) assumes that elements that possess a feature [β] can also have a feature [$*\beta*$]. If this is the case, PRO has a feature [$*\beta*$] and the binding feature of *himself* is duplicated as well.

That means, the fact that reflexives and reciprocals cannot be antecedents for parasitic gaps is still unexplained.

But in the face of all theories having problems with these data, it is not a drawback neither of the duplication nor of the operator theory.

5.8 Antipassivizability

The next property of parasitic gaps is that they are not compatible with antipassivization contexts. The example from section 2.2.8 is repeated in (38).

- (38)
- a. Their relations involved abuse.
 - b. *Abuse was involved by their relations.
 - c. [What kind of abuse] did their relations involve *t*?
 - d. [What kind of abuse] did his constantly discussing *pg* suggest that their relations involved *t*?
 - e. *[What kind of abuse] did your discovering that their relations involved *pg* lead him to discuss *t*?
 - f. *[What kind of abuse] did their relations lead to condemnation of *t*

5.9. MULTIPLE WH-QUESTIONS

without involving *pg*?

Postal (2001:224)

However, as it is not clear what factors lead to the impossibility of parasitic gaps to occur in these contexts, I cannot provide an answer to this problem nor — I think — can any other theory about parasitic gaps.

5.9 Multiple Wh-Questions

The next property of section 2.2 was the observation of Kim and Lyle (1996) that parasitic gaps may not occur in multiple questions.

- (39) a. Which parcel₁ did you give *t*₁ to Susan without opening *pg*₁?
b. *Which parcel₁ did you give *t*₁ to whom without opening *pg*₁?

A similar set of data has already been discussed in section 5.1. Nissenbaum (2000) has provided the sentence in (40-b) which corroborate this observation.

- (40) a. ?[Which kid]₁ did you give [which candy bar]₂ to *t*₁ [without first telling [a parent of *pg*₁] about the ingredients in *pg*₂]?
b. *[Which kid]₁ did you give [which candy bar]₂ to *t*₁ [without looking at the ingredients in *pg*₂]?

The only difference between (39-b) and (40-b) is that in (39-b), the parasitic gap corresponds to the overtly moved wh-operator while in (40-b), the parasitic gap belongs to the non-moved operator.

So, the ungrammatical sentence in (39-b) should be derived, according to Nissenbaum (2000), as in (41).

- (41) a. [_{vP} which parcel₁ [_{VP} *t*₁ give to whom]]
b. [_{vP} which parcel₁ [_{CP} Op without opening *t*_{Op}] [_{VP} *t*₁ give to whom]]
c. [_{vP} which parcel₁ whom₂ [_{CP} Op without opening *t*_{Op}] [_{VP} *t*₁ give to *t*₂]]

However, Nissenbaum (2000) doesn't exclude the possibility of *whom* being merged below the adjunct.

- (42) [_{vP} which parcel₁ [_{CP} Op without opening t_{Op}] whom₂ [_{VP} t_1 give to t_2]]

This possibility is necessary to derive sentences like (43) where the lower object is overtly moved to Spec,*vP*.

- (43) ?[Which kid]₁ did you give [which candy bar]₂ to t_1 [in order to impress pg_1]?

Therefore, Nissenbaum (2000) cannot account for (39-b).

And just like in section 5.1, I cannot provide an answer to this problem. The duplication theory predicts all sentences involving overt wh-operator movement to enable parasitic gaps. Hence, (39-b) and (43) should be both grammatical.

5.10 Reconstruction

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Finally, the last property of parasitic gaps is asymmetrical reconstruction. The data are repeated below.

- (44) a. [Which books about himself]₁₂ did John₁ file t_2 before Mary read pg_2 ?
 b. *[Which books about herself]₁₂ did John file t_2 before Mary₁ read pg_2 ? *Kearney (1983)*

This property is predicted by both theories. First, if parasitic gaps are operators, they refer to the whole DP *which books about himself* rather than to *himself*.

In my theory, this behaviour is expected because, the only item that is

5.10. RECONSTRUCTION

duplicated is *which*. Thus, only the duplicate of *which* is merged in the adjunct clause. Furthermore, because of Fusion the duplicate cannot be reconstructed into the adjunct clause. Therefore, the two theories are again equal in this respect.

One thing should be mentioned, though. Munn (1994) noticed that what appears to be simply the impossibility of reconstruction into an island, is indeed much more complicated.

- (45) a. *Which picture of herself did every boy who saw *pg* say Mary liked *t*?
- b. Which picture of himself did every boy who saw *pg* say Mary liked *t*?

Munn (1994) claims that reconstruction depends on the relative position of the gap. That is, if the parasitic gap follows the licensing gap (cf. (44)), the antecedent will be reconstructed into the licensing gap. If, however, the parasitic gap precedes the licensing gap (cf. (45)), the antecedent will be reconstructed into the parasitic gap.

If this is true, both theories fail to explain the ungrammaticality of (45-a).

Summarizing this chapter, we have seen that the new theory of parasitic gaps doesn't have any big disadvantage over operator theories of parasitic gaps. In most aspects considered so far, both theories make the same predictions about the properties of parasitic gaps, that is either they can both derive the behaviour or they both can't. An interesting difference between the two theories regards passive structures. While the operator theory is unable to explain why simple passivized categories cannot license parasitic gaps, I have shown that because of duplication and fusion, passivized categories lose their categorial features before they can check EPP on T. Hence, passive movement cannot license parasitic gaps.

CHAPTER 5. PROPERTIES OF PARASITIC GAPS REVISITED

The next chapter will provide further empirical evidence why the new theory is superior to theories that assume empty operators.

Chapter 6

More Empirical Evidence

The aim of this chapter is to show that operator theories are not adequate to describe the behaviour of parasitic gaps. The evidence for this will be threefold: First of all, I will show that the parasitic and the licensing gap have to be identical in certain features which is expected under the duplication theory but unexpected under the operator theory. Secondly, I will show that operator theories are semantically inadequate for all contexts where parasitic gaps can occur except for adjuncts. Finally, I will discuss the behaviour of duplicated items before and after Fusion.

6.1 Identity Restrictions for the Duplicate

The first type of evidence is well known and goes back to Kiss (1985). She has shown that the parasitic and the licensing gap have to have the same case feature.¹

¹In fact, case identity means morphological case identity. Franks (1993) shows that in Russian, case identity can be violated if the morphological form of the antecedent is syncretic and encompasses the different cases of the parasitic and the licensing gap.

- (i) a. mal'čik, *kotoromu/*kotorogo Maša davala den'gi *t* do togo,
boy who.DAT/GEN Masha.NOM gave money *t*.DAT until
kak (ona) stala izbegat' *pg*
(she) started to-avoid *pg*.GEN

CHAPTER 6. MORE EMPIRICAL EVIDENCE

This fact is shown in (1) and (2) for Hungarian (Kiss (1985)) and German (Kathol (2001)).

- (1) a. [FP Milyen iratokat tettél el *t* [CP mielőtt
 what papers.ACC you.put away before
 elolvastál-volna *pg*]]
 you.had.read
 “What papers did you put away before you had read?”
- b. *[FP Milyen iratok veszték el *t* [CP mielőtt elolvastál-volna *pg*]]
 what papers got.lost away before you.had.read
 “What papers did you put away before you had read?”
- c. [FP Milyen iratokat gondoltál [CP mielőtt elolvastál-volna
 what papers.ACC you.thought before you.had.read
pg] [CP hogy nem szeretnél [CP ha elvesznének *t*]]
 that not you.would.like if got.lost
 “What papers did you think before reading that you would not like
 if were lost?”
- (2) a. *Hans hat seiner Tochter [ohne *pg* davon zu
 Hans has his daughter.DAT without thereof to
 informieren] DM 100 überwiesen.
 inform DM 100 wired
 “Hans wired his daughter 100 DM without telling her of it.”
- b. *Hans hat seine Tochter [ohne *pg* Geld zu geben]
 Hans has his daughter.ACC without money to give
 unterstützen können.
 support could
 “Hans was able to help his daughter without sending her money.”

The Hungarian data in (1) show that sentences with parasitic gaps are only

“the boy who Masha gave money to until she started to avoid him”

- b. *devuška, kotoroj Ivan daval den'gi t do togo, kak*
 girl who.DAT/GEN Ivan.NOM gave money until *t*.DAT (he) started
 (on) stal izbegat' *pg*
 to-avoid *pg*.GEN
 “the girl who Ivan gave money to until he started to avoid her”

An answer to this problem is to assume that case features are already decomposed in the numeration and that the case marker in (i-b) is underspecified. If decomposition of case features is legitimate, case identity is not violated.

6.1. IDENTITY RESTRICTIONS FOR THE DUPLICATE

acceptable if both the parasitic and the licensing gap have the same case. This is true for (1-a) where both have accusative case. In (1-b), on the other hand, the licensing gap is nominative while the parasitic gap is accusative. Finally, in (1-c) the situation is similar to (1-b) but with the difference that the licensing gap's case is changed from nominative to accusative case during the derivation. (This case change is optional in Hungarian.)

The German sentences in (2) confirm the claim that both gaps have to have the same case. In (2-a) the antecedent of both gaps has dative case which is incompatible with the verb *informieren* which governs accusative case. In (2-b), the antecedent is, now, accusative which is the case of the real gap this time but not of the parasitic gap.

Kiss assumes that sentences with parasitic gaps involve only one antecedent which is the head of two chains. (This could be the case if one assumes the chain composition mechanism of Chomsky (1986) or the theory of Frampton (1990).) She suggests the condition in (3) which she claims to be a natural consequence of the case properties of \bar{A} -chains given in (4).

(3) In a parasitic gap construction, the Case of both the real gap and the parasitic gap must be properly transmitted to the phonologically realized operator.

(4) *Case marking in \bar{A} -chains*

- a. A transitive V case-marks its noun phrase object or the noun phrase occupying the specifier of its sentential object, whether the target noun phrase is empty or lexically filled. (Case marking is optional, unless forced by the Case Filter.)
- b. In an \bar{A} -chain, Case is inherited successive cyclically.
- c. If an element of an \bar{A} -chain is both Case marked by a Case assigner and inherits a Case, the more marked one of the two Cases is realized.

So, minimalist operator theories have to assume Chain Composition or similar mechanisms and the assumptions about case marking in chains to derive the case identity property of parasitic gaps. However, such mechanism haven't been proposed by Nissenbaum (2000) who argues that parasitic gaps are exclusively licensed at LF.²

Turning to the Duplication theory of parasitic gaps, the case identity requirement is a natural outcome of my theory.

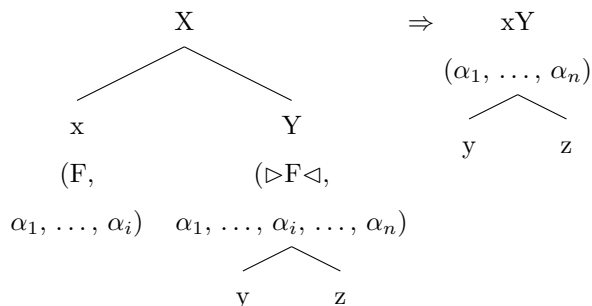
Since case features are already present in the numeration and duplication is copying of features, the duplicate must have the same case feature as the original lexical item.^{3,4}

Beside case, such features are definiteness and animacy. Definiteness is a feature that is morphologically overt in Hungarian. The following data is due to Kiss (1985).

²In fact, case marking should not matter at all according to Nissenbaum (2000) since case marking is a property of narrow syntax and not of LF. Thanks to Philipp Weisser for strengthening this position.

³Somewhat more complicated is the theory if case features are the outcome of feature valuation. The only way out here is to assume that the case feature of the antecedent is percolated together with the fusion features. Thus, Fusion must be revised.

(i) *Fusion* (Revised Version)



Now, Fusion is restricted by the condition that the goal of Fusion must be identical in a subset of features to the node bearing the Fusion feature.

⁴The duplication theory, however, predicts (1-c) to be impossible since the two case features differ at the point where the two elements are merged. Thus, a theory assuming feature valuation would be perhaps more suitable.

6.1. IDENTITY RESTRICTIONS FOR THE DUPLICATE

- (5) *<sub>[FP Kiket szeretnél [CP ha eljnnék t [PP
 Who.PL.ACC[-DEF] you.would.like if came
 anékül [CP hogy meghívod pg]]]]
 without.it that you.invite[+DEF]
 “Whom would you like if came without having invited?”</sub>

In (5), *meghívod* agrees with a definite object while the antecedent *kiket* is indefinite. If definiteness is a feature already present in the numeration, it is excepted under my theory that both instances of *kiket* should have the feature [+DEF]. Hence, the agreement marking in (5) can never come off.

Another feature that should presumably matter is animacy. Compare the German sentences in (6).

- (6) a. Was hat er ohne zu kennen gemocht?
 what has he without to know liked
 “What did he like without knowing?”
 b. *Was hat er ohne zu mögen geheiratet?
 what has he without to like married
 “What did he marry without liking?”
 c. *Was hat er ohne zu heiraten gemocht?
 what has he without to marry liked
 “What did he like without marrying?”

The sentences in (6) should illustrate that the two gap positions must agree in animacy. The two verbs in (6-a), *kennen* (‘to know’) and *mögen* (‘to like’), both select animate as well as inanimate complements. Thus, the sentence in (6-a) is grammatical with the inanimate wh-phrase *was*. In contrast to that, the verb *heiraten* (to marry) only selects animate (and human) objects.⁵ Now, while (6-b) is predicted in both the operator and the duplication theory, (6-c) definitely is a problem for operator theories. The reason is the following one: In (6-b) and (6-c), defenders of the operator theory would assume an empty

⁵Actually, it is possible to combine an inanimate object with marry but this is unambiguously understood as insult to the bride or the groom. This reading is not favoured here.

operator in the object position of the *ohne*-adjunct while the object of the matrix verb is the antecedent *was*. Since *was* is inanimate, it is incompatible with *heiraten* and so (6-b) is definitely impossible. But in (6-c), *was* is merged with *mögen* and the empty operator with *heiraten*. Now this should be possible because empty operators are not supposed to be specified for animacy. Evidence for this comes from English *that*-relative clauses like in (7).

- (7) a. the man [Op₁ that I don't like t_1]
 b. the book [Op₁ that I don't like t_1]

The general view of *that*-relative clauses is that they involve an empty operator which is the null equivalent of *which* and *who*. But, as the examples in (7) show, the operator is compatible with both animate and inanimate noun phrases. So, it is the operator theory's task to prove the existence of two types of empty operators — animate and inanimate ones.

The data in (6) is, however, a natural consequence of the duplication operation in section 4.1. Let's assume, animacy is a feature which is part of the lexicon. Then, this feature is already present in the numeration (just like case). Hence, the item that is duplicated and the duplicate must have the same animacy feature. So, the verbs must be comparable in respect to their s-selection properties to which animacy clearly belongs.

In sum, this section has shown that identity restrictions on parasitic and licensing gaps distinguish both theories. Operator theories cannot derive the effects without additional assumptions while duplication easily explains the desired effects as long as all features are already present in the numeration.

6.2 Parasitic Gaps in Other Constructions

In this section, I will discuss the adequacy of the operator theory of Nissenbaum (2000) in respect to parasitic gaps that occur in relative clauses, subjects and

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complement clauses comparing my account using Duplication and Fusion with the operator account of Nissenbaum (2000). According to Engdahl's (1983) accessibility hierarchy for parasitic gaps (see section 2.1.1), these are domains that make sentences with parasitic gaps less acceptable in general, that is they are low on the hierarchy. Nevertheless, even if the sentences under consideration are at best marginal, they provide another testing ground for both theories.

6.2.1 Relative clauses

The first construction that I want to consider in this section are relative clauses. Examples of parasitic gaps in relative clauses in various languages are given in (8).

(8) *English*

This is a man that people [_{CP} who meet *pg*] really like *t*.

Parker (1999:17)

(9) *Dutch*

Dit is het artikel waar ik *pg* over zei dat Harry een reactie *t* op
this is the article where I about said that H. a reaction to
moest schrijven.
should write

“This is the article about which I said that Harry should write a reaction to.”
*Bennis and Hoekstra (1985:75)*⁶

(10) *Swedish*

- a. Räkna upp de filmer som [_{NP} alla [_S som sett *pg*]]
List of those films that everyone who has seen
tyckte bra om *t*
liked a lot .
“list of thos films that everyone who has seen liked a lot”

⁶Cited by Parker (1999)

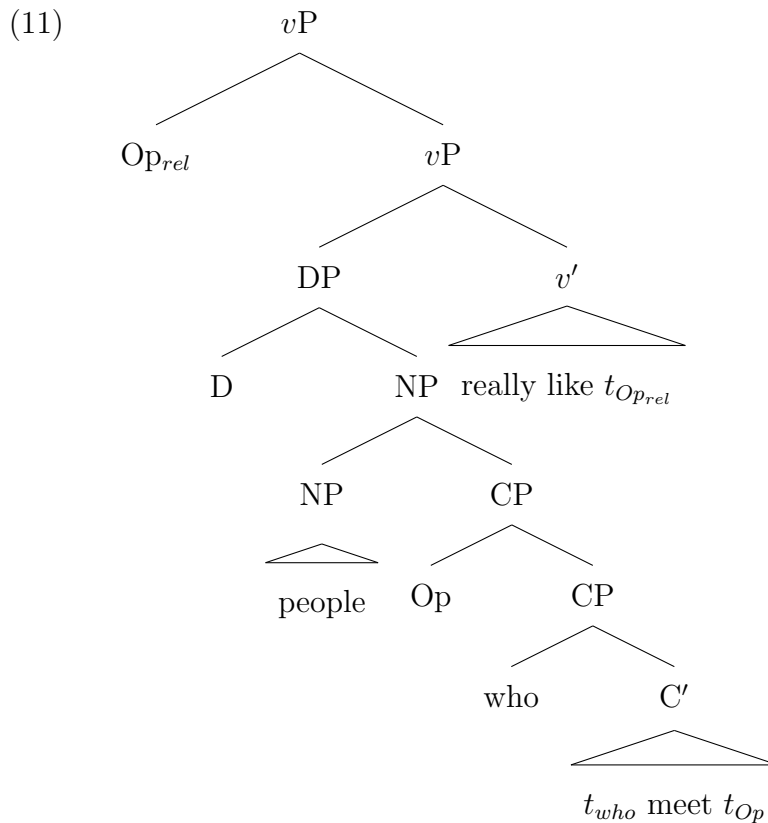
CHAPTER 6. MORE EMPIRICAL EVIDENCE

- b. Kalle är en kille som [NP ingen [S som träffat pg]] kan
 Kalle is a guy who no one who (has) met can
 tåla *t*.
 stand
 “Kalle is a guy who no one who has met can stand.”

Engdahl (1983:17)

Before turning to my theory, I want to derive the sentence in (8) by means of operators.

The structure of (8) is given in (11).



Now, this derivation will definitely yield a semantic crash because of type mismatches inside the DP. The movement of the relative pronoun *who* and the null operator *Op* causes predicate abstraction twice. The relative clause will, therefore, have the type $\langle e, \langle e, t \rangle \rangle$ while the noun phrase has the type $\langle e, t \rangle$. That means neither predicate modification nor functional application can be used to determine the type of the modified NP. Thus, the sentence can have no

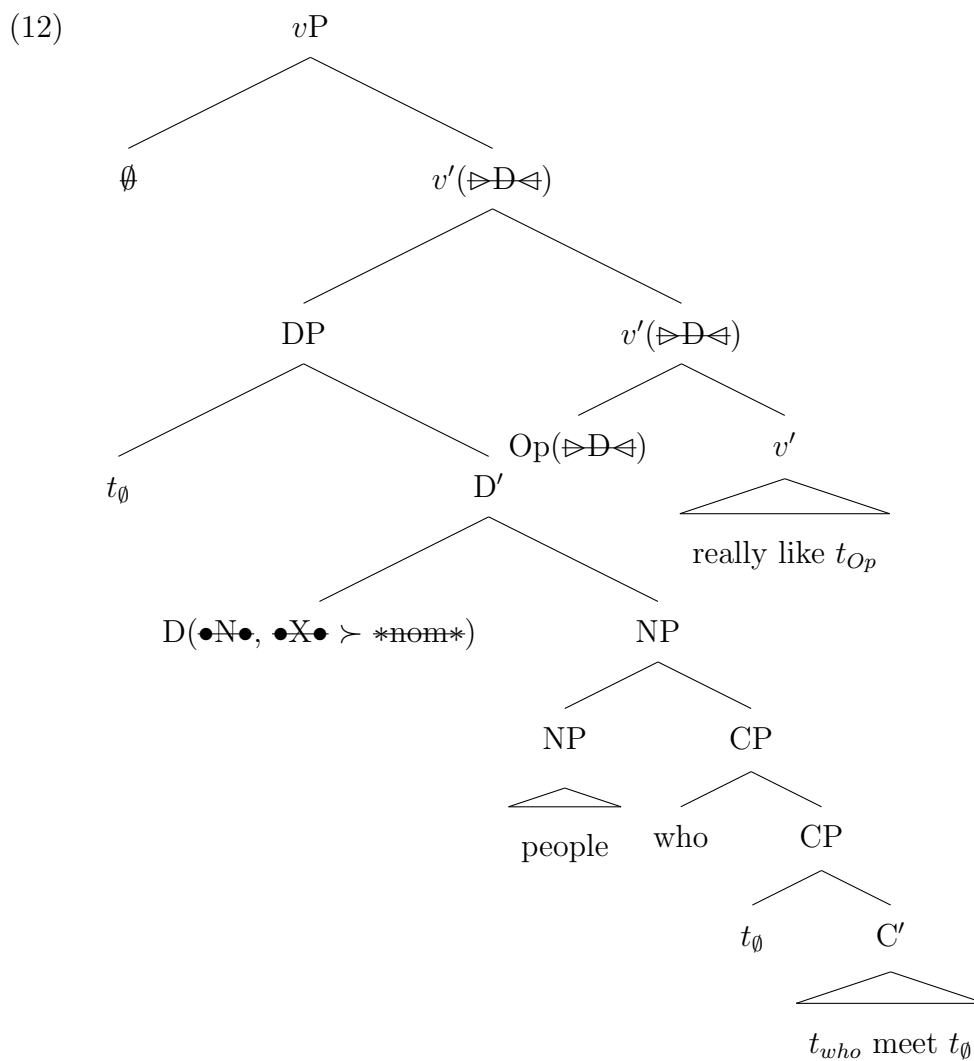
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semantics.

Assume now, that the operator Op can move further up to $Spec,DP$, so that predicate abstraction takes place in the DP. Then, the DP would have the type $\langle e,e \rangle$ which is incompatible with the v' being of type $\langle e,t \rangle$. So, even if a type mismatch inside the NP could be prevented, a type mismatch between the subject and v' occurs.

The operator theory is, therefore, not able to derive sentences where a parasitic gap occurs inside a relative clause.

Now, the derivation of the structure in (8) by means of duplication and fusion must look like in (12).



First, the duplicated element \emptyset is moved to Spec,CP. Remember from chapter 4 that D heads have a feature [**case**] which must be checked by an NP having a matching feature [*case*]. Now, because D has a case feature that is unchecked at the point when the NP is merged, an edge feature can be inserted that enables the movement of \emptyset to Spec,DP. Now, the duplicate is accessible for v since it has a feature [\triangleright D \triangleleft] percolated from the moved operator Op. So, an edge feature can be inserted, \emptyset can be moved out of the DP and Fusion can take place. The derivation is supposed to be successful.

In sum, parasitic gaps inside relative clauses pose a real problem for operator theories that license parasitic gaps at LF because the derivation is supposed to cause type mismatches. A theory that dispenses with operators doesn't have a problem with this type of parasitic gap constructions. Especially, my theory that uses duplicates which fuse during the derivation can derive such structures elegantly.

6.2.2 Subjects

Another construction where parasitic gaps may occur are subjects. An example is given in (13).

- (13) Who would [a picture of *pg*] surprise *t*? *Chomsky (1986:57)*

The predictions for these constructions are the same as for relative clauses. Nissenbaum (2000) would assume that an operator is inserted in the position of the parasitic gap who is moved to Spec,DP. This causes predicate abstraction and the DP would be of type $\langle e, e \rangle$. This type would, however, be incompatible with the verbal projection v' which is of type $\langle e, t \rangle$.

Again, if parasitic gaps are the result of Duplication and Fusion, the possibility of parasitic gaps inside DPs is not surprising. The duplicated *who* moves to Spec,DP where it is accessible for v which has a fusion feature [\triangleright D \triangleleft] percolated from the original *who*. Now, when the duplicate has been extracted

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out of the DP, it can fuse with v' . The derivation is, therefore, successful.

6.2.3 Complement Clauses

The next category that allows parasitic gaps are complement sentences like the ones in (14).

- (14) a. Who did you warn t that the police would arrest pg ?
Culicover (2001:43)
- b. Which man did you persuade t that Bill would visit pg ?
Munn (2001:392,fn. 11)
- c. Who did you tell t that we were going to vote for pg ?
Engdahl (1983:11)
- d. This is the man who I told t that my brother would visit pg ?
Bennis and Hoekstra (1985:61)

The acceptability of these examples is, however, controversial. While most authors judge them as grammatical (Chomsky (1986); Parker (1999); Culicover (2001); Safir (1987); Engdahl (1983)), some find them rather unacceptable (Munn (2001); Bennis and Hoekstra (1985); Manzini (1994)).

Now, the exact structure of the sentences in (14) is a matter of discussion. On the one hand, there is evidence showing that the position of the licensing gap c -commands the sentential complement of the matrix verb, but on the other hand, this would violate the anti- c -command condition of parasitic gaps. Therefore, Safir (1987) has argued for a structure where the complement clause is in a higher position.

Kiss (1985) has argued that if the object c -commands the sentential complement, the sentence in (15-a) is correctly predicted to be ungrammatical due to Binding Condition C while the sentence in (15-b) is grammatical under coindexing of the quantifier and the pronoun.

CHAPTER 6. MORE EMPIRICAL EVIDENCE

- (15) a. *The police warned him_i that they would arrest John_i.
 b. The police warned everybody_i that they would arrest him_i.

Safir (1987), who acknowledges the facts illustrated in (15), nevertheless argues that the anti-c-command condition is true also for sentential complements. He suggests that the sentential complement can be extraposed to a higher position where it is not c-commanded by the direct object. One of the arguments he provides for this movement is suggested by the data in (16).

- (16) a. I called John an enemy of himself.
 b. Who did you call *t* an enemy of John?
 c. *Who did you call *t* an enemy of *pg*?

The sentence in (16-a) suggests a c-command relation between the complex DP *an enemy of himself* and *John* since *himself* is bound by *John*. (16-b) shows that movement from the position of *John* is possible. Now, (16-c) shows that a parasitic gap in the DP causes ungrammaticality since the licensing gap, due to the impossibility of extraposition of the DP, inevitably c-commands the parasitic gap. Safir (1987) concludes, therefore, that the sentential complements in (15) can extrapose and so escape c-command while the non-sentential complements in (16) cannot do so.

Furthermore, Safir (1987) construes sentences that show that the sentential complements of *persuade*, *tell*, *warn*, *etc.* and adjunct clauses behave alike.

- (17) a. I don't know who Mary will [_{VP} trust *t*], but I know who John will [_{VP}].
 b. I don't [_{VP} know who Mary will [_{VP} trust *t*]][_{CP} without meeting *pg*]], but John does [_{VP} [_{VP}]][_{CP}]].
 c. ??I don't know who Mary will [_{VP} trust *t*]][_{CP} without meeting *pg*]], but I know who John will [_{VP}].
- (18) a. I don't know who John [_{VP} persuaded *t*]][_{CP} (that) we should trust

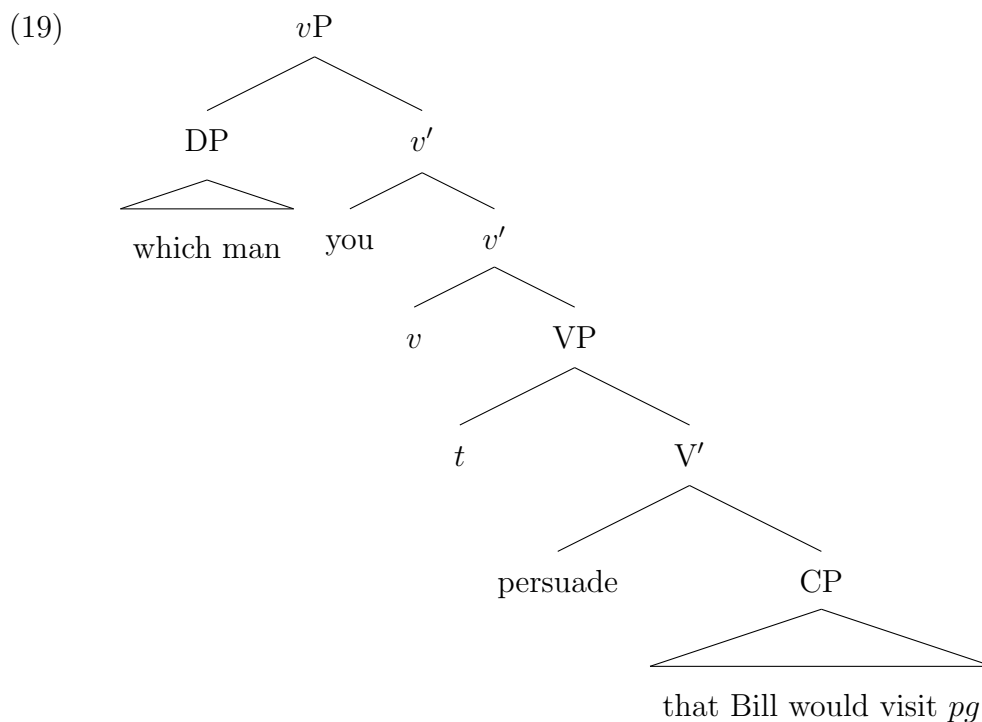
6.2. PARASITIC GAPS IN OTHER CONSTRUCTIONS

Bill], but I know who Mary did [_{VP}].

- b. I don't [_{VP} know who John [_{VP} persuaded *t*][_{CP} that we should visit *pg*]], but Mary does [_{VP} [_{VP}]][_{CP}]].
- c. ?*I don't know who John [_{VP} persuaded *t*][_{CP} that we should visit *pg*], but I know who Mary did [_{VP}].

The sentences in (17-b,c) and (18-b,c) show that in both situations it is possible to delete the matrix VP containing the embedded VP and the CP but sentences where only the embedded VP is deleted are ungrammatical. This can only be explained by the CP *not* being part of the embedded VP in both cases, i.e. if the CP in (18-c) would be part of the VP headed by persuade it should be possible to delete the VP just like in (18-b). If it is not, then, the sentential complement must be in a position higher than the complement of *persuade*.

So let's investigate the two possible positions for the sentential complement of the verb *persuade* starting with the complement position. The structure of (14-b) is given in (19).



CHAPTER 6. MORE EMPIRICAL EVIDENCE

Now, assuming an operator in the position of the parasitic gap would result in a type mismatch since the complement would have type $\langle e,t \rangle$ but *persuade* expects an argument of type t .

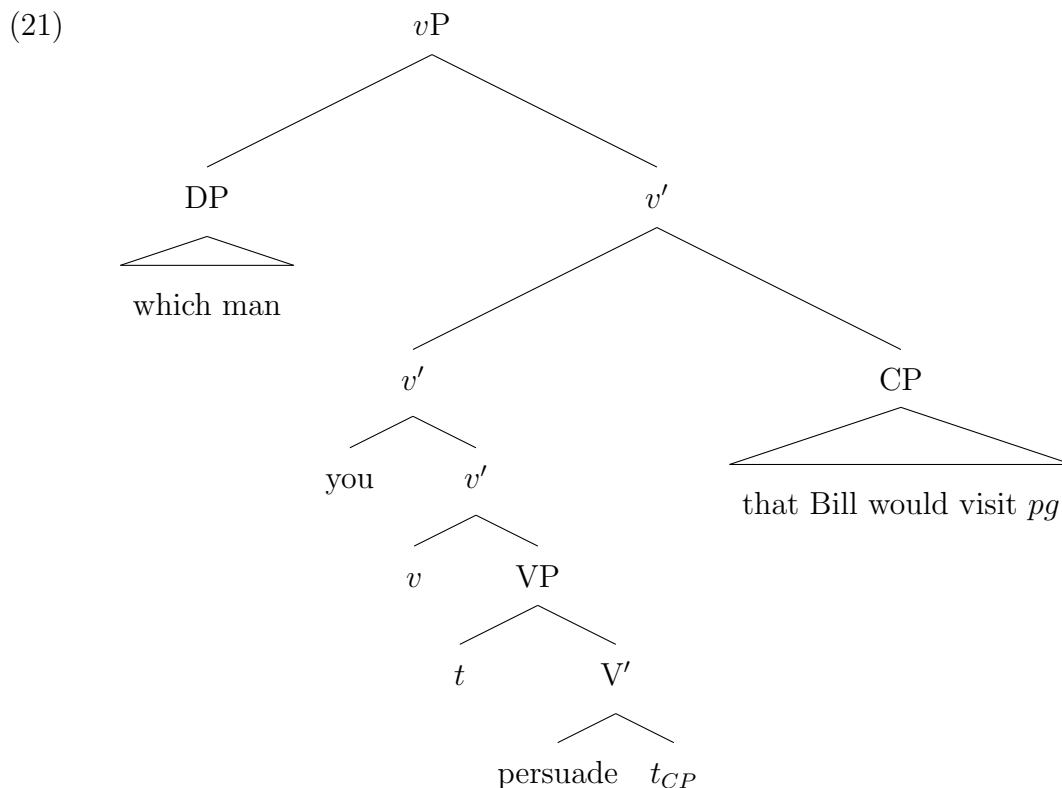
The derivation of the structure in (19) by means of Duplication and Fusion is, however, supposed to be successful. First of all the duplicate is merged in the position of the parasitic gap and then moved to Spec,CP via Spec,vP. Then, *which man* moves to Spec,vP of the matrix clause and percolates its fusion features to v . Now, the duplicate of *which* can be extracted and Fusion can take place.

- (20) a. *Embedded CP*
 $[_{CP} \emptyset_i \text{ that Bill would } [_{vP} \emptyset_{\bar{i}} \text{ visit } \emptyset_{\bar{i}}]]$
- b. *Construction of the VP*
 $[_{VP} \text{ which}(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ man } [_{V'} \text{ persuade } [_{CP} \emptyset_i \text{ that Bill would } [_{vP} \emptyset_{\bar{i}} \text{ visit } \emptyset_{\bar{i}}]]]]$
- c. *Movement to Spec,vP and Feature Percolation*
 $[_{vP} \text{ you } [_{v'} \text{ which man } v(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) [_{VP} \text{ which}(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ man } [_{V'} \text{ persuade } [_{CP} \emptyset_i \text{ that Bill would } [_{vP} \emptyset_{\bar{i}} \text{ visit } \emptyset_{\bar{i}}]]]]]]$
- d. *Extraction of \emptyset out of the CP*
 $[_{vP} \emptyset_i \text{ you } [_{v'} \text{ which man } v(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) [_{VP} \text{ which}(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ man } [_{V'} \text{ persuade } [_{CP} \emptyset_{\bar{i}} \text{ that Bill would } [_{vP} \emptyset_{\bar{i}} \text{ visit } \emptyset_{\bar{i}}]]]]]]$
- e. *Fusion*
 $[_{vP} \text{ you } [_{v'} \text{ which man } v [_{VP} \text{ which}(\triangleright D_i \triangleleft \succ \triangleright \text{acc} \triangleleft \succ \triangleright \varphi \triangleleft) \text{ man } [_{V'} \text{ persuade } [_{CP} \emptyset_{\bar{i}} \text{ that Bill would } [_{vP} \emptyset_{\bar{i}} \text{ visit } \emptyset_{\bar{i}}]]]]]]$

Now, turning to the second possibility, if sentential complements and adjunct clauses behave similar in certain respects, the landing site of the extraposition is presumably the position of the adjunct clause, i.e. Spec,vP. The structure

6.3. THE DUPLICATES BEFORE AND AFTER FUSION

involving extraposition is given in (21).



Of course, this configuration is exactly like the one for adjuncts. Hence, both theories should equally account for this construction. The only problem for operator theories is that the complement clause is now semantically an adjunct clause but perhaps this can be justified.

In sum, parasitic gaps in complement sentences, although only marginally acceptable for some speakers, are expected under both theories.

6.3 The Duplicates Before and After Fusion

This section deals with the question if there is further evidence for Fusion in that the syntactic, morphological or semantic behaviour is in some way affected by the presence or absence of fusion features.

The presence of the fusion property on features of some category α is not supposed to change the way of interaction of α in Merge or Agree relations.

CHAPTER 6. MORE EMPIRICAL EVIDENCE

That is, as I mentioned in the chapter 4, a feature [\bullet F \bullet] can be satisfied by a feature [F] or [\triangleright F \triangleleft] in the same way. Hence, we would expect that categorial and Agree properties of elements with fusion features to be the same as of elements without such features.

Nevertheless, it may be possible that there are languages that make a difference between [F] and [\triangleright F \triangleleft]. One set of data that could show differences are reflexes of successive-cyclic movement (Kayne and Pollock (1978); McCloskey (1979); Clements (1984); Collins (1994); Chung (1998); Lahne (2009)).

Lahne (2009) discusses different types of reflexes of successive-cyclic movement: semantic, morphological and syntactic reflexes.

The hypothesis that my theory makes is, therefore, the one in (22).

- (22) There are languages in which the syntactic behaviour of some category α depends on whether it has fusion features or not.

In other words, there should be languages where (i) certain grammatical properties don't show up until Fusion has taken place or (ii) certain grammatical properties don't show up *after* Fusion has applied.

For the latter case (ii), we have seen an example in section 5.4. Before Fusion takes place, elements with fusion features still have categorial properties. Categorial properties are important to satisfy the EPP property of verbal heads, e.g. T. We have seen that Fusion causes the deletion of categorial properties. Hence, elements without categorial features are incapable of satisfying EPP after Fusion. This feature deletion explains why passive movement never licenses parasitic gaps.

For the former case (i), I have not found any examples yet and I will leave this issue for further research.

Chapter 7

Parasitic Gaps in German

The final chapter of this thesis deals with an issue that is orthogonal to the discussion above but, nevertheless, interesting to pursue. However, for reasons of space, I will not provide a full discussion of this topic but rather list up some arguments that have been made by other scholars. The question is if parasitic gaps also exist in German. The arguments against parasitic gaps in German are not at all conclusive for me and I will end this chapter with the question if an alternative, involving coordination, is really adequate for the constructions in question.

The question if parasitic gaps exist in Standard German is one that has been discussed extensively for decades (Felix (1985); Fanselow (2001); Kathol (2001)).¹ The constructions in question are the ones in (1) to (3).

- (1) a. Wen hat er [anstatt PRO *pg* freundlich zu behandeln] *t*
who has he instead.of friendly to treat
geärgert?
annoyed
“Who did he annoy instead of treating friendly?”

¹I won't discuss parasitic gaps in Bavarian German here. For further information about these constructions, which is structurally closer to its English counterpart, see especially Felix (1985); Lutz (2004).

CHAPTER 7. PARASITIC GAPS IN GERMAN

- b. ?Wen hat er [anstatt PRO ihn freundlich zu behandeln] *t*
 who has he instead.of him friendly to treat
 geärgert?
 annoyed
 “Who did he annoy instead of treating him friendly?”
- c. Wen hat er *t* geärgert [anstatt PRO *pg* freundlich zu
 who has he annoyed instead.of friendly to
 behandeln]?
 treat
 “Who did he annoy instead of treating friendly?”
- d. ?Wen hat er *t* geärgert [anstatt PRO ihn freundlich zu
 who has he annoyed instead.of him friendly to
 behandeln]?
 treat
 “Who did he annoy instead of treating him friendly?”
- (2) a. Er hat das Geld [anstatt PRO *pg* zu sparen] *t* ausgegeben.
 He has the money instead.of to save spent
 “He has spent the money instead of saving it.”
- b. Er hat das Geld [anstatt PRO es zu sparen] *t* ausgegeben.
 He has the money instead.of it to save spent
 “He has spent the money instead of saving it.”
- c. ?Er hat das Geld ausgegeben [anstatt PRO *pg* zu sparen].
 He has the money spent instead.of to save
 “He has spent the money instead of saving it.”
- d. Er hat das Geld ausgegeben [anstatt PRO es zu sparen].
 He has the money spent instead.of it to save
 “He has spent the money instead of saving it.”
- (3) a. Er hat Peter [ohne PRO *pg* zu mögen] *t* freundlich begrüßt.
 he has Peter without to like friendly greeted
 “He has greeted Peter friendly without liking him.”
- b. ?Er hat die Frau [um PRO *pg* zu ärgern] *t* beleidigt.
 He has the woman in.order.to to annoy offended
 “He has offended the woman in order to annoy her.”

The first set of examples illustrate apparent parasitic gaps in German that are licensed by wh-movement. To me it seems, that in cases where a pronoun occurs in the parasitic gap position the sentences get slightly worse. Furthermore, note that extraposition doesn't affect grammaticality in the examples in (1).

The set of data in (2) shows, that the same construction is possible if the antecedent is scrambled and not wh-moved. However, to me it seems, that the insertion of a pronoun is better in these cases, especially if the *anstatt*-clause is extraposed. Finally, the sentences in (3) give examples for other adjuncts in German that allow parasitic gaps. While *ohne*-clauses are good contexts for parasitic gaps, *um*-clauses are highly marginal (Kathol (2001) even finds them ungrammatical).

At all, the contexts for parasitic gaps in German are highly restricted. While English allows parasitic gaps to occur in a big variety of domains, they can only be found in tenseless adjuncts in German.²

So, tensed adjuncts, relative clauses, subjects and complement clauses don't allow parasitic gaps.

(4) *Tensed adjunct*

*Wen hat Peter [nachdem er *pg* geschubst hat] *t* getreten?
 who has Peter after he jostled has kicked
 "Who did Peter kick after he jostled?"

(5) *Relative clause*

²Parker (1999:190) judges sentences where parasitic gaps occur in tensed adjuncts as quite acceptable. I find them, in line with Fanselow (2001) ungrammatical.

- (i) a. ?Welches Buch hat Annica [bevor jemand anders *pg* lesen konnte] *t* zur
 which book has Annica before somebody else read could to
 Bibliothek zurückgebracht?
 library brought.back
 "Which book did Annica bring back before somebody else could read?"
- b. ?Dies ist die Art Thema die du [bevor du *pg* verstehen wirst] *t*
 this is the kind.of topic which you before you understand will
 studieren musst.
 study must
 "This is the kind of topic which you have to study before you must understand?"
- c. ?Welches Mädchen hat er [weil er *pg* hasste] *t* ignoriert.
 which girl has he because he hated ignored
 "Which girl did he ignore because he hated?"

CHAPTER 7. PARASITIC GAPS IN GERMAN

*Wen hat der Mann [der eigentlich kannte *pg*] geleugnet *t* zu kennen?
who has the man who actually knew denied to know
“Who did the man that actually knew denied to know?”

(6) *Subject*

*Wem haben [Freunde von *pg*] *t* geholfen?
who has friends of helped
“Who did friends of help?”

(7) *Complement Clause*

*Wen hat er gewarnt *t* dass er *pg* schlagen würde?
who has he warned that he beat would
“Who did he warn *t* that he would beat *pg*?”

The first difference between German and English is, therefore, the distribution of parasitic gaps, which is much more restricted in German. However, a restricted distribution is not necessarily an argument against parasitic gaps since in languages like Spanish, parasitic gaps can also only occur in tenseless adjuncts (e.g Mayo (1994)).

Another argument against the existence of parasitic gaps in German is the nature of the antecedent. Obviously, German allows not only for non-nominal but also for non-referential antecedents (Fanselow (2001)).

(8) dass er sich anstatt (sich) um Maria zu kümmern mit Büchern
that he REFL instead REFL of Maria to care with books
beschäftigte
occupied
“that he occupied himself with books instead of caring for Maria”

Fanselow (2001:412)

(9) dass er mit Maria anstatt in die Oper zu gehen Rambo II
that he with Maria instead.of in the opera to go Rambo II
angeschaut hat
watched has
“that he watched Rambo II with Maria instead of going to the opera
with her”

Assmann and Heck (2009:7)

Now, we have seen that languages like Swedish also allow non-NP antecedents for parasitic gaps. Levine et al. (2001) have argued that even in English non-NP and non-referential antecedents are allowed. The only thing that is special for German is that reflexive pronouns can be the antecedent for a parasitic gap (cf. (8)). In English, this is not possible.

- (10) a. *Himself₁, Mike₁ praised *t* after describing *pg*₁ to Mary.
 b. *Each other₁, they₁ (never) praised *t*₁ after describing *pg*₁.

Fanselow (2001), who argues against parasitic gaps in German, raises the issue that in German more than one parasitic gap can occur in the adjunct clause.

- (11) dass er dem Kind₁ das Buch₂ anstatt *pg*₁ *pg*₂ zu leihen
 that he the.DAT child the.ACC book instead.of to lend
 verkaufte
 sold
 “that he sold the book to the child, instead of lending it to him”

However, this is clearly not an argument against parasitic gaps in German since in English multiple gaps are possible as well. The data are repeated in (12). (13) shows German multiple gap constructions (cf. Assmann and Heck (2009:9))

- (12) a. ?[Which senator]₁ did you persuade *t*₁ to borrow [which car]₂ [after
 getting [an opponent of *pg*₁] to put a bomb in *pg*₂]?
 b. *[Which senator]₁ did you persuade *t*₁ to borrow [which car]₂ [after
 putting a bomb in *pg*₂]?
 (13) a. wenn man der Maria₁ das Buch₂ [anstatt *pg*₁ *pg*₂ zu schenken]
 if one the Maria the book instead.of to give
 ausleiht
 borrow
 “If one borrows Maria the book instead of giving it to her”

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- b. wenn man der Maria₁ [anstatt *pg*₁ zu helfen] das Buch
 if one the Maria instead.of to help the book
 wegnimmt
 take.away
 “if one takes away the book from Maria instead of helping her”
- c. *wenn man der Maria₁ das Buch [anstatt *pg*₁ zu helfen]
 if one the Maria the book instead.of to help
 wegnimmt
 take.away
 “if one takes away the book from Maria instead of helping her”

It is rather the case that the German data in (13) resemble the English data in (12). If two categories move, they must license two parasitic gaps (cf. (12-a) and (13-a)), if only one category moves, only one parasitic gap is allowed (cf. (13-b)). Therefore, (13-c) must be ungrammatical just like (12-b) since two categories move but there is only one parasitic gap.

Thus, the sentence in (11) is rather an argument *for* parasitic gaps in German.³

³Kathol (2001) deals with multiple gap constructions as well and observes a difference between English and German. In English, replacement of one gap with a pronoun leads to ungrammaticality while in German, pronouns can be freely exchanged with parasitic gaps.

- (i) a. Which book₁ do you wonder who₂ [Bill told *t*₂ that Mary bought *t*₁][before Sam persuaded *pg*₂ that Mary wanted *pg*₁].
 b. *Which book₁ do you wonder who₂ [Bill told *t*₂ that Mary bought *t*₁][before Sam persuaded *pg*₂ that Mary wanted it].
 c. *Which book₁ do you wonder who₂ [Bill told *t*₂ that Mary bought *t*₁][before Sam persuaded him that Mary wanted *pg*₁].
- (ii) a. Den Käfer₁ hat ihr₂ Karl [anstatt *pg*₂ *pg*₁ zu schenken] teuer
 the VW-beetle has her Karl instead.of to give expensively
 verkauft.
 sold
 “Karl sold her the VW beetle to her for much money instead of giving it to her for free.”
 b. Den Käfer₁ hat ihr₂ Karl [anstatt ihr *pg*₁ zu schenken] teuer
 the VW-beetle has her Karl instead.of to give expensively

On the other hand, Kathol (2001) tries to show that what seems to be a parasitic gap construction is rather an instance of a gap left by left node raising. To do so he shows various similarities between parasitic gap and coordination constructions.

The first property that the two constructions have in common concerns verb movement in German. Both coordination and parasitic gap constructions are ungrammatical if the verb appears in C.

(14) *Left Node Raising*

- a. *Hans sah Maria [erst *t* lange an] und [dann *t* leidenschaftlich
Hans looked Maria first long at and then passionately
geküsst hat]
kissed has
“First, Hans looked at Maria long and then kissed her passionately”
- b. *Hans sah Maria [erst *t* lange an] und [küsst dann *t*
Hans looked Maria first long at and kissed then
leidenschaftlich]
passionately
“First, Hans looked at Maria long and then kissed her passionately”

(15) *Parasitic Gap*

- a. ??Hans küsste Maria [ohne *pg* anzusehen]
Hans kissed Maria without to.look.at
“Hans kissed Maria without looking at her.”
- b. *Hans sah Maria [ohne *pg* zu küssen] lange an.
Hans look Maria without to kiss long at
“Hans look at Maria without kissing her.”

This property is indeed puzzling and I can't offer a solution for that now.

verkauft.
sold
“Karl sold her the VW beetle to her for much money instead of giving it to her
for free.”

Although the sentence in (ii-b) is grammatical, I find the sentence in (ii-a) without a pronoun a little better.

CHAPTER 7. PARASITIC GAPS IN GERMAN

The next property Kathol (2001) brings up is case identity. This property was already discussed in section 6.1. Now, case identity is not only a problem for parasitic gap constructions but also for coordination constructions as shown in (16).

- (16) *Hans möchte seine/seiner Tochter [Geld *t* geben] und
Hans would.like his.ACC/his.dat daughter money give and
[auch *t* moralisch unterstützen]
also morally support
“Hans would like to give his daughter money and also to support her
morally.”

Nevertheless, case identity is a property of parasitic gaps, that is found in other languages, too, e.g. in Hungarian. (See section 6.1 for details.) So it might be a property of multiple gap constructions in general.

Finally, Kathol (2001) says that if parasitic gaps exist in German, it is puzzling that the adjunct clause cannot be extraposed. This property is shown by the example in (17).

- (17) *Hans hat Maria geküsst [ohne *pg* anzusehen].
Hans has Maria kissed without to.look.at
“Hans kissed Maria without looking at her.”

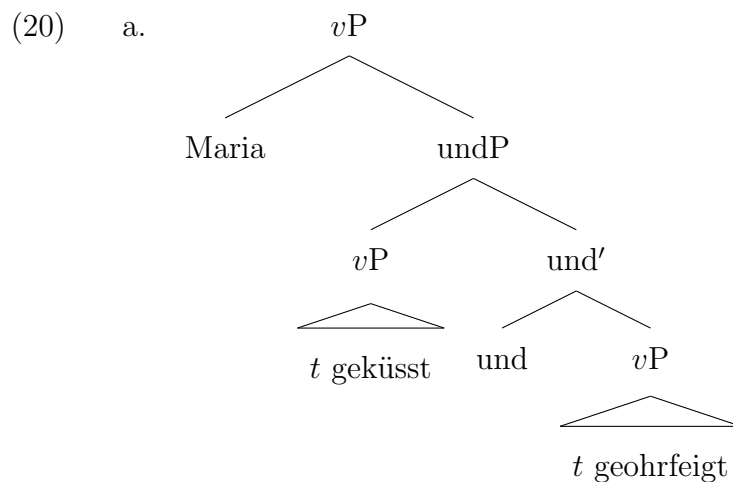
Although I find the example in (17) just as bad as Kathol, I am not convinced that extraposition is the only factor that rules out (17). Consider the sentence in (18), repeated from (1-c).

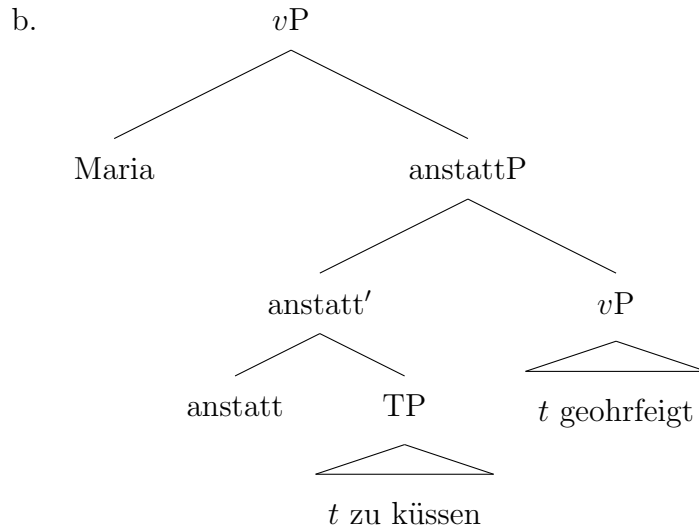
- (18) Wen hat er *t* geärgert [anstatt PRO *pg* freundlich zu behandeln]?
who has he annoyed instead.of friendly to treat
“Who did he annoy instead of treating friendly?”

If the alleged parasitic gap is licensed by wh-movement rather than scrambling and if it occurs in an *anstatt*-clause instead of an *ohne*-clause, the example is much better.

Now, let's assume that all these arguments against parasitic gaps were right. The consequence must be that what seems to be adjunction is in fact coordination. This result has been achieved for example by Fanselow (2001). Fanselow (2001) assumes that elements like *anstatt* are actually conjunctions. However, the question that comes up right then is which constituents are actually coordinated. Presumably, a sentence like (19-b) would have the structure in (20-b).

- (19) a. Er hat Maria [*t* geküsst] und [*t* geohrfeigt].
 He has Maria kissed and slapped.
 "He slapped Maria and kissed her."
 b. Er hat Maria *anstatt* [*t* zu küssen] [*t* geohrfeigt].
 He has Maria instead.of to kiss slapped
 "He slapped Maria instead of kissing her."





This structure, however, raises two questions. First, if *anstatt* is indeed a conjunction, why is the position different from other conjunctions like *und*? Second, how can two categories of different syntactic and semantic type be coordinated at all?

An argument that Kathol (2001) brings up *against* coordination is that alleged parasitic gap constructions show control properties, that is the adjuncts that allow parasitic gaps always contain a PRO that must be controlled by the subject of the matrix clause.

- (21) a. *dass dieses Buch_i [ohne PRO_i pg_i zu lesen] dem Jungen t_i
 that this book without to read the boy
 gegeben wurde
 given was
 (intended reading): “that this book was given to the boy without
 its reading itself” *Müller (1993:191)*⁴
- b. *dass dieses Buch_i [ohne PRO_i es zu lesen] dem Jungen t_i
 that this book without it to read the boy
 gegeben wurde
 given was *Kathol (2001:331)*
- c. *dass der Titel_i dieses Buch_j [ohne PRO_i pg_j zu lesen] in die
 that the title this book without to read into the
 Bestsellerliste katapultierte
 bestseller.charts tossed

All three examples in (21) are bad because the PRO of the embedded clause cannot be controlled by the matrix subject. In (21-a,b), the only possible controller is a passivized subject which is known to be incapable of being a controller (cf. Legate (2003:511)). In (21-c), the subject is inanimate and therefore unable to control the PRO which must have an animate controller because of the context ‘to read’.

Kathol (2001) admits that this control property of alleged parasitic gaps doesn’t emerge from an analysis involving for example left node raising.

Another property that tells parasitic gaps apart from coordination constructions is its behaviour towards long-distance dependencies (cf. Kathol (2001:331f.)). While in the sentence in (22-a) involving coordination, a long-distance dependency is possible, (22-b) is ungrammatical. Therefore, such constructions shouldn’t involve coordination.

- (22) a. [Mit wem]_i hat Hans vermutet [dass wir lange *t_i* verhandelt
with whom has Hans conjectured that we long negotiated
hatten] und [deshalb sofort *t_i* einen Vertrag
had and therefore immediately a treaty
abgeschlossen]?
signed
“Who did Hans think that we had been negotiating with and
therefore sign a treaty with immediately?”
- b. *[Mit wem]_i hat Hans [ohne zu vermuten [dass wir lange *pg_i*
with whom has Hans without to conjecture that we long
verhandelt hatten]] einen Vertrag *t_i* abgeschlossen?
negotiated had a treaty signed
“Who did Hans sign a treaty with without thinking that we had
been negotiating with him?”

⁴Although the sentence is from Müller (1993), the conclusion that the ungrammaticality is due to failed control stems from Kathol (2001). Müller (1993) argues that (21) involves passive movement which is known to be unable to license parasitic gaps (cf. Kathol (2001:317)).

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In sum, the discussion above has supplied various arguments for and against parasitic gaps in German. To me, it is still inconclusive to say that alleged parasitic gap constructions in German are in fact coordination constructions, like e.g. Fanselow (2001) would say. An alternative, that Kathol (2001) proposed, is that such constructions involve “non-coordinate” left node raising. The conclusion is definitely not wrong but perhaps an account for parasitic gaps can also cover left node raising, so that there would be no difference between the two operations at all. As I have discussed in section 3.2, there already exist various proposals that treat parasitic gaps and ATB movement alike. Maybe these theories can also account for left node raising. However, I will answer the question if parasitic gaps exist in German with yes because (i) the behaviour of parasitic gap and coordination constructions differ in several aspects and (ii) convincing alternative accounts for these constructions doesn’t exist.

Chapter 8

Conclusion

The topic of this thesis was the development of a derivational syntactic theory which can explain the complex phenomenon that parasitic gaps represent.

Starting with an empirical description of the problem, I have shown the peculiar and sometimes intricate behaviour of parasitic gaps which gives reason to the question if parasitic gaps are a natural consequence of the principles of universal grammar or if they indeed need special mechanisms. The main results of this chapter are repeated in (1) and (2).

(1) *Distribution*

a. *Domains:*

- (i) untensed and tensed adverbial clauses
- (ii) complement clauses
- (iii) relative clauses
- (iv) subjects

b. *Types of movement:*

- (i) wh-movement
- (ii) relativization
- (iii) topicalization
- (iv) HPNS
- (v) object raising

- (vi) scrambling
 - (vii) clitic movement
 - c. *Grammatical functions of the parasitic gaps*
 - (i) subjects
 - (ii) objects
 - (iii) predicates
- (2) *Constraints about parasitic gaps (PGs)*
- a. PGs must be licensed by overt movement.
 - b. PGs must not be c-commanded by the true gap.
 - c. PGs are sensitive to islands (i.e., they show subjacency effects).
 - d. PGs cannot be licensed by A-movement.
 - e. The antecedents of PGs must be referential nominals.
 - f. PGs are prohibited in antipronominal contexts.
 - g. PGs cannot be licensed by reflexives and reciprocals.
 - h. PGs are incompatible with verbs that are inherently unpassivizable.
 - i. PGs cannot occur in multiple wh-questions.
 - j. Antecedents of PGs cannot reconstruct into the position of PGs.

The subsequent chapter dealt with theories of parasitic gaps that try to explain especially the constraints in (2). I have introduced the idea that parasitic gaps are actually empty pronominals or proforms that are bound by the antecedent of the true gap. Defenders of pronoun theories are for example Chomsky (1982); Engdahl (1985, 2001); Cinque (1990); Postal (1993, 1994). The main arguments for these theories are first, that parasitic gaps seem to be restricted by the category of the antecedent, i.e. parasitic gaps can only be licensed by referential nominals and second, parasitic gaps seem to be incompatible with antipronominal contexts. However, as I have argued in chapter 5, these constraints are perhaps not so strong and counterexamples are easy to be find (Levine et al. (2001)). Two important failures of this

account are, however, that it fails to explain the constraints in (2-c) and (2-d). If parasitic gaps were pronouns, they shouldn't be sensitive to the type of movement relation between the true gap and the antecedent. But more important, pronoun theories fail to explain, why parasitic gaps show island effects which are actually a sign of movement.

This island sensitivity of parasitic gaps have, then, been the reason for Kayne (1983) to develop a new idea of explaining parasitic gaps. He develops the theory of connectedness which assumes that parasitic gaps are really gaps in the same sense as gaps that are created by movement. Hence, parasitic gaps are subject to the same constraints as true gaps. By defining the terms of *g-projection* and *g-projection sets* and by modifying the definition of the empty category principle, Kayne (1983) develops representational constraints about parasitic gaps and thereby explains the island sensitivity of parasitic gaps. Nevertheless, even though his account is able to explain many properties of parasitic gaps, the system is not derivational and contradict the aim of this thesis.

The second part of chapter 3 dealt with derivational theories of parasitic gaps, which are able to explain the movement properties. The type of theory, I summarized first, proposes that parasitic gaps are the result of operator movement. Because parasitic gaps can be separated from their antecedents by one island but not by more than one island, these theories assume that an empty operator moves to the highest possible position inside the island. If they are stopped by further barriers in between, the derivation crashes. However, null operators have to be identified with some overt category in order to be licensed (Stowell (1985)). One way to achieve this is to apply Chomsky's mechanism of *Chain Composition* where the licensing and the parasitic chain are composed in one chain so that the head of the licensing chain becomes the head of the parasitic chain, too. Frampton (1990) modifies Chomsky's (1986) theory in that the parasitic gap is the result of a deletion of process. The antecedent of

the parasitic gap is inserted twice in the position of the true and the parasitic gap. The true gap results from movement while the parasitic gap from deletion, thereby becoming a trace that is in a chain with the moved antecedent.¹

But the perhaps most important modification of the operator theory was done by Nissenbaum (2000). He argued that parasitic gaps are exclusively licensed on LF and that the null operators are licensed by the same semantic principles as for example relative operators, i.e. predicate abstraction and predicate modification (Heim and Kratzer (1998)). Because the theory appears quite promising with respect to explaining parasitic gap constraints and respects principles of the minimalist framework, the predictions and behaviour of this theory are further examined in the subsequent chapters.

Finally, the last part of chapter 3 summarized one account that treats parasitic gap and coordination constructions alike, namely sideward movement (Nunes (1995, 2001)).

Chapter 4 was devoted to the development of a totally new account on parasitic gaps. I have argued that parasitic gaps result from a defective numeration. A numeration is defective when it contains structure-building or probe features which must be checked but don't have matching features that could check them. I proposed a repair mechanism that I called Duplication which copies matching features that are present in the numeration and adds these features to the numeration again. The original features are marked by the fusion property $\triangleright\triangleleft$, that requires the fusion of the original and the duplicated feature. Fusion should be understood in the sense of morphological Fusion (Halle and Marantz (1993)), i.e., it can only apply under sisterhood. The two operations are repeated in (3) and (4).

(3) *Duplication* ($N = [L, \dots]$)

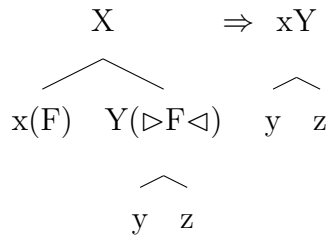
a. There are structure-building and probe features $[\bullet F_1 \bullet], \dots [\bullet F_i \bullet]$,

¹This theory was not explained in section 3.2 because of reasons of space.

$[*F_j*], \dots [*F_n*]$ in the numeration N that don't have matching features $[F_1], \dots [F_n]$.

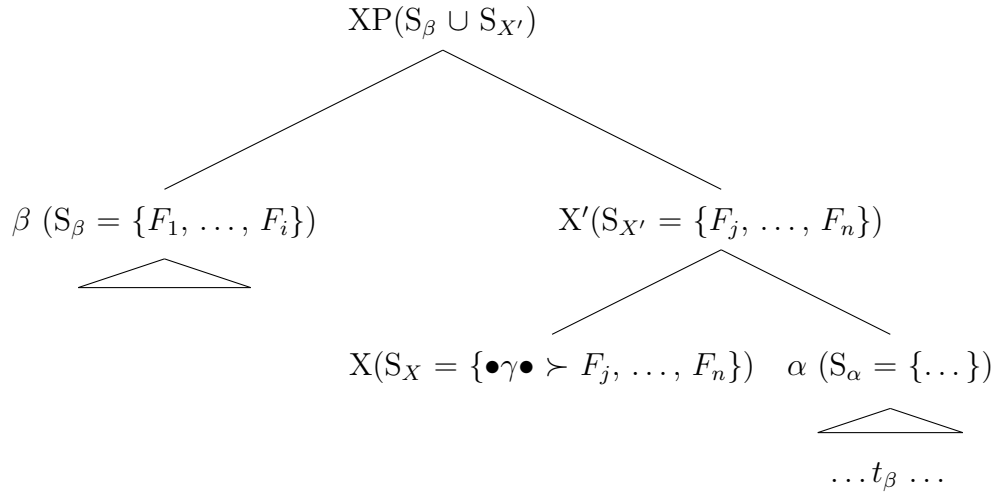
- b. There is a lexical item L in N that has such features $[F_1, \dots, F_n]$.
- c. An item L' with the features $[F_1, \dots, F_n]$ of L is added to N .
- d. All duplicated features are marked by $\triangleright\triangleleft$ on L .

(4) *Fusion*

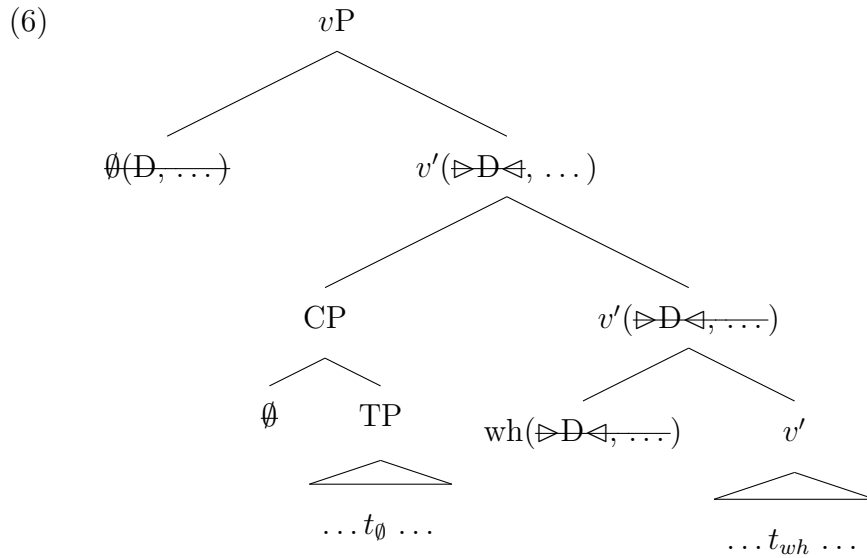


In order to derive the “selective” island-sensitivity (Nunes (2001:325)), I integrated Duplication and Fusion into the system of Müller (2010) who assumes that the fact that categories are barriers for movement if they are last-merged in a phase (cf. Huang (1982)) can be explained by assuming that only active phase heads allow the extraction of categories out of constituents. Phase heads are active if they still possess features that need to be checked. Now, if the duplicated item is merged inside the category that is usually a barrier and the original item is merged in the matrix clause, both items have to come together in a configuration where Fusion can take place. To enable the fusion features and its matching features to be in a sisterhood configurations, I proposed the following mechanism of feature percolation, that allows the percolation of features not only from the head daughter but also from specifiers that are created by movement. Because features are organized in ordered lists in Müller’s system, percolation not only involves bare features but rather feature lists.

(5) *Feature List Percolation*



That means, the duplicated item is not directly fused with the original item but with the projection of a phase head whose specifier the original item is. The derivation which I provided in chapter 4 is repeated schematically in (6).



In the next two chapters, I have shown that the new theory is able to explain the behaviour of parasitic gaps. Chapter 5 compared the operator theory of Nissenbaum (2000) with the theory developed in chapter 4 by revisiting the constraints about parasitic gaps that I have introduced in section 2.2. The result of the discussion was that both theories don't differ dramatically in their predictions, so that the duplication theory is not inferior to the operator theory.

The most important properties of parasitic gaps, which are the ones in (2-a) to (2-d) and (2-j), can be explained by both theories under certain assumptions, which are in my view all justified while the properties in (2-e) to (2-i) are puzzling for both theories.

In chapter 6, I have discussed further empirical evidence that showed the inadequacy of operator theories in certain domains. I considered identity requirements of the two gaps, type mismatches in contexts other than adjunct clauses and evidence for the existence of the Fusion operation, i.e. evidence suggesting that items behave differently before and after Fusion.

Finally, in chapter 7, I have investigated the existence of parasitic gaps in German. This problem has been discussed throughout years and there are mainly two movements: one side argues that parasitic gaps in German are real and give reason to the assumption that scrambling can license parasitic gaps (Felix (1985); Bennis and Hoekstra (1985); Assmann and Heck (2009)) and the other side tries to prove that what seems to be parasitic gap constructions are in fact coordination constructions (e.g. Huybregts and Van Riemsdijk (1985); Fanselow (2001); Kathol (2001)). I have discussed the arguments against parasitic gaps in German and the possibility of coordination. The discussion ended with the conclusion that even though coordination and parasitic gap constructions have a lot in common, analyses that treat both constructions alike are highly problematic for empirical and theoretical reasons.

In conclusion, I can say that the aim I formulated in chapter 1 is achieved. The first of the three questions was what a parasitic gap actually is. The answer to this question is that parasitic gaps are duplications of the elements that act as antecedents. The next question was how the dependence between the parasitic and the licensing gap is established. I suggested that the two gaps are dependent because they have to undergo Fusion. The last question was how a theory answering the first two questions can account for the properties

of parasitic gaps. By using the system of Müller (2010), I was able to derive the island sensitivity of parasitic gaps. The fact that parasitic gaps can only be licensed by overt movement and the anti-c-command constraint follow from the feature list percolation mechanism. The fact that parasitic gaps cannot be licensed by A-movement follows from Fusion and the deletion of categorial features. Finally, identity properties and asymmetrical reconstruction follow from Duplication.

Although, this thesis has answered a lot of questions, it has raised some new ones. The most important question is perhaps, if Duplication and Fusion can be used for other multiple gap constructions, like for example ATB constructions, too. I haven't discussed this possibility here but leave it to further research.

Another question which I could not answer now is if there is evidence that elements which have been duplicated and not fused yet behave different from elements that haven't been duplicated. Hopefully, future research can provide an answer to this question.

Finally, I can say that the new theory developed in this thesis provides a new and adventurous perception of parasitic gaps and seems to be promising not only in empirical but also in theoretical terms.

Bibliography

- Alexopolulou, Theodora and Dimitra Kolliakou (2002), 'On linkhood, topicalization and clitic left dislocation', *Linguistics* **38**, 193–245.
- Aoun, Joseph and Robin Clark (1985), 'On non-overt operators', *Southern California occasional papers in linguistics* **10**, 17–36.
- Assmann, Anke and Fabian Heck (2009), 'Reply to fanselow (2001)'. Universität Leipzig.
- Bennis, Hans and Teun Hoekstra (1985), 'Gaps and parasitic gaps', *The Linguistic Review* **4**, 29–87.
- Boeckx, Cedric, Norbert Hornstein and Jairo Nunes (2009), *Control as Movement*, Cambridge University Press.
- Campos, Hector (1991), Silent objects and subjects in spanish, *in* H.Campos and F.Martinez-Gil, eds, 'Current studies in Spanish linguistics', Georgetown University Press, Washington D.C., pp. 117–141.
- Chao, Wynn and Peter Sells (1983), On the interpretation of resumptive pronouns, *in* 'Proceedings of NELS 13', pp. 47–61.
- Chiercha, Gennaro (1991), 'Functional wh and weak crossover', *WCCFL* **10**, 75–90.
- Chomsky, Noam (1981), *Lectures on Government and Binding*, Foris, Dordrecht.

BIBLIOGRAPHY

- Chomsky, Noam (1982), *Some concepts and consequences of the theory of government and binding*, MIT Press, Cambridge, Massachusetts.
- Chomsky, Noam (1986), *Barriers*, MIT Press, Cambridge, Mass.
- Chomsky, Noam (1995), *The Minimalist Program*, MIT Press, Cambridge, Massachusetts.
- Chomsky, Noam (2000), Minimalist inquiries: The framework, *in* R.Martin, D.Michaels and J.Uriagereka, eds, 'Step By Step: Essays In Syntax in Honor of Howard Lasnik', MIT Press, pp. 89–155.
- Chomsky, Noam (2001), Derivation by phase, *in* M.Kenstowicz, ed., 'Ken Hale. A Life in Language', MIT Press, Cambridge, Mass., pp. 1–52.
- Chung, Sandra (1998), *The Design of Agreement: Evidence from Chamorro*, University of Chicago Press, Chicago.
- Cinque, Guglielmo (1990), *Types of A'-dependencies*, MIT Press, Cambridge, Mass.
- Clements, George (1984), 'Binding domains in kikuyu', *Studies in the Linguistic Science* **14**, 37–56.
- Collins, Chris (1994), 'Economy of derivation and the generalized proper binding condition', *Linguistic Inquiry* **25**, 45–61.
- Cowper, Elizabeth (1985), Parasitic gaps, coordinate structures, and the subjacency condition, *in* 'Proceedings of NELS 15', GLSA, University of Massachusetts, Amherst, pp. 75–86.
- Culicover, Peter W. (2001), Parasitic gaps: A history, *in* P. D.Culicover and P. M.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Mass., chapter 1, pp. 3–68.

BIBLIOGRAPHY

- Emonds, Joseph E. (1985), *A unified theory of syntactic categories*, Foris, Dordrecht.
- Engdahl, Elisabet (1983), ‘Parasitic gaps’, *Linguistics and Philosophy* **6**, 5–34.
- Engdahl, Elisabet (1985), ‘Parasitic gaps, resumptive pronouns, and subject extractions’, *Linguistics* **23**, 3–44.
- Engdahl, Elisabet (2001), Versatile parasitic gaps, in P. D.Culicover and P. M.Postal, eds, ‘Parasitic Gaps’, MIT Press, Cambridge, Mass., chapter 4, pp. 127–146.
- Fanselow, Gisbert (2001), ‘Features, θ -roles and free constituent order’, *Linguistic Inquiry* **32**, 405–437.
- Felix, Sascha (1985), Parasitic gaps in German, in W.Abraham, ed., ‘Erklärende Syntax des Deutschen’, Niemeyer, pp. 173–201.
- Fischer, Silke (2004), Towards an Optimal Theory of Reflexivization, PhD thesis, University of Tübingen.
- Fischer, Silke (2006), ‘Matrix unloaded: Binding in a local derivational approach’, *Linguistics* **44**, 913–935.
- Frampton, John (1990), ‘Parasitic gaps and the theory of wh-chains’, *Linguistic Inquiry* **21**, 49–77.
- Franks, Steven (1993), ‘On parallelism in across-the-board dependencies’, *Linguistic Inquiry* **24**, 509–529.
- Gazdar, Gerald, Ewan Klein, Geoffrey K. Pullum and Ivan A. Sag (1985), *Generalized Phrase Structure Grammar*, Harvard University Press, Cambridge, Massachusetts.
- Georgi, Doreen and Gereon Müller (2010), ‘Noun phrase structure by reprojection’, *Syntax* **13**(1), 1–36.

BIBLIOGRAPHY

- Grosu, Alexander (1980), 'On the analogical extension of rule domains', *Theoretical Linguistics* **7**, 1–55.
- Haegeman, Liliane (1984), 'Parasitic gaps and adverbial clauses', *Journal of Linguistics* **20**, 229–232.
- Halle, Morris and Alec Marantz (1993), Distributed morphology and the pieces of inflection, in K.Hale and S.Keyser, eds, 'The View from Building 20: Essays in Honor of Sylvain Bromberger', MIT Press, Cambridge, Massachusetts, pp. 111–176.
- Heim, Irene and Angelika Kratzer (1998), *Semantics in Generative Grammar*, Blackwell.
- Hornstein, Norbert (1995), *Logical Form: From GB to minimalism*, Blackwell, Oxford.
- Hornstein, Norbert and Jairo Nunes (2002), 'On asymmetries between parasitic gap and across-the-board constructions', *Syntax* **5**, 26–54.
- Horvath, Julia (1997), 'The status of wh-expletives' and the partial wh-movement construction of hungarian', *Natural Language & Linguistic Theory* **15**, 509–572.
- Huang, C.T. James (1982), Logical relations in Chinese and the theory of grammar., PhD thesis, MIT.
- Huybregts, Riny and Henk Van Riemsdijk (1985), Parasitic gaps and atb, in 'Proceedings of the North Eastern Linguistics Society 15', GLSA, University of Massachusetts, Amherst, pp. 168–187.
- Kathol, Andreas (2001), Nonexistence of parasitic gaps in german, in P.Culicover and P.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Massachusetts, chapter 9, pp. 315–338.

BIBLIOGRAPHY

- Kayne, Richard (1994), *The antisymmetry of syntax*, MIT Press, Cambridge, Massachusetts.
- Kayne, Richard and Jean-Yves Pollock (1978), ‘Stylistic inversion, successive cyclicity, and move np in french’, *Linguistic Inquiry* **9**, 595–621.
- Kayne, Richard S. (1983), ‘Connectedness’, *Linguistic Inquiry* **14**, 223–250.
- Kearney, Kevin (1983), *Governing Categories*, University of Connecticut, Storrs.
- Kim, Soowon and James Lyle (1996), Parasitic gaps, multiple questions and vp ellipsis, in J.Camacho, L.Choueiri and M.Watanabe, eds, ‘The Proceedings of the Fourteenth West Coast Conference on Formal Linguistics’, CSLI Publications, Stanford, Calif., pp. 287–301.
- Kiss, Katalin (1985), ‘Parasitic chains’, *The Linguistic Review* **5**, 41–74.
- Kluender, Robert (1998), On the distinction between strong and weak islands: A processing perspective, in ‘The limits of syntax’, Academic Press, New York, pp. 241–279.
- Koster, Jan (1987), *Domains and dynasties*, Foris, Dordrecht.
- Lahne, Antje (2009), Where there is Fire there is Smoke: Local Modelling of Successive-Cyclic Movement, PhD thesis, Universität Leipzig.
- Lee, Kap-Hee (1988), A Theory of Parasitic Gaps, PhD thesis, Hankuk University of Foreign Studies.
- Lee, Kap-Hee (1998), ‘A minimalist approach to parasitic gap constructions’, *Studies in Generative Grammar* **8**, 343–363.
- Legate, Julie Anne (2003), ‘Some interface properties of the phase’, *Linguistic Inquiry* **34**, 506–515.
- Levine, Robert D., Thomas E. Hukari and Michael Calcagno (2001), Parasitic gaps in english: Some overlooked cases and their theoretical implications, in

BIBLIOGRAPHY

- P. D.Culicover and P. M.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Mass., chapter 6, pp. 181–222.
- Longobardi, Giuseppe (1985), *The theoretical status of the adjunct condition*, Scuola Normale Superiore, Pisa.
- Lutz, Uli (2004), Et, parasitic gaps and german clause structure, *in* H.Lohnstein and S.Trissler, eds, 'The syntax and semantics of the left periphery', Mouton de Gruyter, Berlin, pp. 265–312.
- Manzini, Rita (1994), 'Locality, minimalism and parasitic gaps', *Linguistic Inquiry* **25**, 481–508.
- Mayo, María del Pilar García (1994), 'Operators, clause-boundedness and finiteness in english vs. romance parasitic gap constructions', *Revista de Filología de la Universidad de La Laguna* **13**, 145–152.
- McCloskey, James (1979), *Transformational Syntax and model theoretic semantics*, Reidel, Dordrecht.
- Müller, Gereon (1993), On deriving movement type asymmetries, PhD thesis, Universität Tübingen.
- Müller, Gereon (2010), 'On deriving ced effects from the pic', *Linguistic Inquiry* **41**, 35–82.
- Müller, Gereon and Fabian Heck (2000), Successive cyclicity, long-distance superiority, and local optimization, *in* R.Billerey and B. D.Lillehaugen, eds, 'Proceedings of WCCFL 19', pp. 218–231.
- Munn, Alan (1992), 'A null operator analysis of atb gaps', *The Linguistic Review* **9**, 1–26.
- Munn, Alan (1994), A minimalist account of reconstruction asymmetries, *in* 'NELS 24', GLSA, University of Amherst, Massachusetts, pp. 397–410.

BIBLIOGRAPHY

- Munn, Alan (2001), Explaining parasitic gap restrictions, *in* P.Culicover and P.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Massachusetts, chapter 11, pp. 369–392.
- Nissenbaum, Jonathan W. (2000), Investigations of Covert Phrase Movement, PhD thesis, MIT.
- Nunes, Jairo (1995), The Copy Theory of Movement and Linearization of Chains in the Minimalist Program, PhD thesis, University of Maryland.
- Nunes, Jairo (2001), 'Sideward movement', *Linguistic Inquiry* **32**, 303–344.
- Ortiz de Urbina, Jon (1993), Feature percolation and clausal pied-piping, *in* J. I.Hualde and J.Ortiz de Urbina, eds, 'Generative Studies in Basque Linguistics', Benjamins, Amsterdam, pp. 189–219.
- Ouhalla, Jamal (2001), Parasitic gaps and resumptive pronouns, *in* P. D.Culicover and P. M.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Mass., chapter 5, pp. 147–180.
- Parker, Anna (1999), Parasitic gaps in the germanic languages, Master's thesis, National University of Ireland, Dublin.
- Pollard, Carl Jesse and Ivan A. Sag (1994), *Head-Driven Phrase Structure Grammar*, University of Chicago Press, Chicago.
- Postal, Paul (1993), 'Parasitic gaps and the across-the-board phenomenon', *Linguistic Inquiry* **24**, 735–754.
- Postal, Paul (1994), 'Parasitic and pseudoparasitic gaps', *Linguistic Inquiry* **25**, 347–364.
- Postal, Paul (1998), *Three investigations of extraction*, MIT Press, Cambridge, Massachusetts.

BIBLIOGRAPHY

- Postal, Paul (2001), Further lacunae in the english parasitic gap paradigm, *in* P. D.Culicover and P. M.Postal, eds, 'Parasitic Gaps', MIT Press, Cambridge, Mass., chapter 7, pp. 223–249.
- Richards, Norvin (1997), What moves where when in which language, PhD thesis, MIT, Cambridge, Massachusetts.
- Ross, John R. (1967), Constraints on variables in syntax, PhD thesis, MIT.
- Safir, Ken (1987), 'The anti-c-command condition on parasitic gaps', *Linguistic Inquiry* **18**, 678–683.
- Sag, Ivan A. (1983), 'On parasitic gaps', *Linguistics and Philosophy* **6**, 35–45.
- Stowell, Tim (1985), Licensing conditions on null operators, *in* 'Proceedings of the 4th West Coast Conference on Formal Linguistics', pp. 314–326.
- Svenonius, Peter (2004), On the edge, *in* D.Adger, C.de Cat and G.Tsoulas, eds, 'Peripheries: Syntactic Edges and their Effects', Kluwer, Dordrecht, pp. 261–287.
- Taraldsen, Knut (1981), The theoretical interpretation of a class of marked extractions, *in* A.Belletti, L.Brandi and L.Rizzi, eds, 'Theory of markedness in generative grammar', Scuola Normale Superiore, pp. 475–516.
- Williams, Edwin (1978), 'Across-the-board rule application', *Linguistic Inquiry* **9**, 31–44.
- Williams, Edwin (1990), 'The atb theory of parasitic gaps', *The Linguistic Review* **6**, 265–279.
- Yoon, Jeong-Me (2001), Feature percolation, movement and cross-linguistic variation in pied-piping, *in* 'Language, Information and Computation : Proceedings of The 15th Pacific Asia Conference : 1- 3 February 2001, Hong Kong', City University of Hong Kong, pp. 283–292.

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