

Subextraction

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1 Introduction

Displacement is a core property of human language. Constituents can be rearranged in syntactic structure. In (1a), for example, the direct object noun phrase (*this car*) has been moved to the left periphery of the clause and no longer occupies its base position, that is, complement to V, as in (1b):

- (1) a. This car I really like.
b. I really like this car.

In (1a), the noun phrase selected by the verb *like* is moved to a landing site within the so-called extended projection of the verb (see Grimshaw 1991; 1997), which is the clause (i.e., CP). The direct object remains within the structure projected from the verb, so to speak.¹

Turning to (2), the direct object *this car* is no longer part of the extended projection of the selecting verb *to like*. Rather, the direct object noun phrase has been moved out of the embedded clause (CP) and finds its landing site within the matrix clause.

- (2) *This car*_i I believe [_{CP} that you will really like *t*_i]

This instance of displacement is a case of *subextraction*: the direct object noun phrase is extracted from within the embedded clause; that is, it is moved to a landing position that is external to the extended projection (CP) of the head (*like*) with which it stands in a certain base relationship (in this case, a thematic relationship).²

In the spirit of the search for restrictions on displacement, the question should be raised of what restrictions hold on subextraction. From an “internal” perspective, the question arises of whether the position of the displaced element within the containing extended projection matters for subextraction. From an “external” perspective, the question arises of to what extent the position of the extended projection within the larger structural environment (e.g., a clause) matters for subextraction. In other words, what matters are the properties of the displaced (i.e., subextracted) element itself (β in (3)) and the properties of the phrase (extended projection) from which subextraction takes place (XP in (3)).

- (3) a. [_{YP} ... α ... [_{XP} ... X β ...]]
b. [_{YP} ... α ... [_{XP} ... β X...]]
where α is the landing site and β the extraction site.

The sentences in (4), which exemplify subextraction from the extended nominal projection (DP), show the internal perspective. They illustrate that subextraction from the direct object noun phrase is possible for the (right branch) element *who* in (4a) but not for the (left branch) element *whose* in (4b).

- (4) a. Who_i did you see [_{DP} a picture of *t*_i] yesterday?
b. *Whose_i did you see [_{DP} *t*_i picture] yesterday?

The example in (5) illustrates the relevance of the external perspective. It is impossible to extract *who* out of a subject noun phrase. In this respect, it differs

considerably from the pattern in (4a), in which *who* is removed from a direct object noun phrase.

- (5) *Who_i did [_{DP} a picture of t_i] amuse you yesterday?

Subextraction does not only apply to the clausal domain (see (2)) and the nominal domain (see (4a)). It can also apply to the (extended) prepositional domain (see among others Emonds 1985; Van Riemsdijk 1978; Corver 1990; Abels 2003) and to the (extended) adjectival domain (see, e.g., Corver 1990; 1997a; 1997b). Some illustrations are given in (6) and (7).³

- (6) a. [Whose throat]_i did she stick her finger [_{PP} into t_i]?
 b. [How far]_i did she stick her finger [_{PP} t_i into his throat]?
 (7) a. [Which of his sisters]_i was John [_{AP} heavily dependent on t_i] at the time?
 b. [How heavily]_i was John [_{AP} t_i dependent on his oldest sister] at the time?

In (6a), the complement of the preposition *into* has been extracted out of the PP, resulting in a preposition stranding pattern. In (6b), the left branch modifier *how far* has been removed from the PP. In (7a), *which of his sisters* has been extracted out of an adjective phrase; more specifically, out of the complement PP selected by the adjective *dependent*. In (7b), the left branch modifier *how heavily* has undergone extraction from an adjective phrase.

While subextraction of left branch material is possible in (6b) and (7b), subextraction of left branch constituents is not always permitted. Consider, for example, patterns (8a) and (8b), which minimally differ from (6b) and (7b), respectively:

- (8) a. *[Right]_i she stuck her finger [_{PP} t_i into his throat]!
 b. *[How]_i was John [_{AP} t_i dependent on his oldest sister] at the time?

Movement of *right* and *how* to the beginning of the sentence is only possible if the other material in the containing PP or AP is dragged along: the so-called pied-piping phenomenon (see Ross 1967, ch. 87):

- (9) a. [_{PP} Right into his throat]_i she stuck her finger t_i!
 b. [_{AP} How dependent on his oldest sister]_i was John t_i at the time?

The examples in (10) give some further illustrations of the pied-piping phenomenon. In (10a), the *wh*-word *how* drags along all the material contained within the AP and PP in which it is embedded, and in (10b), it drags along the material contained within the modifying AP and the larger AP in which this modifier is embedded. Compare in this respect the related structures in (6b) and (7b), where a smaller structure (i.e., the modifying APs *how far* and *how heavily*) has been pied-piped.

- (10) a. [_{PP} How far into his throat]_i did she stick her finger t_i?
 b. [_{AP} How heavily dependent on his oldest sister]_i was John t_i at the time?

The observation that left branch elements may differ from each other in their subextraction behavior, as exemplified by the contrast between (6b) and (7b) on the one hand and (8a) and (8b) on the other hand, extends to right branch elements. For instance, although subextraction from a (direct object) noun phrase is permitted in (4a), subextraction of a nominal or prepositional constituent is impossible in the following examples (see among others Bach and Horn 1976; Chomsky 1977; Koster 1978; 1987):

- (11) a. *Who_i did you destroy [a picture of t_i] yesterday?
 b. *What_i did Einstein attack [a theory about t_i]?
 c. *[About what]_i did Einstein attack [a theory t_i]?
 d. *[From which shelf]_i did Susan read [a book t_i]?

As is clear from the few examples above, the phenomenon of subextraction raises a variety of questions: (a) What permits subextraction of certain left branch elements but not others? (b) What permits subextraction of certain right branch elements but not others? (c) To what extent does the position/distribution of the phrase from which extraction takes place play a role in subextraction behavior? From a cross-categorial perspective, the question can be raised to what extent phrases (extended projections) behave similarly or differently as regards their subextraction possibilities.

Since a discussion of subextraction behavior across the various extended projections falls beyond the scope of this chapter, I will focus on subextraction from one particular domain, namely the extended nominal projection (although sometimes reference will be made to subextraction from other syntactic domains). The spirit of the various analyses that have been proposed for subextraction phenomena involving the nominal domain remains the same for subextraction phenomena from other categorial projections, such as adjective phrases, prepositional phrases, and verbal phrases/clauses.

The chapter will be organized as follows. The first part will focus on subextraction of left branch material. I will take Ross' (1967) Left Branch Condition as my point of departure (see section 2). According to this island condition, constituents that are on a left branch typically do not undergo displacement (see, e.g., (4b)). In section 3, I will discuss various alternative analyses that have been proposed in order to capture the impossibility of extracting left branch elements from within the nominal system in a language like English. Section 4 addresses the question about the subextraction behavior of (noun phrase-internal) left branch elements from a cross-linguistic perspective. More specifically, the question should be raised as to whether this restriction on subextraction from noun phrases is a universal one. As Ross pointed out himself (section 2), the answer is "no." There are languages (e.g., Russian and Latin) that quite freely permit extraction of left branch constituents from within the nominal domain. The question therefore arises of what underlies this cross-linguistic variation in subextraction behavior. Section 4 discusses a number of accounts that have been given for the left branch extraction behavior of various Slavic languages. Besides languages quite freely permitting subextraction from noun phrases, there are also languages that in general exclude such subextraction but have one or more construction types that exceptionally permit subextraction. In section 5 one such construction will be highlighted, namely, the so-called *wat voor N*

construction ('what for *N'*'; 'what kind of *N'*') in Dutch, a construction type which is also found in other Germanic languages. This nominal construction has the exceptional property that the left branch interrogative element *wat* can be moved out of the noun phrase (so-called *wat voor* split). This section will also contain a brief discussion of another "exceptional" subextraction phenomenon, namely *combien* extraction in French. I will use the case of *wat voor* split to discuss the role played by the syntactic position of the noun phrase from which extraction takes place. (Recall the contrast between subextraction from an object noun phrase and subextraction from a subject noun phrase as exemplified in (4a) and (5), respectively.) Section 6 provides a discussion of extraction of right branch material from noun phrases. Section 7 concludes this chapter.

2 The Left Branch Condition

Ross (1967, 127) was one of the first who observed the immobility of elements that specify or modify nominal constituents. Some illustrations are given in (12)–(15).

- (12) a. **This* I really like [____ car]!
 b. *This car* I really like ____ !
- (13) a. **Which* do you like [____ car]?
 b. *Which car* do you like ____?
- (14) a. **What* he is [____ a fool]!
 b. *What a fool* he is ____!
- (15) a. **Whose* do you like [____ car]?
 b. *Whose car* do you like ____?

As illustrated by these examples, determiners carrying demonstrative, interrogative, or exclamative force and possessors like *whose* cannot be removed from the nominal domain. The (b)-examples show the entire noun phrase has to be fronted. Under the assumption that it is some grammatical property of the specifying element (e.g., a *wh*-feature) that triggers the displacement process, we can say that the determiners and the nominal possessor drag along ("pied-pipe") the rest of the material contained within the noun phrase.

As shown by (16) and (17), it is not only left branch determiners and possessors that are inaccessible to movement. Such modifying elements as attributive APs cannot be removed from the noun phrase either. As shown by the (b)-examples, pied-piping is required.

- (16) a. **Very big* John bought [a ____ car].
 b. *A very big car* John bought ____.
- (17) a. **How big* did John buy [____ a car]?
 b. *How big a car* did John buy ____?

Ross (1967) observes that degree words that specify an adjective cannot be removed from the larger adjective phrase either; see the examples in (18)–(20). In this case too, preposing must apply to the entire adjective phrase. More precisely, the degree word that is targeted for movement carries along (i.e., pied-pipes) the other material contained within the dominating extended adjectival projection.

- (18) a. **That* she certainly isn't [____ tall]!
 b. *That tall* she certainly isn't ____!

- (19) a. **How* you are [____ tall]!
 b. *How tall* you are ____!

- (20) a. **How* are you [____ tall]?
 b. *How tall* are you ____?

In order to account for the immobility of left branch elements, Ross formulated the Left Branch Condition:⁴

- (21) Left Branch Condition (LBC):
 No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

Reference to the notion *left branch* is prompted by the fact that determiners, possessors like *whose*, and (AP-internal) degree words occupy a position to the left of the nominal/adjectival projection line. In the formulation of the condition it is the linear property of leftmostness that determines the non-extractability of certain elements, that is, NPs according to Ross. We should add immediately here that for Ross the categorial label "NP" applies not only to a lexical item like *whose* in (15), but also to adjective phrases (as in (16) and (17)) and degree words such as *that* and *how* in (18)–(20). Given this assumption, the LBC correctly predicts the ill-formedness of the (a)-examples in (12)–(20).⁵ In (15a), for example, the NP *whose* is the leftmost element within the containing NP and therefore cannot be moved out of it. In (19a) and (20a), the NP *how* is extracted from the larger NP *how tall*. Since *how* is the leftmost element within the larger NP, subextraction yields an LBC violation. In (17a) it is the *wh*-degree word *how* that is targeted for movement. *How* itself cannot be fronted since it is the leftmost element within the NP *how big* (**How did John buy* [[____ *big*] *a car*]?) The NP *how big* cannot be fronted either; it is the leftmost element within the NP *how big a car*. The only legitimate displacement is movement of the entire direct object NP. So the interrogative degree word *how*, which is targeted for movement, drags along (pied-pipes) the dominating attributive AP and the dominating NP.

A question which obviously arises is whether the inaccessibility of left branch elements (in the nominal and adjectival domain) is a universal property of human language. That is, is the LBC a universal constraint? As Ross (1967) himself had already observed, in certain languages (e.g., Russian, Latin) subextraction of left branch specifiers and modifiers is permitted. Consider, for example, the examples in (22) from Polish, where a specifying or modifying element is removed from the containing

noun phrase (examples from Rappaport 2000). It should be noted that pied-piped variants, involving fronting of the entire noun phrase, are also grammatical.⁶

- (22) a. *Czyja* ukradłeś [____ książkę]?
 whose you-stole book
 'Whose book did you steal?'
 b. *Jaką* kupiłeś [____ książkę]?
 what you-bought book
 'What (kind of) book did you buy?'
 c. *Jak duże* widziałeś [____ auto]?
 how big you-saw car
 'How big a car did you see?'

About those languages that do not display the LBC effect Ross (1967, 146) makes the following remark:

As far as I know, it is only in highly inflected languages, in whose grammar the rule *Scrambling* appears, that the Left Branch Condition is not operative, but it is not the case that it is not operative in all such languages. At present, therefore, I am unable to predict when a language will exhibit the Left Branch Condition and when not.⁷

In section 4, a number of proposals will be discussed that try to account for this cross-linguistic variation in subextraction behavior.

Besides those languages which rather freely admit subextraction from the nominal and/or adjectival system, there are also languages which, on the whole, obey the LBC, except for some special construction(s). Consider, for example, the following cases:

(23) Dutch

- a. *Wat* heeft Jan [____ voor boeken] verkocht?
 what has Jan for books sold
 'What kind of books did John sell?'
 b. **Welke* heeft Jan [____ boeken] verkocht?
 which has Jan books sold
 'Which books did Jan sell?'

(24) French

- a. *Combien* a-t-il vendu [____ de livres]?
 how-many has-he sold of books
 'How many books did he sell?'
 b. **Quels* a-t-il vendu [____ livres]?
 which has-he sold books
 'Which books did he sell?'

(25) Hungarian

- a. *Ki-nek* akarod, hogy halljam [____ a hang-já-t]?
 who-DAT you-want that I-hear the voice-POSS.3SG-ACC
 'Whose voice do you want me to hear?'

- b. **Melyik* akarod, hogy halljam [a ____ hang-t]?
 which you-want that I-hear the voice-ACC
 'Which voice do you want me to hear?'

In the (a)-examples in (23)–(25), a left branch element is removed from a containing noun phrase. In (23a) the *wh*-element *wat* has been extracted out of a so-called *wat voor N* construction, yielding a discontinuous noun phrase. In (24a) the interrogative quantifier *combien* has undergone subextraction from the noun phrase. In (25a), finally, a nominal possessor has been reordered out of a larger noun phrase (see Szabolcsi 1983). These subextractions are exceptional in those languages. In general, left branch elements cannot be removed out of the noun phrase in those languages, as is illustrated by the (b)-examples in (23)–(25).

For the adjectival domain too, some “special” instances of left branch extraction have been noted in the literature (Grosu 1974; Bracco 1980; Rivero 1980; Corver 1990; 2000; Rizzi 1990). Compare, for instance, the (a)-examples with the (b)-examples in (26)–(28). The (a)-examples also permit the pied-piping pattern, in which the entire adjective phrase has been fronted to the left periphery of the clause. The pied-piping pattern (i.e., fronting of the entire adjective phrase) is the only well-formed structure for the (b)-examples.

(26) Spanish

- a. ¿*Cómo* dices que es [____ de inteligente]?
 how you-say that he-is of intelligent
 'How intelligent do you say he is?'
- b. **Tan* es [____ inteligente]!
 so-much he-is intelligent
 'He is so intelligent!'

(27) Romanian

- a. *Cît* e Maria [____ de frumoasă]!
 how-much is Mary of beautiful
 'How beautiful Mary is!'
- b. **Ce* e Maria [____ frumoasă]!
 what is Mary beautiful
 'How beautiful Mary is!'

(28) Italian

- a. *Quanto* è [____ alto]?
 how-much he-is tall
 'How tall is he?'
- b. **Tropo* è [____ alto]!
 too-much he-is tall
 'Too tall he is!'

The limited subextraction phenomenon exemplified in the (a)-examples in (23)–(25) and (26)–(28) raises the question as to why extraction is permitted in those cases. That is, in what way do these constructions differ from “normal” noun phrases or adjective phrases, which do not permit subextraction? In section 5, we

will address this question by discussing a number of analyses that have been proposed in the literature for the split *wat voor N* construction (see (23a)) and the split *combien de N* construction (see (24a)).

3 Constraints on left branch extraction

In this section we discuss (in more or less chronological order) a number of analyses of the LBC effect that have been given in various stages of generative-syntactic research. Each of these analyses relates the impossibility of subextraction to some grammatical property of the syntactic structure: (a) the linear or hierarchical position of the subextracted element within the phrase in which it is embedded (section 3.1); (b) the bounding nature (barrierhood/phasehood) of the phrase dominating the left branch element that is targeted for movement (sections 3.2 and 3.4); (c) the licensing (i.e., proper government) of the trace left behind after subextraction (section 3.3); (d) the nature of the hierarchical organization of the extended nominal projection (section 3.4); (e) the morphological or phonological interpretability of the syntactic structure after subextraction has applied (section 3.5).

3.1 Constraints in terms of the extraction site

In Ross (1967), the immobility of NP-internal (and AP-internal) left branch specifiers and modifiers was noted. According to his LBC, the factor determining their immobility is their syntactic placement within the containing phrase (i.e., NP); that is, when some element α is leftmost within NP, α cannot be extracted out of that NP. Strictly speaking, the formulation in (21) does not account for the ungrammaticality of the following examples:

- (29) a. **Very pretty* I saw [John's ____ daughter].
 b. **Very intelligent* I met [several ____ girls].

In these examples the attributive AP is not the leftmost constituent of the containing NP. Nevertheless, subextraction is not permitted. Evidently, reference to leftmostness is too weak.

Emonds (1976; 1980; 1985) proposed various reformulations of Ross' LBC. In Emonds (1985) the following definition is given:

- (30) Generalized Left Branch Condition (GLBC):
 No syntactic category C^j to the left of the lexical head of an X^2 can be analyzed as a C^j by a transformation.

Like Ross' LBC, the GLBC states that the (linear) property of being to the left of the (lexical) head of a phrase is the relevant factor that accounts for non-extractability. Emonds' reformulation differs, however, in one crucial respect from Ross' LBC: the GLBC refers to all material to the left of the head of a phrase, not only to the

constituent that is leftmost of the head of a phrase. So the ill-formedness of the examples in (29) is predicted.

Chomsky (1973, n. 10) gives a reinterpretation of Ross' LBC as a condition that would prevent extraction of the specifier of an NP or an AP.⁸ He argues that the ungrammaticality of sentences such as (12)–(20) "can perhaps be attributed to a principle that requires that if the specifier of a noun phrase or an adjective phrase ... is extracted, then the whole phrase must be extracted." As opposed to Ross' LBC, which refers to the property of leftmostness, Chomsky's Specifier Constraint refers to the property of being in a certain hierarchical position within the phrase, namely the specifier position of a phrase XP.

A similar reinterpretation of Ross' LBC is proposed by May (1977). He formulates the following condition:

- (31) Condition on Analyzability:
If a rule \emptyset mentions SPEC, then \emptyset applies to the minimal [+N]-phrase dominating SPEC, which is not immediately dominated by another [+N]-phrase.

This condition states that if a transformational rule targets an element occupying the specifier position of a [+N]-projection (i.e., NP and AP), the dominating [+N]-projection is the category that is displaced. The addition "which is not immediately dominated by another [+N]-phrase" excludes displacements like (32):

- (32) **Whose father's* did you see [____ car]?

The *wh*-element *who(se)* is targeted for *wh*-movement. The containing NP (*whose father*) cannot be fronted, however, since it is immediately dominated by another NP (i.e., [+N]-projection).

The four constraints mentioned above (LBC, GLBC, the Specifier Constraint, and the Condition on Analyzability) all try to account for the impossibility of left branch subextraction in English in terms of a property of the extraction site. This could be either the linear property "leftmostness" or "being to the left of the head," or the hierarchical property of being in the specifier position. The former refers to a string-peripheral position, the latter to a hierarchically peripheral position.

It is interesting to see that in the (early) generative literature conditions have been proposed that claim exactly the opposite. These conditions state that extraction of some element A from within a phrase is only possible if A is in a string-peripheral/hierarchically peripheral position.⁹ An example of a condition stating the accessibility of string-peripheral positions is De Haan's (1979) Accessibility Condition.

- (33) Accessibility Condition:
No transformational rule can involve X^1 , Y or X^2 , Y in the structure:
... X^1 ... [α ... Y ...] ... X^2 ...
where α is a bounding node,
unless Y is left peripheral in α ,
or Y is right peripheral in α , respectively.

According to this condition, some targeted constituent Y can leave the dominating phrase (α) only if Y is in a string-peripheral position: left-peripheral for leftward subextraction, right-peripheral for rightward subextraction.

An example of a constraint stating that structurally peripheral positions are accessible to movement is Van Riemsdijk's (1978) Head Constraint:¹⁰

(34) Head Constraint:

No rule may involve X_i/X_j and Y_i/Y_j in the structure

... X_i ... [H^n ... [H' ... Y_i ... H ... Y_j ...] H' ...] H^n ... X_j ...

(where H is the phonologically specified (i.e., non-null) head and H^n is the maximal projection of H, and H ranges over V, N, A, P.)

Van Riemsdijk points out that in a language like Dutch certain complements of P (namely pronominal elements such as *het* 'it', *wat* 'what', *dat* 'that') are moved to [SpecPP], where they change their formal appearance; that is, they become R-pronouns (*er* 'there', *daar* 'there', *waar* 'where'). Due to this PP-internal movement the R-pronoun is no longer within the complement domain of P (i.e., H in (34)).

Being in the specifier position of PP, the R-pronoun is accessible to movement operations (see also Preposition Stranding):¹¹

- (35) a. *Daar_i* heeft Jan [_{PP} *t'_i* [_{P'} op *t_i*]] gerekend.
 there has Jan on counted
 'That, John counted on.'
- b. *Waar_i* heeft Jan [_{PP} *t'_i* [_{P'} op *t_i*]] gerekend?
 where has Jan on counted
 'What did John count on?'

As shown by the ill-formedness of (36), nominal elements that remain in the complement position within the PP cannot be reordered out of the PP (see (36a); pied-piping of the dominating PP is required, as in (36b)).

- (36) a. **Wie_i* heb je [_{PP} [_{P'} op *t_i*]] gerekend?
 who have you on counted
 'Who did you count on?'
- b. [_{Op} *wie_i*]_i heb je *t_i* gerekend?
 on who have you counted
 'Who did you count on?'

Obviously, if the Left Branch effect is not explained in terms of a distributional property of the extraction site (i.e., leftmost/string-peripheral within projection XP or hierarchically peripheral within XP), some other linguistic property must be found that is responsible for the non-extractability of NP-internal (or AP-internal) left branch elements in a language like English. In the next section, I will discuss an approach that tries to capture the Left Branch effect in terms of the bounding nature (barrierhood) of the phrasal node containing the left branch element.

3.2 Subextraction and the containing extraction domain

The Subjacency Condition (see Chomsky 1973; 1977; 1986) is a locality constraint which ascribes the impossibility of certain movement operations to the syntactic configuration that contains the node to be moved.¹² This locality constraint states that a transformational rule cannot move a constituent from position Y to position X in a configuration like (37) if α and β are bounding nodes (so-called “barriers” in Chomsky 1986); NP and S (i.e., IP/TP) being bounding nodes for English.

(37) ... X...[α ...[β ...Y...]...]...X..

Chomsky points out that various island constraints – the Complex NP Constraint, the *Wh*-Island Constraint, and the Subject Condition, for example – are subsumed under the Subjacency Condition. The possibility of deriving the ill-formed subextractions in (12)–(17) is not discussed in Chomsky (1973; 1977).¹³ Movement of determiners, possessors, and attributive APs from within the nominal domain to Comp (in Chomsky 1986: [SpecCP]) always crosses two bounding nodes in English, namely NP and S (IP in Chomsky 1986). So it seems that at least for English, part of the LBC effects can be reduced to the Subjacency Condition as formulated above.

Chomsky (1981, 168), however, points out that a Subjacency account of the ill-formed subextraction examples in (12)–(17) is unlikely, given the fact that similar subextractions are ill-formed in a language like Italian (see (38) and (39)), which, as argued by Rizzi (1982), has NP and *S'* (i.e., CP) as bounding nodes for Subjacency. If Italian has *S'* (CP) rather than S (IP) as a bounding node, left branch extraction out of a noun phrase is not blocked by the Subjacency Condition.

(38) **Questi* hai incontrato [____ ragazzi]?
 which you-have met boys
 ‘Which boys did you meet?’

(39) **Quanti* hai incontrato [____ ragazzi]?
 how-many you-have met boys
 ‘How many boys did you meet?’

In view of the fact that the LBC effect cannot be subsumed under the Subjacency Condition, there should be some other principle of grammar to which it can be reduced. Chomsky (1981, 168) suggests that the Empty Category Principle (ECP) is a good candidate for explaining the impossibility of left branch subextraction from NP. In the next section, I will discuss this ECP approach to LBC effects.

3.3 Subextraction and proper government

Another approach to the restrictions on left branch subextraction is in terms of the licensing of the empty category (i.e., trace) left behind after movement. The principle of grammar regulating the distribution of (non-pronominal) empty categories is the ECP (see Chomsky 1980; 1981). This principle requires that traces be properly

governed (i.e., locally identified) by a proper governor. In Chomsky (1981), the relation of proper government is defined as follows:

- (40) Proper government:
 A properly governs B iff A governs B, and
 (i) A is lexical (= X^0), or
 (ii) A locally binds B

Under this approach, subextraction of NP- and AP-internal specifiers and modifiers is blocked due to the fact that the trace is not properly governed. In other words, the trace left behind after subextraction is illegitimate.

Chomsky (1981, 168) contains a short discussion of the non-extractability of left branch possessor noun phrases from within NPs in English (e.g., **Whose did you read book?*). He accounts for the ill-formedness of this possessor subextraction by stating that even though N governs the trace in the specifier position of NP, it does not *properly* govern this empty element; that is, N does not belong to the set of proper governors. This account of the non-extractability of left branch possessors from within NP obviously extends to other left branch effects, such as those involving determiners (see (12), (13)) and attributive APs (see (16), (17)).

Chomsky's analysis relies on the assumption that the trace occupying the specifier position of NP cannot be properly governed from outside. If proper government of the empty category in [SpecNP] by a noun phrase-external proper governor (e.g., V) were possible, subextraction (e.g., of *whose*) should be permitted.¹⁴ Thus, the question arises as to what blocks proper government of the trace in [SpecNP] by an external governor, say V. As pointed out earlier, Chomsky assumes that even though the trace is not properly governed by N, it falls within the government domain of N (for reasons of genitive case assignment). Implicit in this analysis is the idea that potential proper governors that are external to NP do not have access to [SpecNP] if this position falls within the government domain of the lexical head N. So, a trace always falls within the government domain of a single head. Giorgi and Longobardi (1991, 101) state this explicitly in terms of their Uniqueness Constraint on Government:¹⁵

- (41) Uniqueness Constraint on Government:
 If a position β is governed by a lexical head α , it has no other governors

They point out that left branch possessors, attributive APs, and other left branch elements that cannot be removed from within NP fall within the government domain of N. The reason is that these left branch elements enter into a case dependency with N (i.e., N assigns genitive case to the possessor) or into an agreement relationship with N (e.g., in number or gender). With Chomsky, they assume that even though N governs these left branch positions, it does not properly govern them.

Rizzi (1990) also proposes an ECP account for such ill-formed specifier extractions as *Whose did you see [____ car]?* In contrast with Chomsky (1981) he adopts a conjunctive definition of the ECP. More specifically, he states that a non-pronominal empty category must be (i) properly head-governed and (ii) antecedent-governed or theta-governed (see Rizzi 1990, 32). The former

component of this formulation of the ECP captures the formal licensing relation; that is, it characterizes the formal environment in which the null element can be found. The second component is the principle of identification, which recovers some contentive property of the null element on the basis of its immediate structural environment. As for the formal licensing relation, Rizzi assumes that a trace must be head-governed within the immediate projection of the head. In other words, complements to a head H are properly head-governed; specifiers are not. As a consequence, specifier (or modifier) extractions like those in (12)–(15) and (16)–(17) from within the nominal domain are impossible, given the fact that the trace left behind after subextraction falls outside the proper head government domain of the head (N). It is furthermore assumed that potential proper governors (like V) do not have access to the NP- or AP-internal specifier position. In other words, government into the nominal domain is excluded. This opacity of the NP is determined as follows: even though N does not head-govern the specifier position, it has m-command over the specifier position. This way, the lexical head N always intervenes between the specifier of N and the external governor.

Giorgi and Longobardi (1991) and Rizzi (1990, 111, n. 4) point out that the impossibility of specifier extraction from within AP (see (18)–(20)) can be explained along the same lines: A is not a proper governor for the trace in [SpecAP]. Government of the trace in [SpecAP] by some external governor (say V) is blocked because the lexical head A protects its Spec position for government from outside.

Thus far, it has been shown that the restrictions on subextraction from NP and AP can be explained in terms of the theory of proper government (the ECP), if it is assumed that N and A are not sufficient governors and that NP-/AP-external governors cannot govern into the nominal or adjectival domain. Of course, there are cases where subextraction is permitted: subject noun phrases in [SpecCP] can be extracted from within IP (see (42)), and *wh*-phrases in [SpecCP] (via successive cyclic movement) can be removed from CP (cf. (43)).

(42) *Who* (do you think) [_{IP} ____ left]?

(43) *What* did she say [_{CP} ____ [_{C'} that [_{IP} John bought ____]]]?

These examples show that certain specifier positions are accessible to extraction. Giorgi and Longobardi (1991, 101) and Rizzi (1990) relate this contrast in Spec accessibility to the lexical/non-lexical distinction: specifiers of I and C are available to external government (e.g., by V); specifiers of lexical categories (e.g., N, A) are not.

The proper government approaches discussed so far adopt the so-called lexical head analysis for noun phrases and adjective phrases: that is, specifying elements like *that*, *which*, *whose*, and *how* occupy the specifier position of a lexical head (N, A); see Chomsky (1970), Jackendoff (1977), Corver (2013).

- (44) a. [_{NP} that/which/whose [_{N'} car]]
 b. [_{AP} how/that [_{A'} tall]]

In Corver (1990; 1992; 1997a; 1997b) an ECP approach to the Left Branch effect is developed which makes use of the DP- and DegP-hypotheses for nominal and

adjectival structures (see Abney 1987). The relevant structural configurations are then as in (45) and (46).

(45) [_{VP} V [_{DP} who [_{D'} D (= that/which/'s) [_{NP} [_{AP} very big] [_{N'} car]]]]]

(46) [_{VP} V [_{DegP} Spec [_{Deg'} Deg (= how/that) [_{AP} tall]]]]]

Adopting a Barriers-type theory of locality (Chomsky 1986), Corver accounts for the left branch extraction effects in the following way. Subextraction of the *wh*-determiner *which* in (45) is blocked by the ECP (and Subjacency). Being a head (D), *which* must move directly to the left periphery of the clause (CP). The *wh*-determiner cannot escape the barrierhood of intervening maximal projections (VP and IP) by adjoining to them; this is due to the structure preservation requirement that an X^0 category cannot adjoin to an XP category. So, movement to the left periphery of the clause crosses two barriers: VP and IP (the latter by inheritance according to Chomsky's (1986) theory). This is represented schematically in (47), where the boldface phrasal categories are barriers for extraction.

(47) [_{CP} Spec [_{C'} C [_{IP} ... [_{VP} V [_{DP} [_D **which**] [_{NP} **car**]]]]]]]

After having been moved (directly) to the left periphery of the clause, the *wh*-determiner would not be able to antecedent-govern the trace. Moreover, Subjacency would be violated since two barriers (i.e., bounding nodes) have been crossed.

The non-extractability of the attributive AP (*very big*) is explained as follows. Under the Barriers theory, both NP and DP are barriers. NP is an inherent barrier because it is not governed by a lexical category (i.e., it is governed by D), and DP is a barrier by inheritance; that is, it immediately contains an inherent barrier. Direct movement of the attributive AP out of DP would yield a Subjacency violation. It should be noted, though, that the AP could escape a Subjacency violation by moving into [SpecDP] before leaving the DP. This intermediate step crosses only one barrier, namely NP. Even though a Subjacency violation may be circumvented this way, the trace in the original position of the moved attributive AP would not satisfy the ECP. The trace is not lexically governed (i.e., N does not stand in a theta-relation to the AP), nor is it antecedent governed; the NP projection protects the trace in the original position from government from outside.¹⁶

The non-extractability of *whose* in (45) is explained as follows. With Abney (1987), Corver assumes that this possessor is not a constituent: *who* occupies [SpecDP] while *-se* is the D-head. Given the fact that only constituents can move, *whose* is frozen in situ; fronting is possible only if the rest of the noun phrase is pied-piped.¹⁷

Consider next the adjectival structure in (46). Extraction of the degree word is out for the same reason that determiners cannot be extracted. The Deg⁰ must be moved directly to the left periphery of the clause; it cannot escape the barrierhood of intervening XP categories (e.g., DegP, VP, IP) due to the fact that a head (Deg⁰) cannot adjoin to a maximal category (XP). Fronting of the degree word makes it cross three barriers, yielding a violation of both the ECP and the Subjacency Condition. Schematically:

(48) [_{CP} Spec [_{C'} C [_{IP} ... [_{VP} V [_{DegP} [_{Deg} **how**] [_{AP} **tall**]]]]]]]

3.4 A phase-based analysis (or constituency-based analysis?)

Bošković (2005a; 2005b; 2008a; 2008b) develops an analysis of the Left Branch effect which, in the spirit of Chomsky's (1993; 1995) Minimalist Program, gets rid of government and the ECP. With Corver (see section 3.3), he assumes that possessors like *whose* are not constituents and therefore cannot undergo subextraction. He also adopts the position that the immobility of *which* and *that* relates to their head-like status (D^0); see (45). For the impossibility of subextracting attributive APs (see, for example, (16)–(17)) he explores two analyses: (i) a locality analysis based on the notion of Phase (see Chomsky 2001; 2008), and (ii) a constituency analysis based on Abney's (1987) proposal that an English attributive adjective does not occupy a specifier position within NP (the NP-over-AP pattern) but rather takes NP as a complement (the AP-over-NP pattern). Let us first consider the phase analysis.

The phase-based analysis starts out from the idea that a constituent XP can move out of a phase – a notion quite similar to the pre-minimalist notion of bounding node; see section 3.2 – only if it first moves to the Spec of the Phase head. This locality requirement on movement operations is formulated as the Phase Impenetrability Condition (PIC; see Chomsky 2001; 2008), which says that only the head and the Spec of a phase are accessible for movement to a position outside of the phase (see also note 9). Under the assumption that DP is a phase, a phrasal constituent XP contained within DP can only escape from DP via [SpecDP].¹⁸ In a sentence like (49a), for example, the *wh*-phrase *who* leaves the direct object noun phrase via [SpecDP]; see (49b). This DP-internal movement is triggered by a so-called EPP feature on D (see Bošković 2005a, n. 18). From [SpecDP] it moves on to [SpecCP] in order to check off some feature on C.¹⁹

- (49) a. *Who* do you like friends of?
 b. *Who* do you like [_{DP} ____ [_D D [_{NP} friends of ____]]]?

Now, what blocks movement of an attributive AP out of a containing DP (see, e.g., (16a))? Taking the attributive AP to be adjoined to the lexical projection NP, Bošković argues that movement from this syntactic position to [SpecDP] is ruled out for reasons of economy. More specifically, the movement is too local, in the sense that it does not cross a (full) XP boundary; it only crosses an NP segment of the NP boundary:

- (50) *John bought [_{DP} *very big* [_D a [_{NP} ~~*very big*~~ [_{NP} car]]]] (violates anti-locality)

This ban on movements that are too local (or alternatively, the extraction site and landing site should not be structurally too close) is made explicit by the following condition on chain links (see Bošković 1994; 2007; Saito and Murasugi 1999):²⁰

- (51) Each chain link must be at least of length 1, where a chain link from A to B is of length n if there are n XPs that dominate B but not A.

If the attributive AP cannot escape from the noun phrase (DP) via [SpecDP], then the only alternative is to move in one fell swoop out of the noun phrase (see (52)).

This movement operation, however, violates the PIC; that is, the movement step from the position adjoined to NP to a position external to DP is not local enough.

(52) **Very big* John bought [_{DP} [_{D'} a [_{NP} ~~very big~~ [_{NP} car]]]] (violates PIC)

In short, the attributive AP is trapped in its position: movement can never be of the right type.²¹

As an alternative to his phase-based analysis of the immobility of attributive APs in English, Bošković proposes an analysis which relies on Abney's (1987) proposal that in a language like English the attributive AP is not embedded within NP (the NP-over-AP pattern; see (52)) but rather the other way around (the AP-over-NP pattern).²² More specifically, the attributive adjective takes the lexical projection NP as its complement:

(53) John bought [_{DP} ____ [_{D'} a [_{AP} (very) big [_{NP} car]]]]

The non-extractability of (*very*) *big* in (53) immediately follows: subextraction of (*very*) *big* is blocked because it would involve reordering of a non-constituent (the AP is not a constituent (i.e., a phrase) to the exclusion of the NP).

3.5 Subextraction and morphological/phonological constraints

Movement operations have often been formulated in terms of the category that is moved. For example, in a *wh*-movement construction like *Which car did you see?*, it is the *wh*-word *which* that is targeted by the movement rule. In Chomsky (1995) it is not so much the category itself (say, D) that is targeted for movement, but rather some property of the feature inventory making up the category. In the case of a *wh*-determiner like *which*, it is a *wh*-feature rather than the category D (i.e., the element instantiating the entire feature structure) which is targeted. It is further assumed that this feature associated with a lexical item is raised to some position in the functional domain where this feature is checked off (i.e., where it enters into a matching relation with a functional head which is specified for this grammatical feature). Chomsky (1995, 262 ff.) assumes that for reasons of economy, the operation Move just seeks to raise the feature F (e.g., *wh*-). More material is moved along (i.e., pied-piped) with the raised feature if this is needed to get an interface representation that is interpretable. Chomsky argues that it is especially properties of the phonological component that require such pied-piping. Isolated features and other scattered parts of words may not be subject to phonological rules; the representation will be "unpronounceable." Chomsky further notes that there may be a morphological requirement that features of a single lexical item must be within a single X^o (see McGinnis 1995). Or to put it differently, subextraction of a feature F from within the feature constellation making up a lexical item is impossible (at least in overt syntax). The targeted feature will move along the rest of the feature constellation making up the lexical item, and possibly other material will be moved along.

Chomsky gives the following example of this approach to "phonology driven" pied-piping: a *wh*-word like *who* has three components: the *wh*-feature, an abstract element underlying indefinite pronouns, and the feature [\pm human]. The operation

of *wh*-movement raises just the *wh*-feature. Movement of this feature (i.e., subextraction from within the word) alone would result in an illegitimate PF representation; the features making up the word would be scattered and consequently be unpronounceable. Therefore, at least the whole word *who* will have to be pied-piped in overt movement. Chomsky further points out that in a string like (54a) having representation (54b), the *wh*-feature must drag along the entire DP.

- (54) a. whose car
 b. [DP who [D' -s(e) [NP car]]]

Under the assumption that *-s(e)* cliticizes onto its host *who* not in syntax but in phonology, raising of *who* alone leaves behind the sequence *-s book*, which is an illegitimate PF object (see, though, note 17). *Who's* (= *whose*) cannot raise either since it is not a syntactic object (i.e., not a constituent), and hence not input to any movement operation (see also Corver 1990, 172). So it is the entire DP (*whose car*) that must be moved in order to get a legitimate PF representation. Thus, according to Chomsky (1995), LBC effects reduce to phonological and morphological requirements rather than syntactic requirements (like, for example, the ECP). Certain subextractions, that is, yield representations that cannot be interpreted by morphological or phonological rules.

Kennedy and Merchant (2000), too, argue that the principles underlying the LBC must be formulated in terms of PF representations.²³ In line with the idea of Full Interpretation (see Chomsky 1995), they argue that (at least) all terminal nodes must have a phonological value. In the Distributed Morphology approach proposed by Halle and Marantz (1993), according to which lexical items are inserted late in the derivation, the notion of “having a phonological value” is implemented in terms of the presence or absence in the lexicon of lexical items instantiating the featural combinations on syntactic objects. So the syntax feeds the PF interface by supplying the latter with feature bundles which the morphology must then make sense of, namely by finding lexical items that correspond to the various feature combinations and inserting the items under the relevant nodes, which may then be pronounced. If the lexicon lacks an item with a particular feature specification, the derivation crashes: the PF representation is uninterpretable.

Kennedy and Merchant, who focus on the extractability of DP-internal adjective phrases (DegPs), point out that the impossibility of extracting an attributive adjective phrase is due to an uninterpretable feature combination created by agreement between a DegP_{<+wh>} and the head of the nominal constituent in which it originates. Under the assumption that DegP extraction from within DP proceeds through [SpecDP] and that Spec-Head agreement takes place between a functional head and its specifier, the [+wh] feature on DegP is passed to the head of DP, deriving the structure in (55).²⁴

- (55) [DP [DegP<+wh> how big] [D' a<+wh> [NP car]]]

Subsequent subextraction of DegP does not alter the feature values in DP, leading to a PF representation in which there is an occurrence of the [+wh]-feature on D. Such a representation, they claim, is uninterpretable because there is no D-element

of English vocabulary that can be inserted into this context. Since Full Interpretation requires all symbols in the PF representation to have a phonological interpretation (i.e., instantiated by lexical insertion), the derivation crashes.

Movement (i.e., pied-piping) of the entire DP (*how big a car*) to [SpecCP] avoids a violation at PF. When the entire DP is pied-piped along with $\text{DegP}_{<+wh>}$, the [+wh]-feature on D (as well as DegP) is checked off in [SpecCP] by a [+wh] C-head. Since the [+wh]-feature is no longer present on D, the indefinite article *a* can be lexically inserted in D.

4 Cross-linguistic variation in left branch extraction behavior

As Ross (1967, 145 ff.) observed, left branch-specifying or -modifying elements can be removed from the nominal domain in some languages, such as Latin and most Slavic languages.²⁵

(56) Latin

- a. *Quales puellas amat* ___?
 what-kind-of girls he-loves
 'What kind of girls does he love?'
- b. *Quales amat* [___ *puellas*]?
 what-kind-of he-loves girls
 'What kind of girls does he love?'

(57) Russian

- a. *Č'ju knigu čitaješ* ___?
 whose book you-are-reading
 'Whose book are you reading?'
- b. *Č'ju čitaješ* [___ *knigu*]?
 whose you-are-reading book
 'Whose book are you reading?'

Given the well-formedness of subextraction in (56b) and (57b), Ross concludes that the LBC is not operative in languages like Latin and Russian. The question, of course, arises of whether this difference in subextraction behavior can be reduced to some grammatical property on which languages can vary. As was already hinted at by Ross, languages violating the LBC are characterized by rich morphology. One might therefore want to propose that discontinuous patterns are possible as long as the dependency between the extracted specifier/modifier (e.g., *Č'ju* in (57)) and the remote head (*knigu*) is morphologically recoverable. This is also the approach taken by Horn (1974; 1978; 1983). He proposes a condition called the Noun Phrase Constraint (NPC), which excludes removal of any element from within the noun phrase. So, this locality constraint rules out left and right branch extractions out of the English noun phrase:

- (58) a. *Which did you destroy [___ book]?
 b. *About whom did you destroy [a book ___]?

Horn argues that in a language like Polish, subextraction of an agreeing element, which typically occurs on a left branch, is permitted, while extraction of a non-agreeing constituent (e.g., a PP) is not:

- (59) a. *Jakie* *pożyczyłeś* [____ *książki*] *z* *biblioteki*?
 which-ACC you-borrow books-ACC from library
 ‘Which books did you borrow from the library?’
- b. **O* *kim* *on* *zniszczył* [*książkę* ____]?
 about whom he destroyed book-ACC
 ‘He destroyed a book about whom?’

Adjectival forms like *jaki* are marked morphologically to agree with the head noun that they are related to in gender, number, and case. In contrast, PPs are not marked according to whether they occur in an NP. On the basis of the asymmetry in (59), Horn concludes that “the NPC is valid in Polish, but can be overridden just in case there are morphological markers present in the surface structure that can function to associate a constituent in Comp with an empty node elsewhere in the structure” (Horn 1983, 188).²⁶

In what follows, I will discuss a number of other analyses that have been given for the extractability of left branch elements in certain languages, more specifically Slavic languages.

4.1 A locality-based approach: the ECP and phases

In Uriagereka (1988, 113) and Corver (1990; 1992), the observation is made that left branch extraction is typically found in languages that do not have overt articles. The absence of an overt article is shown by the following examples from Polish and Czech:

- (60) Polish
- a. *Ptaka* *patrzy* *na* *kota*
 bird looks at cat
 ‘The/a bird is looking at the/a cat.’
- Czech
- b. *Marie* *mluvila* *s* *velmi* *velkým* *mužem*
 Mary spoke with very big man
 ‘Mary spoke with a/the very big man.’

Corver argues that the contrast between languages with overt articles and those without overt articles is reflected in the configurational structure of the noun phrase: languages with overt articles have a DP layer within the extended nominal projection, languages that lack overt articles do not (i.e., the nominal projection consists of the lexical projection NP). He further points out that potential candidates for the category D in those article-less languages – e.g., demonstratives, possessive, interrogative pronouns, and so forth – should be analyzed as adjectives (see also Horn 1978; 1983; Zlatić 1997; Bošković 2005a; 2005b). A first piece of evidence for this categorial status comes from their morphological behavior: demonstratives

and possessive pronouns have (declension) endings similar to normal adjectives. This is exemplified in (61) for Czech demonstratives:

- (61) a. ten dobrý student (nominative)
 that good student
 b. toho dobrého studenta (accusative)
 c. tomu dobrému studentovi (-u) (dative)

Also syntactically, the elements in question display adjectival behavior. Just like adjectives, they can occur in a predicative position of a copula construction (see (62)); note the ill-formedness of English *my* in predicative position (**This pen is my*). Another property these Czech elements share with adjectives is their relatively free word order when they are used attributively (see (63)). In English, it is impossible for an attributive adjective to precede an attributively used demonstrative pronoun: **pretty these girls*.²⁷

- (62) a. Mé péro jest nowe.
 my pen is new
 b. To péro je mé
 this pen is my
 ‘This pen is mine.’

- (63) a. ta pěkná děvčata
 these pretty girls
 b. pěkná ta děvčata
 pretty these girls

Under the assumption that attributive adjectives (APs) are part of the lexical projection NP, adjectival “pronouns” (i.e., demonstratives, possessives, interrogatives) are also analyzed as being part of the lexical projection NP.

According to Corver, the above-mentioned difference in the configurational structure of the noun phrase (i.e., being a DP-language (English) versus being an NP-language (Polish, Russian, Czech, Latin) is at the basis of the contrast in left branch extraction behavior: languages whose nominals project to DP do not permit subextraction of specifying or modifying elements; languages whose nominal projections lack the DP level (i.e., “bare” NPs) do.²⁸

The impossibility of moving left branch material out of the English DP has already been discussed in section 3 (see especially 3.3 and 3.4). As regards the transparency of bare NPs in article-less languages, consider the following structural environment, where α is the left branch element targeted for movement:

- (64) [CP ... [VP V [NP α [NP N]]]]

Using a Barriers framework (Chomsky 1986), Corver (1990; 1992) analyzes the extractability of left branch specifiers (and modifiers) in the following way. The direct object NP is L-marked by the verb and therefore does not constitute a barrier. Via intermediate adjunction to VP, the left branch element can reach [SpecCP]

without violating Subjacency or the ECP. This is shown in (65) for the Polish example in (59a).

(65) [_{CP} *Jakie* [_C _____ [_{IP} ... [_{VP} _____ [_{VP} [_{NP} _____ [_{NP} książki]]]]]]]]

Adopting Corver's NP analysis for languages permitting left branch extraction, Bošković (2005a; 2005b; 2008a; 2008b) proposes an alternative analysis in terms of (minimalist) Phase theory. He assumes that in those languages the lexical projection NP is a phase and that the attributive AP is adjoined to NP.²⁹ Being in a hierarchically peripheral position (i.e., an edge position), the NP-adjoined AP can leave the direct object noun phrase without violating the PIC (see Chomsky 2001; 2008). As shown by the Polish example in (66), left branch extraction out of a direct object noun phrase is not possible if the extracted left branch element originates within the complement of a noun (see Corver 1990; 1992; Bošković 2005a; 2005b; 2008a; 2008b):

(66) **Ktorého* (ty) widziałeś [_{NP} książkę [_{NP} _____ [_{NP} mężczyzny]]]?
 which-GEN (you) saw book-ACC man-GEN
 'Which man's book did you see?'

Bošković argues that direct movement of the interrogative adjective to a position outside of the direct object noun phrase yields a violation of the PIC, because the matrix NP (headed by *książkę*) constitutes a phase. Extraction via the edge (Specposition) of the matrix NP is not possible, since it would involve a movement step which is too local (see section 3.4 for a brief discussion of anti-locality). That is, the distance of the extraction site of the NP-adjoined AP from the landing site (i.e., [SpecNP]) would not be big enough.

4.2 Left branch extraction from DP

As pointed out in Rappaport (2000), a bare-NP analysis for those languages that permit left branch subextraction raises the question of why subextraction of right branch elements (e.g., PPs) is not permitted either (see also Horn 1974; 1978; 1983; see, however, Stjepanović 1998; Bošković 2005a; 2005b; 2008a; 2008b for the view that PP extraction out of NP is possible in a language like Serbo-Croatian). If NP-internal APs and PPs occupy hierarchically similar positions (say, a position adjoined to NP), you would expect them to display the same subextraction behavior. However, as suggested by the following examples, this does not seem to be the case (examples taken from Rappaport 2000):

(67) Polish
 a. **Z* *czym* postrzelili przed domem [*chłopca* _____]?
 with what they-shot in-front-of house boy
 'They shot [a boy with what] in front of the house?'
 b. *Ze* *skakanką*
 with jump.rope
 'With a jump rope.'

- (68) **Od kogo zniszczyłeś [list ____]?*
 from whom you-destroyed letter
 'You destroyed [a letter from whom]?'

In English, right branch adjunct PPs cannot be removed either from within the noun phrase (see Horn 1974; Huang 1982; Chomsky 1986):

- (69) a. Peter kissed [a girl with red hair].
 b. **With what* did Peter kiss [a girl ____]?

Culicover and Rochemont (1992), working within the Government and Binding framework (Chomsky 1981), note that the ill-formedness of (69b) can be explained straightforwardly in terms of the ECP if one adopts the DP hypothesis.³⁰ Extraction of an adjunct PP out of DP yields a violation of the ECP: the PP trace is not properly governed. Now, if the immobility of the English adjunct PP can be explained in terms of the presence of DP, then arguably the same explanation holds for a language like Polish. Rappaport takes this position and proposes that in Slavic languages noun phrases are DPs. This, obviously, raises the question of how to account for the left branch subextraction asymmetry. That is, if the English noun phrase and, say, the Polish noun phrase are both DPs, why do they differ in their left branch extraction behavior?

Following ideas proposed by Giorgi and Longobardi (1991) in their account of possessor-extraction phenomena, Rappaport argues that extraction of some element Y from within the nominal domain is possible if (i) [SpecDP] is available as an intermediate landing site for Y, and (ii) the trace in [SpecDP] can be lexically governed from outside (e.g., by V) (see section 3.3). As regards the first condition, it is stated that only those elements can move through [SpecDP] that enter into a Spec-Head agreement relationship with D (this is under the assumption that D is the locus of phi-features and case). This implies that agreeing elements like attributive APs, possessive pronouns, and agreeing *wh*-elements can move through [SpecDP] whereas non-agreeing modifiers like PPs cannot. The second condition states that the element in [SpecDP] can leave this position only if the trace left behind can be lexically governed from outside, for example by V. In languages like Polish and Russian, V is able to govern into DP. Thus, [SpecDP] is accessible to government from outside. In a language like English (and other languages blocking left branch subextraction), V is not able to govern the specifier of a DP complement. Thus, on this analysis, the parametric distinction between Polish and Russian, on the one hand, and English, on the other hand, lies in whether or not V has the ability to govern inside its DP complement.

4.3 Apparent left branch extraction: remnant AP fronting and scattered deletion

In the analyses discussed so far, it is assumed that the discontinuous patterns in (57b) and (59a), for example, are derived by means of extraction of a left branch element from within the containing noun phrase. In other words, these patterns involve subextraction from the noun phrase and have a subpart of the noun phrase

in [SpecCP]. In the generative-syntactic literature, two approaches to the left-branch-extraction puzzle have been proposed that take the fronted element to be the entire noun phrase, rather than just a subpart of the noun phrase.³¹ In other words, according to these analyses left branch extraction is an epiphenomenon, in the sense that its surface effects (e.g., the superficial discontinuity of an interrogative *wh*-element and a noun to which the *wh*-word “belongs”) can be derived by means of other computational operations.

The first approach can be characterized as the remnant movement approach (see Borsley and Jaworska 1988 and Franks and Progovac 1994 for different implementations of this analysis). According to this analysis, a nominal part of the noun phrase is extracted out of that noun phrase and moved to some position within the clause (e.g., left or right adjunction to VP or IP). Subsequently, the entire noun phrase, containing the trace of the moved nominal, moves to [SpecCP]. This remnant movement analysis is exemplified in (70) for a “left branch” extraction pattern like (57b):

- (70) [CP [Č’*ju* t_i]_j [C’ čitaješ t_j [knigu]_i]]
 whose you-are-reading book
 ‘Whose book are you reading?’

A possible advantage of the remnant movement approach is that patterns like (71), in which a non-constituent (the preposition *z* and the *wh*-element *którymi*) appears to be fronted, can be handled quite easily. This structure can be derived by first subextracting *studentami* out of the PP in which it is embedded and subsequently moving the entire PP (including the trace of the displaced element *studentami*) to SpecCP (see also Citko 2006, n. 16). Schematically (for the sake of the argument, I take *studentami* to have undergone rightward movement out of the PP):

- (71) Polish
 [CP [Z *którymi* t_i]_j [C’ rozmawiałaś t_j [studentami]_i]]
 with which you-talked students
 ‘Which students did you talk to?’

The second approach (see Fanselow and Ćavar 2002) makes use of the copy theory of movement (Chomsky 1993). According to this theory, the trace left behind after movement is a copy of the moved element, which is deleted by a principle of the PF component. Normally, the copy occupying the base position is deleted entirely and the only element that surfaces phonetically is the moved constituent (i.e., the head of the movement chain); see, for example, (72):

- (72) *Which book* did you read ~~*which book*~~?

Fanselow and Ćavar propose that languages permitting “left branch” extraction allow for scattered deletion of the copies that make up a movement chain. That is, deletion can apply in a discontinuous manner, in the sense that material can be deleted in both the foot of the chain and the head of the chain. According to this analysis, a “left branch” extraction pattern like (57b) is derived as in (73). In the

higher copy, the noun *knigu* is deleted, while in the lower copy the interrogative element is deleted.

(73) [_{CP} *č'ju knigu* [_{C'} *čitaješ č'ju knigu*]]

As pointed out at the beginning, both the remnant movement approach and the scattered deletion approach consider left branch subextraction to be an epiphenomenon. Importantly, cross-linguistic differences in “left branch extraction” behavior must follow from asymmetries as regards remnant movement behavior or differences in the possibilities of scattered deletion.

5 “Exceptional” subextraction

As was noted in section 2, there are languages which typically do not permit extraction of left branch material from within a noun phrase (or adjective phrase, for that matter) but have a “special” nominal (or adjectival) construction from which left branch subextraction can take place. Some examples of such nominal constructions were given in (23)–(25), here repeated as (74)–(76). The (a)-examples illustrate the “exceptional” subextraction of a left branch constituent, whereas the (b)-examples show that other left branch material cannot be reordered out of the noun phrase.³²

(74) Dutch

- a. *Wat* heeft Jan [____ voor boeken] verkocht?
 wat has Jan for books sold
 ‘What kind of books did John sell?’
- b. **Welke* heeft Jan [____ boeken] verkocht?
 which has Jan books sold
 ‘Which books did Jan sell?’

(75) French

- a. *Combien* a-t-il vendu [____ de livres]?
 how-many has-he sold of books
 ‘How many books did he sell?’
- b. **Quels* a-t-il vendu [____ livres]?
 which has-he sold books
 ‘Which books did he sell?’

(76) Hungarian

- a. *Ki-nek* akarod, hogy halljam [____ a hang-já-t]?
 who-DAT you-want that I-hear the voice-POSS.3SG-ACC
 ‘Whose voice do you want me to hear?’
- b. **Melyik* akarod, hogy halljam [a ____ hang-t]?
 which you-want that I-hear the voice-ACC
 ‘Which voice do you want me to hear?’

Example (74a) illustrates the phenomenon of *wat voor* split, which is also attested in other Germanic languages such as German, Norwegian, and Swedish. (75a) shows that in French the interrogative quantifier *combien* (how-many/how-much') can be separated from the rest of the noun phrase (*de livres*). (76a), finally, is an illustration of the phenomenon, extensively discussed in Szabolcsi (1983), that the possessor can "run away" from its (nominal) home in Hungarian.

A complete discussion of each of these subextraction phenomena is beyond the scope of this chapter. I will concentrate on one type of subextraction phenomenon, namely *wat voor* split (see (74a)), in order to be able to give a good overview of the kind of analyses that have been proposed in generative syntax to account for these split patterns (see section 5.1). After my discussion of *wat voor* split, a brief discussion of subextraction of *combien* will follow (section 5.2).

5.1 *Wat voor* split

As shown in (77), subextraction of left branch-specifying/-modifying elements from within the nominal domain is generally ruled out in Dutch (see Corver 1990). Pied-piping of the other material contained within the noun phrase is required (see (78)).

- (77) a. **Welk* heb je [____ boek] gelezen?
 which have you book read
 'Which book did you read?'
 b. **Hoe veel* heb je [____ boeken] gelezen?
 how many have you books read
 'How many books did you read?'
 c. **Erg leuke* heb ik [____ boeken] gelezen.
 very nice have I books read
 'Very nice books I read.'

- (78) a. *Welk boek* heb je ____ gelezen?
 b. *Hoe veel boeken* heb je ____ gelezen?
 c. *Erg leuke boeken* heb ik ____ gelezen.

There is a nominal construction, however, which permits removal of a left branch-specifying element, namely the so-called *wat voor N* ('what kind of N') noun phrase. This nominal construction asks for the nature, quality, or sort of person or object. As shown in (79a), subextraction of the left branch *wh*-element *wat* from within the noun phrase is permitted. Sentence (79b) shows that the other material contained within the noun phrase can be pied-piped.³³

- (79) a. *Wat*_i heb je [_i voor (een) boek] gelezen?
 what have you for (a) book read
 'What kind of book did you read?'
 b. [*Wat voor (een) boek*]_i heb je *t*_i gelezen?

This same extraction pattern is found in various other Germanic languages (see also Leu 2008b):³⁴

(80) German

- a. *Was* hast du [____ für ein Buch] gelesen?
 what have you for a book read
 'What kind of book did you read?'

Norewegian

- b. *Hva* leser du [____ for ei bok]?
 what read you for a book
 'What kind of book do you read?'

Swedish

- c. *Vad* läser du [____ for en bok]?
 what read you for a book'
 'What kind of book do you read?'

Subextraction of *wat* obviously poses a problem for Ross' LBC or any of its reinterpretations. If the subextraction patterns in (77) are ruled out by any of the principles discussed in section 3 (e.g., LBC, Subjacency Condition, ECP, PIC), why isn't the split *wat voor N* construction blocked by the same principle? All in all, the question that arises is the following: what property does the *wat voor N* construction have that other nominal constructions also featuring a *wh*-determiner (e.g., *welk boek* 'which book') lack? In what follows, I will briefly discuss a number of answers that have been given to this question in the generative-syntactic literature.

5.1.1 *Categorial change: the wat voor N phrase as a [-V] category*

Den Besten (1985) argues that the proper treatment of the split *wat voor* construction involves subextraction of the question word *wat*. He assumes that extraction of *wat* from within the NP changes the categorial status of the containing noun phrase. After subextraction, the [*t_i voor N*]-phrase changes from [+N, -V]³ into [-V]³.³⁵

(81) [-_{V3} wat [-_{V2} [-_{V1} [-_V voor] [_{NP} een auto]]]]

According to Den Besten, this categorial change is due to the presence of the preposition *voor*, which becomes the head of the [-V]³-category after subextraction of *wat*. Working within the Government and Binding framework (Chomsky 1981), Den Besten proposes that the *wh*-trace left behind after subextraction of *wat* must be properly governed in order to satisfy the ECP. The [-V]³-internal trace gets properly governed by the verb (*koopt* in (82)) via the preposition which is the head of the [-V] phrase. It is further argued that the switch from [+N, -V] to [-V] accounts for the absence of Subjacency effects in the split *wat voor* construction. Under the assumption that [-V] is not a bounding node, no Subjacency violation is triggered if *wat* is moved to Comp, because S (i.e., IP) is the only bounding node separating the moved *wh*-element and its trace.

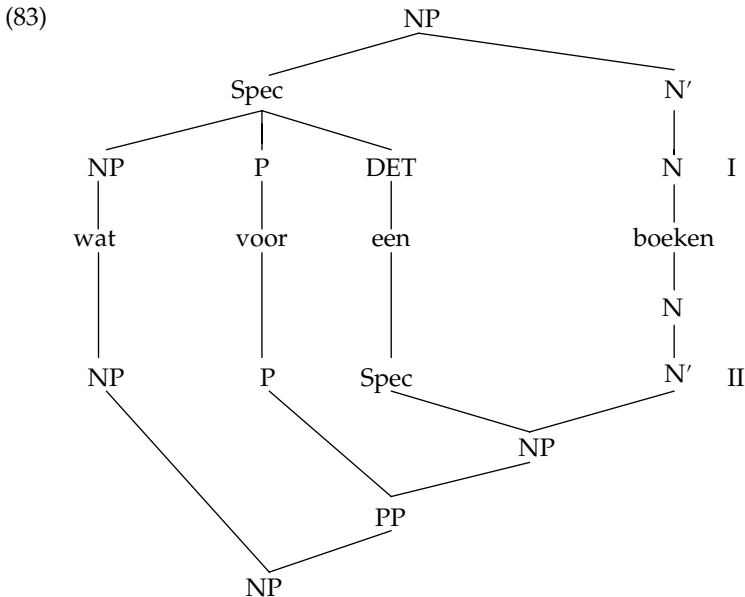
(82) Dutch

- Ik vraag me af [_{S'} wat_i [_S Jan [_{VP} [-_{V3} t_i voor een auto] koopt]]].
 I wonder REFL PRT what Jan for a car buys
 'I wonder what kind of car John will buy.'

In short, it is the categorial change of the containing noun phrase from [+N, -V] into [-V] that is of importance in this analysis: the [-V] projection is not a bounding node for Subjacency. Furthermore, this projection is accessible to proper government from outside. A noun phrase like *welke auto* ('which car'), which lacks a prepositional element like *voor*, does not permit such a categorial change. Subextraction of *welke* will be from within the maximal projection of [+N, -V] (i.e., NP) and consequently yield a Subjacency violation and an ECP violation (under the assumption that [SpecNP] is not accessible to external governors; see section 3.3).

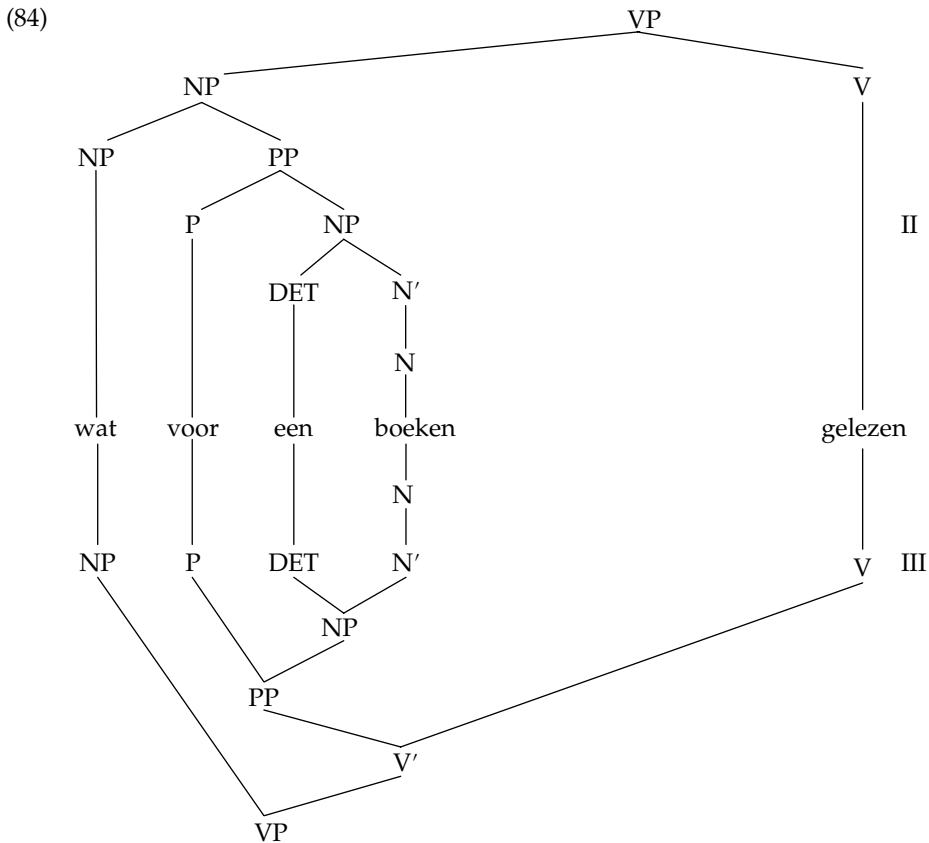
5.1.2 The *wat voor N* construction as a reanalyzed structure

Bennis (1983) proposes that the string *wat voor N* is best viewed as a co-analyzed or reanalyzed structure. Co-analysis refers to a situation in which a string is assigned more than one structural analysis because of the ambiguous behavior of some linguistic element. The co-analyzed structure can be represented by a double tree representation, that is, a tree with two hierarchical dimensions. Under this reanalysis approach, the string *wat voor een boeken* (lit.: what for a book, 'what kind of books') is assigned two structural representations: one in which *wat voor* forms a unit separate from N (dimension I in (83)), another in which *voor N* forms a unit that combines with *wat* (dimension II in (83)). The tree is displayed as two coexisting dimensions, each of which is a tree with its own properties.



Bennis notes that movement rules can apply to both levels of representation. He further argues that the reanalyzed structure in (83) as such cannot account for the split pattern. Removal of the question phrase *wat* would still be from within NP and consequently violate such principles as the LBC, the Subjacency Condition, and the ECP. It is therefore suggested that a second reanalysis operation applies to the output of the first reanalysis operation (i.e., the lower dimension in (83)). This yields

a triple tree structure. For the sake of clarity, (84) only gives the two reanalyzed dimensions.



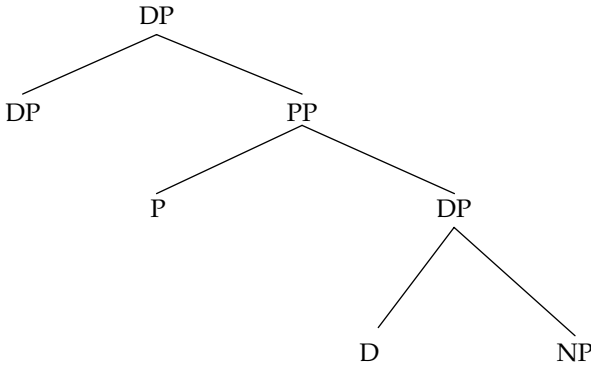
Dimension III permits extraction of the question word *wat*, which is no longer within the noun phrase after the second reanalysis operation has applied. The LBC is not violated in this dimension since the question word is not a left branch specifier of the noun phrase in this third dimension. The Subjacency Condition is not violated either in dimension III because movement of *wat* crosses only the bounding node S (i.e., IP). The ECP is also satisfied, since the verb properly governs the trace of the moved question word.

What distinguishes the *wat voor N* construction from nominal constructions that do not permit left branch subextraction is the property of reanalysis. The noun phrase *wat voor N* can be restructured in such a way that the *wh*-element *wat* is no longer part of the noun phrase. The underlying assumption is that similar restructurings are not possible with such noun phrases as *welk boek* ('which book'), which do not allow subextraction of the *wh*-element (see (77a)).

5.1.3 The *wat voor N* construction as an adjunction configuration

In Corver (1990; 1991) it is argued that the proper analysis of a *wat voor N* phrase like *wat voor een auto* is the one given in (85); see also Pafel (1996) for German.

(85)



The interrogative element is the head of this phrase; the string *voor (een) N* forms a PP which is base-adjoined to DP. The optional article *een* occupies the lower D position and takes an NP complement. It is assumed that the DP *wat* is not an argument of some predicate; for example, it is not assigned a theta-role by the verb.³⁶ It is the entire *wat voor* phrase which is the argument of the verb. It is further proposed that the PP headed by *voor* behaves as a predicative phrase with regard to *wat*. Support for the predicative status of the PP headed by *voor* is given by the following examples, where *voor* also shows up in predicative contexts.

(86) Dutch

- a. Ik schold hem uit [voor (een) bedrieger].
 I called him PRT for (an) impostor
 'I called him an impostor.'
- b. Ik hield het [voor waar].
 I held it for true
 'I took it to be true.'

Adopting a Barriers-type framework (Chomsky 1986), Corver accounts for the possibility of subextracting *wat* in the following way. In (87) *wat* has been reordered out of a direct object noun phrase. Neither the Subjacency Condition nor the ECP is violated since the fronted *wat*, the lower DP segment, can reach [SpecCP] without crossing any barrier (i.e., a maximal projection that is not L-marked). The direct object DP itself is L-marked (i.e., assigned a theta-role by a lexical category) and therefore does not constitute a barrier for extraction. The potential barrierhood of VP can be voided via adjunction to it, and IP is not a barrier by stipulation. Schematically (note that the finite verb has been moved to C):

(87) [CP wat_i [C' heb_j [IP je [VP [DP t_i voor boek] gekocht t_j]]]]

Summarizing, Corver's analysis crucially assumes that the *wat voor N* construction has a different phrasal structure than those nominal constructions (e.g., *welk boek*, 'which book') that do not feature subextraction. The former involves an adjunction configuration: a predicative PP is base-adjoined to the DP *wat*. For a nominal construction like *welk boek*, he assumes that the *wh*-determiner *welk* heads the DP projection and takes the NP *boek* as its complement: [DP [D' *welk* [NP *boek*]]].

The D-head cannot be extracted from within the containing DP; see Corver's analysis of the Left Branch effect in section 3.3.

5.1.4 DP-internal predicate displacement construction: movement to the edge

The analyses presented thus far assume that the *wh*-element *wat* is base-generated as a left peripheral element within the containing noun phrase. Contrary to those analyses, Bennis, Corver, and Den Dikken (1998) claim that the *wh*-element *wat* is in a derived position within the extended nominal projection (i.e., DP). They assume that *wat* originates as a DP-internal nominal predicate which is moved to the left periphery of the extended nominal projection (i.e., [Spec DP]).³⁷ This *wh*-movement process is similar in nature to *wh*-movement within the clausal domain. According to this analysis, a noun phrase like *wat voor boek* 'what for book' has the underlying structure in (88a). In this structure, the noun phrase contains a Small Clause structure (XP), which configurationally defines the predication relationship between *boek* and *wat*. After predicate displacement has applied to the *wh*-word, *wat* ends up in [SpecDP], which is the leftmost position within the nominal domain. This derived structure is given in (88b).³⁸

- (88) a. [DP [D' voor_[+wh] [XP boek [_{X'} X wat]]]]
 b. [DP wat_i [D' voor_[+wh] [XP boek [_{X'} X t_i]]]]

As indicated in (88), *voor* is taken to be a [+wh] operator head, that is, a prepositional head with interrogative force. Evidence for this analysis comes from the fact that many southern varieties of Dutch and substandard Dutch in fact use *voor* as the infinitival complementizer in constructions that feature operator (OP) movement to [SpecCP]:

- (89) Dit is een man [OP_i voor [PRO t_i in het oog te houden]].
 this is a man for in the eye to keep
 'This is a man to keep an eye on.'

The subextraction phenomenon (i.e., *wat voor* split) is not discussed by Bennis, Corver, and Den Dikken, though it is quite clear that the subextraction possibility should be related to the fact that the fronted *wat* occupies the highest A'-position within the extended nominal projection. Analogously to subextraction from the clausal domain via [SpecCP], an element can leave the noun phrase via [SpecDP]. Within a Government and Binding framework, the extractability of *wat* can be accounted for in terms of the ECP: on the assumption that the specifier position of functional projections (like IP, CP, and DP) is accessible to an external proper governor (say, V; see section 3.3), the trace in [SpecDP] will be properly governed. Under a minimalist approach in terms of phasehood, the extractability of *wat* would follow from the DP-internal movement step which reorders *wat* from the hierarchically low base-position to a hierarchically high edge-position (SpecDP).

Notice also that subextraction from the DP configuration in (88b) is compatible with Kennedy and Merchant's (2000) theory on subextraction (see section 3.5). They argued that subextraction from within a noun phrase (i.e., DP) is blocked if, after subextraction has applied, a nominal configuration is created with a feature

specification on D for which no lexical item with a matching feature constellation can be found in the lexicon. Since the prepositional determiner *voor* carries the [+wh]-feature, subextraction of the *wh*-element *wat* from within DP does not yield an uninterpretable phonological representation.

5.1.5 A remnant movement approach to the split *wat voor* N construction

Leu (2008a; 2008b) develops an analysis of the internal syntax of the (Swiss) German *was für* construction, which takes the *was für* sequence to be part of an extended adjectival projection (xAP) that modifies the noun. Besides the *wh*-word *was* and the preposition *für*, the adjectival modifier also contains a kind-nominal which can (and sometimes must) remain silent: $[[_{xAP} \textit{was für SORT} \textit{ein Buch}]$. The *wh*-word *was* can escape from the adjectival projection and move to a higher projection within the extended nominal domain, namely WhP. This yields the structure in (90):³⁹

(90) $[_{WhP} \textit{was}_k [_{xAP} \textit{t}_k \textit{für SORT} [\textit{ein Buch}]]]$

As for the split *was ... für*-pattern (see (80a)), Leu (2008a; 2008b) adopts Abels' (2003) remnant movement analysis. According to this analysis, the constituent $[[_{xAP} \textit{t}_k \textit{für SORT} [\textit{ein Buch}]]$ in (90) is fronted across *was* to a c-commanding position within the clause (see (91a)). Subsequently, the entire noun phrase (i.e., WhP), which now only contains the *wh*-word *was*, is moved to [SpecCP]; see (91b)).

(91) a. $[[_{xAP} \textit{t}_k \textit{für SORT} [\textit{ein Buch}]]_i \dots [_{WhP} \textit{was}_k \textit{t}_i] \dots$
 b. $[_{CP} [[_{WhP} \textit{was}_k \textit{t}_i] [_{C'} C (= \textit{hast}) [_{TP} \dots [[_{xAP} \textit{t}_k \textit{für SORT} [\textit{ein Buch}]]_i \dots [_{WhP} \textit{t}_i] \dots]]]]]$

Evidence in support of this remnant movement analysis comes from examples like (92), in which the *wh*-word *was* has been fronted together with the preposition that selects the noun phrase (i.e., WhP); see also Beermann (1997).

(92) German
Mit was hast du denn für Leuten gerechnet?
 with what have you PRT for people-ACC reckoned
 'On what kind of people did you count?'

Under a remnant movement analysis, this split PP pattern can be accounted for as follows: first, the non-*wh*-part is moved out of the dominating noun phrase (WhP) and PP to a c-commanding clause-internal position. This is followed by a remnant movement operation that fronts the entire PP, which now only contains the overt material *mit was*, to [SpecCP]. See section 5.2 for a remnant movement analysis of similar patterns in French involving the *wh*-word *combien* ('how much/many').

5.1.6 The external perspective on subextraction

In section 1 of this chapter, I argued that two perspectives could be taken on the phenomenon of subextraction: an internal perspective and an external one. From an "internal" perspective, the question arises of whether the position of the displaced element within the containing extended projection (say, the noun phrase)

matters for subextraction. From an “external” perspective, the question arises to what extent the position of the extended projection within the larger structural environment (e.g., a clause) matters for subextraction. In other words, what matters are the properties of the displaced (i.e., subextracted) element itself and the properties of the phrase (extended projection) from which subextraction takes place. The foregoing discussion focused on the internal perspective on subextraction. In this section I will briefly consider the external perspective.

As first observed in Den Besten (1981), the Dutch *wat voor* noun phrase can be split (by subextraction of *wat*) if it occupies the direct object position, but not when it is in the subject position of the clause, that is, [SpecIP/TP] (see also Hoekstra 1984; Koster 1987; Corver 1990; Broekhuis 2005). Sentence (93) exemplifies subextraction of *wat* from a direct object noun phrase. The examples in (94) show that subextraction is not permitted when the *wat voor* phrase is in [SpecIP].

- (93) a. *Wat* heb je [____ voor boeken] gelezen?
 what have you for books read
 ‘What kind of books have you read?’
 b. *Wat* denk je dat Jan [____ voor boeken] heeft gekocht?
 what think you that Jan for books has bought
 ‘What kind of books do you think John bought?’
- (94) a. **Wat* hebben [____ voor mensen] gisteren hun huis verkocht?
 what have for people yesterday their house sold
 ‘What kind of people sold their house yesterday?’
 b. **Wat* denk je dat [____ voor mensen] hun huis hebben
 what think you that for people their house have
 verkocht?
 sold
 ‘What kind of people do you think have sold their house?’

Den Besten explains this subject–object asymmetry in terms of the ECP. In (93), the trace left behind after subextraction of *wat* is properly governed by the verb which takes the noun phrase as its complement. The verb is able to govern the specifier position of the direct object noun phrase. For subjects, however, there is no proper governor, which explains the ungrammaticality of the examples in (94).

Interestingly, a similar contrast can be observed in examples like (95) and (96).

- (95) a. *Wat* werd hem gisteren [____ voor iets] aangeboden?
 what was him yesterday for something offered
 ‘What kind of thing was offered to him yesterday?’
 b. *Wat* zijn hem toen [____ voor rampen] overkomen?
 what are him then for disasters happened-to
 ‘What kind of disasters happened to him?’
- (96) a. **Wat* werd [____ voor iets] hem gisteren aangeboden?
 what was for something him yesterday offered
 ‘What kind of thing was offered to him yesterday?’

- b. **Wat* zijn [____ voor rampen] hem toen overkomen?
 what are for disasters him then happened-to
 ‘What kind of disasters happened to him?’

If the contrast between (95) and (96) is to be explained in terms of the ECP, it should be concluded that the grammatical subject *wat voor iets/wat voor rampen* (i.e., the noun phrase that agrees with the finite verb) occupies the (VP-internal) direct object position. Only in this position is the (specifier/edge position of the) noun phrase properly governed by the verb. In (95a) it is a passive verb which acts as a proper governor; in (95b) an ergative/unaccusative verb (*aangeboden/overkomen*) properly governs the trace. In the ill-formed examples, the grammatical subject is in the structural subject position, that is, [SpecIP], and consequently no longer within the proper government domain of the verb. Subextraction is not permitted.

5.1.7 Concluding remarks

In section 5.1, several analyses of the split *wat voor* pattern have been discussed. According to some analyses, the *wh*-word is accessible to extraction due to its syntactic position within the containing phrase; for example, being in the Spec position of a [-V]-projection (see section 5.1.2), forming the lower segment of a complex DP (section 5.1.3), or being in [SpecDP] after DP-internal movement (section 5.1.4). The “peripheral” position allows subextraction of the *wh*-word without yielding a violation of locality (Subjacency) or the ECP. According to another analysis (section 5.1.2), the *wh*-word *wat voor N* construction gets reanalyzed in such a way that the *wh*-word is no longer part of the nominal expression but rather a dependent within the verbal projection. Like other dependents of V, the *wh*-word can undergo movement to the periphery of the clause. According to this analysis, subextraction is really an epiphenomenon, then; the *wh*-word does not get removed from the noun phrase via syntactic movement. Also according to the remnant movement analysis (section 5.1.5), subextraction of *wat* is an epiphenomenon; the *wh*-word does not get extracted out of the noun phrase. Rather, the entire noun phrase containing *wat* gets fronted after the *voor* phrase has been moved out of this noun phrase to a clause-internal position. In section 5.1.6, it was briefly indicated that besides “internal” factors, “external” factors (specifically, the syntactic position occupied by the larger noun phrase) matter also for subextraction of the *wh*-word *wat*.

Of course, one could try to apply these analyses to other “exceptional” subextraction patterns. In the next section, I will briefly consider subextraction of *combien* from *combien de N* phrases (see also Discontinuous Quantifiers, Primarily in French). Specifically, I will focus on two approaches: one analyzes *combien* extraction as true subextraction from the noun phrase; the other analyzes the split pattern in terms of remnant movement. According to the latter analysis subextraction is an epiphenomenon.

5.2 *Combien* extraction

As noted in various studies on French quantifying expressions (see especially Obenauer 1976; 1984), it is possible to separate the *wh*-word *combien* (‘how much/many’)

from the rest of the noun phrase (see (97a)). Next to this discontinuous pattern, we also find the pied-piping pattern in which the rest of the noun phrase has been moved along with *combien* (see (97b)).

- (97) a. *Combien* a-t-il vendu [____ de livres]?
 how-many has-he sold of books
 'How many books did he sell?'
 b. *Combien de livres* a-t-il vendu ____?

As discussed in Kayne (1981), we find a subject–object asymmetry with the *wh*-phrase *combien*: extraction is possible from a direct object noun phrase but not from a subject noun phrase (examples drawn from Kayne 1981):

- (98) a. *Combien*_i est-ce qu'elle a [t_i d'argent]?
 how-much is-it that-she has of-money
 'How much money does she have?'
 b. *Combien*_i est-ce que [t_i d'argent] se trouve dans le coffre?
 how-much is-it that of-money REFL finds in the safe
 'How much money is found in the safe?'

Kayne accounts for this asymmetry in terms of the ECP: in (98a) the trace left behind after *wh*-movement is properly governed by V; in (98b) it is not, since T is not a proper governor. (Compare the *wat voor* split phenomena in (93)–(94).)

Another syntactic configuration from which subextraction of *combien* is blocked is the one in which the noun phrase containing *combien* is embedded within a PP. As shown in (99a) and (99b), respectively, both subextraction of *combien* and movement of the entire noun phrase from the PP is impossible. The ill-formedness of these examples suggests that P is not a proper governor in French; the trace left behind after movement consequently violates the ECP. Note that V cannot act as a proper governor for the trace because it is too distant from the trace; P counts as a closer potential governor and consequently intervenes. The only legitimate extraction operation is the one depicted in (99c), where the entire PP has been pied-piped. The trace of the displaced PP is properly governed by V, which means that the ECP is satisfied.

- (99) a. **Combien*_i a-t-il compté [PP sur [NP t_i d'amis]]?
 how-many has-he counted on of friends
 'How many friends did he count on?'
 b. **Combien d'amis*_i a-t-il compté [PP sur [NP t_i]]?
 how-many of-friends has-he counted on
 c. *Sur combien d'amis*_i a-t-il compté t_i?

As noted in Obenauer (1976, 13), it is marginally possible to move along the preposition with the subextracted *wh*-phrase *combien*:

- (100) ?*À combien* a-t-elle souri de enfants?
 to how-many has-she smiled of children
 'How many children did she smile at?'

According to Obenauer the marginality of (100) results from the movement of a non-constituent, namely the italicized elements in: [PP à [NP *combien* d'enfants]]. Kayne notes that, if this is the right account of (100), this example should not be in violation of the ECP, which means that V should be able to properly govern the empty P and the empty position left behind after *combien* extraction. Furthermore, it must be that a (PP with an) empty P fails to act as a barrier for proper government (by V).

In the analysis of *combien* extraction discussed so far, *combien* extraction involves subextraction in the sense that *combien* is moved out of a containing noun phrase. An alternative approach is the one which takes subextraction of *combien* to be an epiphenomenon. A discontinuous pattern like (97a) is not derived by means of subextraction of *combien*. Rather, the entire direct object noun phrase is fronted after the nominal part (*livres*) has been moved out of the noun phrase. So it is not *combien* that undergoes subextraction from the noun phrase, but the nominal element *livres*. After subextraction of *livres*, the entire direct object noun phrase consisting of *combien* and the trace of the subextracted nominal element *livres* undergoes remnant movement. In (101), this remnant movement approach, as proposed in Kayne (2002), is illustrated for the French sentence *Combien a-t-il acheté de livres?* ('How many books did he buy?').⁴⁰

- (101) a. acheté [livres combien] → merger of K-*de*
 b. K-*de* acheté [livres combien] → movement of *livres* to SpecK-*de*
 c. livres_i K-*de* acheté [t_i combien] → merger of *de*
 d. de livres_i K-*de* acheté [t_i combien] → movement of VP to Spec-*de*
 e. [acheté [t_i combien]]_j de livres_i K-*de* t_j → *wh*-movement out of VP
 f. [t_i combien]_k... [acheté t_k]_j de livres_i K-*de* t_j

As Kayne notes, patterns like (100) can be accounted for along the same lines. That is, it is the entire PP à *combien* that gets fronted, after the nominal element *garçons* has been moved out of the noun phrase (see also Starke 2001). The derivation of (100) is the following:

- (102) a. souri à [enfants combien] → merger of K-*de*
 b. K-*de* souri à [enfants combien] → movement of *enfants* to SpecK-*de*
 c. enfants_i K-*de* souri à [t_i combien] → merger of *de*
 d. de enfants_i K-*de* souri à [t_i combien] → movement of VP to Spec-*de*
 e. [souri à [t_i combien]]_j de enfants_i K-*de* t_j → *wh*-movement out of VP
 f. [à [t_i combien]]_k... [souri t_k]_j de enfants_i K-*de* t_j

In the last step of the derivation (i.e., (102f)), the trace of *enfants* and the preposition are pied-piped along with the *wh*-word *combien*. Thus, this remnant movement does not require movement of a non-constituent.

6 Right branch extraction

So far my discussion of subextraction has focused on extraction of left branch material from noun phrases. Now what about subextraction of right branch material? Example (4a) in section 1 exemplified such a subextraction pattern. Some more

examples are given in (103)–(104). The noun phrase *which actress* is moved out of the PP and out of the direct object noun phrase in which this PP is embedded. As shown in (104), it is also possible to front the PP; in that case, the preposition is pied-piped.

- (103) a. [Which actress]_i did you write [a book about t_i]?
 b. [Which actress]_i did you see [a picture of t_i]?
 (104) a. [About which actress]_i did you write [a book t_i]?
 b. [Of whom]_i did you see [a picture t_i]?

On the basis of the examples in (103)–(104), one might draw the conclusion that extraction of right branch material from a noun phrase is permitted in English. The ill-formed examples in (105) and (106), however, suggest that things are more complicated.

- (105) a. *[Which actress]_i did you destroy [a book about t_i]?
 b. *[Which actress]_i did you lose [a picture of t_i]?
 (106) a. *[About which actress]_i did you destroy [a book t_i]?
 b. *[Of which actress]_i did you lose [a picture t_i]?

Essentially, there are two approaches to the data in (103)–(104) and (105)–(106). One approach would be to say that it is generally impossible to extract material from a noun phrase (as in (105)–(106)) and that there is something special going on with the well-formed subextraction patterns in (103)–(104). According to the other approach, subextraction from noun phrases is possible in general (as in (103)–(104)), which means that a linguistic factor should be found that blocks the extraction patterns in (105)–(106).

In the literature on extraction from noun phrases, the first approach has typically been adopted; that is, removal from the noun phrase is blocked. The islandhood of noun phrases has very explicitly been stated by Bach and Horn (1976, 277–278) in terms of their NP Constraint:

- (107) NP Constraint
 No constituent that is dominated by NP can be moved or deleted from that NP by a transformational rule.

According to this constraint, subextraction from noun phrases should be blocked. If so, the question arises as to what permits the patterns in (103)–(104). Bach and Horn argue that subextraction from NP is only apparent. They argue that there is a reanalysis rule that changes the structures in (108a) into the one in (108b), where the PP has become a constituent within the verbal domain. The latter structure forms the input for the *wh*-movement rule, which means that *what* is not extracted out of a noun phrase (but only out of Verb-dependent PP). *Wh*-movement of the complement of P yields the pattern in (108c) and *wh*-movement of the PP gives us the pattern in (108d).

- (108) a. You [_{VP} wrote [_{NP} a book [_{PP} about which actress]]] Base structure

- | | | |
|----|---|---------------------|
| b. | You [VP [V' wrote [NP a book]] [PP about which actress]] | Reanalysis |
| c. | Which actress _i did you [VP write [V' [NP a book]]
[PP about t _i]]? | Extraction
of NP |
| d. | About which actress _i did you [VP write [V' [NP a book]]
[PP t _i]]? | Extraction
of PP |

According to Bach and Horn, a reanalysis operation like the one depicted in (108) is only possible with verbs that have the subcategorization frame [____ NP PP] besides the subcategorization frame [____ NP] in their lexical entry. One argument these authors give in support of the availability of the second subcategorization frame comes from pronominalization. As shown in (109), the NP (*a book*) can be replaced by the pronoun *it*.

- (109) You wrote it about Juliette Binoche

According to Bach and Horn, a verb like *destroy* (see (105a) and (106a)) does not have two subcategorization frames; it only has the subcategorization frame [____ NP]. As a consequence, reanalysis is not permitted. Empirical support for this comes from the ill-formedness of (110b). It is impossible to pronominalize the noun phrase *a book* by means of *it*, leaving the PP *about Juliette Binoche* as a remnant.

- (110) a. You destroyed a book about Juliette Binoche
b. *You destroyed it about Juliette Binoche

Chomsky (1977) also adopts a reanalysis-based approach to the patterns in (103)–(104). He argues that, even though base-generating two different syntactic structures may be the right analysis for certain apparent subextraction patterns (e.g., (103a) and (104a)), it cannot be the right analysis for other instances of apparent subextraction. Specifically, he points out that the pronominalization test, as in (109), cannot be applied to a sentence like (111a); this is exemplified in (111b). In spite of the impossibility of pronominalization, extraction of the NP selected by *of*, or of the entire PP, is possible; see (103b) and (104b).

- (111) a. You saw a picture of Juliette Binoche.
b. *You saw it of Juliette Binoche.

In order to account for extractions like (103b) and (104b), Chomsky proposes a reanalysis approach (or “readjustment”) in terms of syntactic movement. Specifically, he postulates that the PP complement gets extraposed to a position outside of the noun phrase and inside the verbal domain. This is illustrated in (112a) and (112b). Extraction of NP (see (112c)) or PP (see (112d)) applies to the readjusted structure.

- (112) a. You saw [NP a picture [PP of Juliette Binoche]]
b. You saw [NP a picture t_i] [PP of Juliette Binoche]_i
c. [Which actress]_j did you see [NP a picture t_i] [PP of t_j]_i?
d. [Of which actress]_j did you see [NP a picture t_i] [PP t_j]_i?

Of course, if one adopts this syntactic readjustment approach, it should be made clear what blocks it when the noun phrase is selected by a verb like *destroy* or *lose* (see (105)–(106)). Furthermore, it has been argued in the generative-linguistic literature that extraposition turns phrases into islands, the so-called Freezing effect (see Ross 1967; 1974; Wexler and Culicover 1977; 1980; see also Freezing Effects). So the question arises why frozenness does not hold for the extraposed PP in (112b).

The discussion so far has focused on extraction of a noun phrase-internal PP or from a noun phrase-internal PP that is in a close relation to the nominal head of the noun phrase (say, a complement PP). As shown in (113) extraction of an adjunct-PP out of the noun phrase is generally impossible (see Horn 1974; Huang 1982; Chomsky 1986):

- (113) a. Peter kissed [_{NP} a girl [_{PP} with red hair]].
 b. **What*_i did Peter kiss [_{NP} a girl [_{PP} with t_i]]?
 c. **With what*_i did Peter kiss [_{NP} a girl t_i]?

In Chomsky (1986, 80), the ill-formedness of (113b) is explained in terms of the Subjacency condition, which states that a moved constituent cannot cross more than two bounding nodes in one movement step. The adjunct PP constitutes a barrier for extraction, since it is not theta-governed by the noun *girl*. He further argues that the NP inherits barrierhood from the PP. Thus, the movement of *what* in (113b) crosses two barriers, yielding a violation of the Subjacency condition. Chomsky argues that this explanation in terms of Subjacency does not carry over to the ill-formed example in (113c). The verb *kiss* theta-governs the direct object NP, which therefore does not constitute a barrier for extraction. Note that inheritance of barrierhood does not play any role here, since it is the entire PP that is subextracted. Chomsky tentatively proposes that the ungrammaticality of (113c) can be regarded as an ECP violation: the trace of the extracted adjunct PP is not accessible to a proper governor outside of the noun phrase, because there is a “closer governor” within the noun phrase.

Culicover and Rochemont (1992) also propose an ECP analysis for (113c). They adopt a DP analysis of English noun phrases and assume that the adjunct PP is part of the NP selected by D. Since D does not theta-govern its NP complement, the NP is a barrier. Consequently, the PP trace cannot be properly governed by its antecedent PP (i.e., the displaced PP), which yields an ECP violation.

7 Conclusion

Displacement is a core property of natural language: satellite constituents of the verbal predicate can be reordered within the clausal domain, for example to [SpecCP]. It has been shown that sometimes it is not the entire satellite of the verbal predicate (say, a direct object noun phrase) that moves to [SpecCP], but a subpart of it (e.g., a left branch *wh*-determiner). In those cases, *subextraction* applies to the satellite XP: a left branch element is moved out of the larger phrase that functions as an argument (or a predicate) within the clause. In certain languages, left branch subextraction is generally impossible except for some “special” construction types (e.g., subextraction of *wat* from within the *wat voor N* construction). In other languages (e.g.,

Russian, Polish) subextraction of left branch elements applies more freely. The central questions that were addressed in this chapter were: (a) What grammatical property accounts for the inaccessibility of left branch elements in those languages that generally block left branch subextraction? (b) Why are certain left branch elements (e.g., *wat* in the *wat voor N* construction) available for subextraction in those languages that generally do not allow subextraction? (c) What grammatical property explains the rather free accessibility of left branch elements in languages such as Polish and Russian? (d) What accounts for the impossibility of moving noun phrase-internal right branch constituents to the left periphery of the clause, and how is it that subextraction of certain right branch elements seems to be possible? And, finally, (e) to what extent does the syntactic position of the noun phrase from which a constituent is extracted play a role? In this chapter various answers have been presented to these questions. Although our understanding of the phenomenon of subextraction has grown over the years, it is also clear, from the different approaches that have been taken to this phenomenon, that more research on subextraction is needed.

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SEE ALSO: Across-the-Board Phenomena; Complex Spatial Expressions; Discontinuous Quantifiers, Primarily in French; Freezing Effects; *Mittelfeld* Phenomena; Scrambling in Germanic; Pied-Piping; Preposition Stranding; Remnant Movement

Notes

1. In (1) and (2), I have illustrated the phenomenon of subextraction on the basis of the notion of extended projection. From the perspective of the notion of phrasal projection (i.e., XP), one could say that in (1) and (2) subextraction has also taken place from VP – and vP, if one adopts this functional layer – and IP/TP.
2. The notion of subextraction used in this chapter refers to removal of a constituent out of larger phrase in which it is embedded. According to a reviewer, the notion of subextraction is also used in the literature to refer to extraction out of an already displaced (i.e., extracted) element. For discussion of the latter extraction configuration, see Freezing Effects. In this chapter I will interpret “subextraction” along the lines of the first definition; i.e., removal of a constituent out of a larger phrase in which it is embedded.
3. I have simply labeled the extended projections of P and A as PP and AP, respectively. For discussion of the internal make-up of the extended prepositional and adjectival projections, see among others Abney (1987); Corver (1990; 1997a; 1997b); Larson (1991); Koopman (2000); Den Dikken (2010). See also Complex Spatial Expressions.
4. The impossibility of removing an NP from a larger NP is also captured by Chomsky’s (1964) A-over-A Principle. This condition asserts that if a phrase X of category A (say, NP) is embedded within a larger phrase ZXW which is also of category A (say, NP), then no rule applying to category A applies to X (but only to ZXW). See also Bresnan’s (1976)

Relativized A-over-A Condition, which relativizes Chomsky's A-over-A Condition to the structural conditions of a transformational rule.

5. Ross (1967, 127 ff.) does not discuss instances of (interrogative) determiner extractions, e.g., *Which did he buy [____ car]?* Obviously, these cases of subextraction fall under the LBC if one assumes that determiners are nominal (i.e., NPs).
6. As noted by Citko (2006, n. 3), the availability of both left branch extraction and pied-piped variants raises non-trivial questions regarding optionality and economy in the grammar, issues that are relevant in the context of the Minimalist Program (Chomsky 1993; 1995). If left branch extraction is possible, the question arises as to why it does not block the pied-piping variant, given that it involves movement of less material.
7. Ross claims that the grammar of each language is provided with what he calls a *conditions box*, in which all language-particular constraints (e.g., the LBC) are stated once for the whole language. By a universal convention of interpretation, all conditions in the conditions box will be understood to be conditions on the operation of every rule in the grammar (topicalization, relative clause formation, question formation, etc.).
8. In line with Chomsky (1970), Chomsky (1973) assumes that a functional category F(P) which enters into a dependency relation with a lexical head H is embedded within the maximal projection of L. In other words, he adopts the lexical head hypothesis: $[_L L XP]$ $[_{LP} [_{FP} F]$.
9. The idea that the periphery of a phrase is accessible to movement operations is also proposed in Chomsky (2000; 2001). He formulates his Phase Impenetrability Condition (PIC), which states that the domain (i.e., the complement) of a phase head H (e.g., C and v^*) is not accessible to operations outside HP, but only H and its edge. The edge is defined as the residue outside of H-bar, i.e., SPECs or elements adjoined to HP. Direct extraction of an element from the complement position of H to a position external to HP is not allowed. Extraction from HP must always proceed via the edge of HP. See also Abels (2003; 2012) for a discussion of the role of the edge of a phase in subextraction phenomena (among others, in the context of preposition stranding). For a phase-based approach to subextraction from nominal expressions, see section 4.
10. Van Riemsdijk notes that the Head Constraint can be interpreted in terms of the c-command relation: an element cannot be extracted out of a maximal projection if it is within the c-command domain of the head of that maximal projection.
11. Pied-piping of the entire PP is also possible; e.g., *Daarop heeft Jan gerekend* and *Waarop heeft Jan gerekend?*
12. Other locality constraints that capture the Left Branch effect are Horn's (1974; 1978; 1983) Noun Phrase Constraint (see also Bach and Horn 1976) and Koster's (1978) Bounding Condition. The Noun Phrase Constraint states that no element can be removed from within NP (see also sections 4 and 6); the Bounding Condition states that maximal projections (i.e., XPs) in general are islands for extraction.
13. Chomsky's (1973) note 10 (see section 3.1) suggests that he does not assume that the Left Branch effect reduces to a locality constraint like Subadjacency.
14. That V is a proper governor is shown by the fact that the trace left behind after extraction of a direct object-NP is legitimate; see, e.g., a sentence like $[Whose\ book]_i\ did\ you\ read\ t_i?$
15. As Giorgi and Longobardi point out, their Uniqueness Constraint on Government can be subsumed under the Minimality condition (Chomsky 1986).
16. The question arises of why English allows such strings as *how big a car*. If these are derived by movement of the AP to $[SpecDP]$, one would expect an ECP violation. Corver (1990, 320) tentatively proposes that such strings as *how big a car* are derived not by syntactic movement of *how big* to $[SpecDP]$ but rather by a PF-process that lowers the indefinite article to a position in between the attributive AP (which is NP-internal) and

the noun. See Kennedy and Merchant (2000), though, for an analysis in which the DegP moves to [SpecDP] in syntax (see also Bowers 1987 and Den Dikken 2006 for a DP-internal DegP-movement analysis).

17. Kayne (2002) also argues that *who* and *-se* do not form a constituent and consequently cannot be removed from within the noun phrase. Interestingly, Kayne (2002, n. 37) notes the contrast in (i):

- (i) a. **Whose were you talking to sister?
 b. ??Who were you talking to's sister?

In (ia), a string which does not form a constituent is fronted, yielding a strongly ungrammatical sentence. In (ib), a constituent (*who*) is subextracted, leaving the clitic element *-se* behind. Stranding the clitic element yields a less unacceptable sentence.

18. The idea that movement out of DP must proceed through [SpecDP] is a standard assumption in generative syntax. The idea goes back to Cinque (1980) and has been discussed in various syntactic studies, including Horrocks and Stavrou (1987), Torrego (1987), Stowell (1989), Corver (1990), Giorgi and Longobardi (1991), Szabolcsi (1994), Gavruseva (2000), and Boeckx (2003).
19. Bošković proposes that NP is not a phase in English. As an alternative (pointed out by a reviewer), one might propose that the relevant feature which triggers the movement of the *wh*-element to [SpecDP] is hosted not by D, but by the relevant C. Chomsky (2008), for example, proposes that movement to [SpecDP] is a derivational conspiracy: the *wh*-element carries an uninterpretable feature which needs licensing by the relevant C-head. Staying in its first-merged position (i.e., the complement of N), the *wh*-element could never escape the DP phase due to PIC. So it has to move to the edge of DP in order to be available to operations at the next phase up (see Boeckx 2008a; 2008b).
20. See also Abels (2003) and Grohmann (2003) for the requirement that movement operations should not be too local.
21. As Bošković points out, this analysis also blocks extraction of adjunct-PPs (see e.g., (11d)) out of noun phrases in a language like English (under the assumption that adjunct PPs are adjoined to NP).
22. As we will see in section 4, Bošković argues that the phrase structural placement of attributive adjectives varies across languages; more specifically, some languages (e.g., English) display Abney's AP-over-NP structure; others (e.g., the Slavic languages that permit subextraction of APs from NPs) display the NP-over-AP-structure.
23. Van Kampen (1997) develops a PF-based Case-licensing approach to LBC effects. According to her, subextraction of D yields a Case violation. More specifically, she proposes a PF condition which states that for the N(P) to get Case, it has to be string-adjacent to D^o. This PF condition blocks subextraction of D^o.
24. As pointed out by a reviewer, Kennedy and Merchant's approach predicts that no extraction out of DP is possible. Since any *wh*-element moving out of the DP will have to pass through [SpecDP], Spec-Head agreement with the D-head will always endow D with a [+wh]-feature, which will be left unrealized by PF insertion, unless the whole DP is pied-piped. This predicts that even complement *wh*-phrases could never leave behind the DP, contrary to fact. Take, for example, a sentence like *Who did you see a picture of?*, where *who* has been moved out of a noun phrase. It has been argued in the literature, though, that such cases are apparent instances of subextraction (see Bach and Horn 1976; Chomsky 1977). Extraction of the complement of P takes place after the PP has been placed in the verbal domain by means of some

reanalysis operation; see section 6 for discussion. In other words, according to these analyses there is no extraction of *who* out of a noun phrase in the above-mentioned example.

25. In various generative-linguistic studies on language acquisition, it has been observed that in child language (e.g., child Dutch, child English) various left branch extraction patterns are attested that are not possible in the adult language. Van Kampen (1994; 1997), for example, gives the child Dutch examples in (i) and Gavrusseva and Thornton (2001) the child English examples in (ii):

- (i) a. *Welk wil jij boekje?* (* in adult Dutch)
 which want you booklet
 'Which booklet do you want to read?'
 b. *Die heb ik niet sok aan.*
 that have I not sock on
 'I am not wearing *that* sock.'
- (ii) a. *Who do you think's flower fell off?* (* in adult English; but see note 17)
 b. *Whose do you think ball went in the cage?*

For more discussion of left branch extraction in child language, see also Hoekstra and Jordens (1994); Snyder et al. (1999); Solà and Gavarró (2004).

26. Citko (2006) discusses an interesting interaction between left branch extraction and the across-the-board (ATB) *wh*-movement in Slavic languages. She points out that ATB left branch extraction is fine as long as the "remnants" in the second conjunct are distinct from their "correspondents" in the first conjunct. This distinctness requirement is illustrated by the Polish examples in (i). In (ia), all the overt elements in the second conjunct are distinct from their correspondents in the first conjunct. In the ill-formed pattern (ib), however, the second conjunct contains an element which is non-distinct from an element in the first conjunct, namely the noun *książek*.

- (i) a. *Ile_i Maria napisała t_i książek a Jan przeczytał t_i artykułów?*
 how-many Maria wrote books and Jan read articles
 'How many books did Maria write and how many articles did Jan read?'
 b. **Ile_i Maria napisała t_i książek a Jan przeczytał t_i książek?*
 how-many Maria wrote books and Jan read books
 'How many books did Maria write and Jan read?'

Citko proposes an account of this distinctness requirement that relies on the interaction of two independently motivated principles: Kayne's (1994) Linear Correspondence Axiom, which prevents symmetrical structures from being linearized, and a structural economy condition that "chooses" Numerations that will lead to structures with maximum structure sharing. I refer the reader to Citko's article for further details of the analysis.

27. See Bošković (2005a; 2005b; 2008a; 2008b) for additional arguments in support of the adjectival status of demonstrative and possessive determiners in Slavic languages displaying left branch extraction behavior.
28. For other studies in which a bare-NP analysis is defended, see among others Rozwadowska (1995); Willim (1997; 2000); Zlatić (1997); Stjepanović (2000); Trenkić (2004); Marelj (2011). See also Fukui (1986) for the claim that languages can differ from each other with respect to the presence versus absence of the DP layer in nominal expressions.

In Longobardi (1994), it is proposed that argument-hood of a nominal expression requires the presence of DP. See Chierchia (1998), however, for the view that syntactically bare NPs can behave as arguments.

29. Bošković (2005a; 2005b) notes that Abney's AP-over-NP analysis (see section 3.4, example (53)) does not hold for bare-NP languages, for the simple reason that AP cannot be an argument (Stowell 1989). Note that in DP languages, the AP-over-NP analysis does not conflict with argument-hood of the extended nominal projection, since the DP layer dominates the AP layer.
30. For further studies on the Slavic noun phrase in which a DP structure is adopted, see among others Fowler and Franks (1994); Babyonyshev (1998); Engelhardt and Trugman (1998); Progovac (1998); Leko (1999); Pereltsvaig (2007).
31. For a critical discussion of the remnant movement analysis and the scattered deletion analysis, I refer the reader to Bošković (2005a; 2005b).
32. See examples (26)–(28) for “exceptional” subextraction from adjective phrases.
33. The indefinite article *een* is optional in the Dutch *wat voor N* construction. A remarkable property of this indefinite article in Dutch is its co-occurrence with a plural N: *wat voor een boeken* ('what kind of books'). In Bennis, Corver, and Den Dikken (1998), it is claimed that this (spurious) indefinite article does not belong to the following noun (or to the preceding *wh*-element). They argue that *een* is the head of a DP-internal Small Clause, i.e., X, in (88) below. See Leu (2008a; 2008b) and Van Riemsdijk (2005) for an analysis in which the indefinite article “belongs to” a phonetically empty kind noun.
34. The *wat voor N* construction has also been examined for other Germanic languages. See, for example, Lie (1982) for Norwegian, Børjars (1992) for Swedish, and Den Besten (1981), Pafel (1996), and Beermann (1997) for German. In recent years, this nominal construction has been investigated from the perspective of morphosyntactic micro-variation (i.e., dialectal variants of language L). See, for example, Vangsnes (2008) for Scandinavian dialectal variants, Leu (2008a; 2008b) and Van Riemsdijk (2005) for Swiss German, and Corver and Van Koppen (2011) for Dutch dialects.
35. The superscripted number (e.g., $[-V]^3$) here stands for “bar level.” $[-V]^3$ is the maximal projection of $[-V]$, and $[-V]^0$ is the head of the projection.
36. Evidence for the non-argument status of Dutch *wat* comes from a number of phenomena: (a) movement of *wat* across a *wh*-island yields a strong (i.e., ECP) violation (see (i)); (b) *wat* cannot be moved across negation (i.e., sensitivity to the negative island effect; see (ii)); (c) the trace of *wat* cannot license a parasitic gap (*pg*) (see (iii)). See Corver (1990; 1991) and Honcoop (1998) for discussion.
 - (i) **Wat vraag jij je af [wanneer Jan [___ voor boeken] gekocht heeft]?*
 what wonder you REFL PRT when Jan for books bought has
 ‘You wonder when Jan bought what kind of books?’
 - (ii) **Wat heeft Jan niet [___ voor boeken] gelezen?*
 what has Jan not for books read
 ‘What kind of books didn’t John read?’
 - (iii) *Wat heeft Jan [zonder PRO [pg voor tijdschriften] te lezen] [___ voor boeken] weggegooid?*
 what has Jan without PRO *pg* for magazines to read
 for books away-thrown
 ‘What kind of books did Jan throw away without having read what kind of magazines?’

Extraction of argumental *wat* does not display the above-mentioned effects.

- (iv) ??*Wat* vraag jij je af [wanneer Jan ____ gekocht heeft]?
 what wonder you REFL PRT when Jan bought has
- (v) *Wat* heeft Jan niet ____ gelezen?
 what has Jan not read
 'What didn't Jan read?'
- (vi) *Wat* heeft Jan [zonder PRO *pg* te lezen] ____ weggegooid?
 what has Jan without to read away-thrown
 'What did John throw away without having read?'

37. See Postma (1994; 1995) and Bennis (1995) for a discussion of the meaning of *wat*. They both come to the conclusion that it is determined by the structural configuration in which *wat* occurs. That is, if *wat* remains in its base position (e.g., complement to V), it gets an indefinite reading (see (i)), and if it occurs in the specifier position of an interrogative C, it gets an interrogative interpretation under Spec-Head agreement (see (ii)).

- (i) Jan heeft wat gegeten.
 Jan has what eaten
 'Jan has eaten something.'
- (ii) *Wat* heeft Jan ____ gegeten?
 what has Jan eaten
 'What did Jan eat?'

Bennis, Corver, and Den Dikken (1998) assume that the element *wat* in the *wat voor N* construction gets its interrogative force by occupying the Spec-position of an interrogative (prepositional) determiner, namely *voor*.

38. Bennis, Corver, and Den Dikken (1998) argue that in *wat voor N* constructions featuring the (spurious) indefinite article *een*, two types of predicate movement take place. First, the nominal predicate *wat* undergoes Predicate Inversion (i.e., A-movement) to the Spec position of some higher functional head F. This movement of the nominal predicate across the subject of the DP-internal Small Clause (*boeken* in (i)) can apply only if the indefinite article heading the Small Clause has raised to the higher functional head F; this is so for reasons of locality (i.e., equidistance; see Chomsky 1995). The second step involves movement of *wat* from [SpecFP] to the operator position [SpecDP]. Schematically:

- (i) [_{DP} wat_i [_{D'} voor [_{FP} t_i [_{F'} X_j (= een) + F [_{XP} boeken [_{X'} t_j t_i]]]]]]]

39. Leu's (2008a; 2008b) analysis in section 5.1.5 is represented in somewhat simplified form. In addition to the noun phrase-internal movement operation that moves *was* out of the extended adjectival projection (xAP), he proposes two additional movement operations in the derivation of the *was für ein N* construction. First, within the xAP, *was* undergoes movement from a position following *für* to a position preceding *für*: [_{xAP} was_i [_{für} t_i SORT]]. Second, the modifying xAP originates in a position following the sequence *ein* + N (e.g., *ein Buch*) and moves to a position preceding that sequence: [[[_xAP was für]_k] [_{ein} Buch t_k]]. See Leu (2008a; 2008b) for discussion and motivation of the various movement steps.
40. Kayne (2002, fn. 54) notes (based on personal communication with Luigi Rizzi) that a remnant movement analysis of apparent *combien* extractions will require rethinking the intervention and weak island effects discussed by, among others, Obenauer (1984) and Rizzi (1990).

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