

The Syntax of Floating Quantifiers: Stranding Revisited

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The Syntax of Floating Quantifiers: Stranding Revisited

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Chapter 1: Introduction and Theoretical Foundations

0. Introduction

The phenomenon of floating quantifiers has been a topic of discussion in the field of linguistics for decades. A floating quantifier is a quantifier that is not adjacent to the DP that it modifies. The following French sentences from Sportiche (1988) illustrate the phenomenon:

- (1) a. Tous les enfants ont vu ce film.
 all the children have seen this film
- b. Les enfants ont tous vu ce film.
 the children have all seen this film

For a long time linguists followed the so-called Adverbial Analysis of floating quantifiers. That is, they assumed that floating quantifiers occupied adverbial positions. This assumption was based on the observation that the position occupied by floating quantifiers is frequently indistinguishable from the position occupied by certain adverbs, which suggests that floating quantifiers, like adverbs, are adjuncts to verbal phrases. The following sentences illustrate this:

- (2) a. The students all entered the classroom.
 b. The students probably entered the classroom.
 c. The students slowly entered the classroom.
 d. The students quietly entered the classroom.
 e. The students stupidly entered the classroom.

Most of the first proponents of the Adverbial Analysis, including Belletti (1982) and Dowty and Brodie (1984), claimed that floating quantifiers occupied adverbial positions because they were base-generated in those positions, as adjuncts to verbal phrases. Another important aspect of the Adverbial Analysis during its initial years was the claim that floating quantifiers seemed to be a kind of anaphoric adverbial that had to be bound by an antecedent. The quantifier *tous* (*all*) in (1b) would thus be considered to be bound by the DP *les enfants* (*the children*). Discussions of the anaphoric nature of floating quantifiers can be found in Jaeggli (1982), Belletti (1982) and Kayne (1983). When I use the term *Adverbial Analysis* in this thesis, I mean an analysis in which floating quantifiers are base-generated as adjuncts to verbal phrases and need a relationship with an antecedent.

There are at least four weaknesses in the Adverbial Analysis as it was originally developed. One weakness is that the obvious relationship between the two sentences in (1) is not accounted for. There is no discernable difference in meaning between (1a) and (1b), and in both sentences the quantifier *tous* (*all*) takes scope over the DP *les enfants* (*the children*). Under the Adverbial Analysis, which treats non-floating quantifiers as adjuncts to nominal phrases and floating quantifiers as

adjuncts to verbal phrases, (1a) and (1b) cannot be derived from a common base-structure, so it seems that a significant generalisation is missed.

Another weakness in the Adverbial Analysis is that it cannot convincingly explain why floating quantifiers, if they are simply adverbs, have to agree in Case and Φ -features with their associated NP or DP. The following example from French shows that floating quantifiers are subject to Φ -feature agreement:

- (3) Les femmes étaient toutes/*tous bien vêtues.
 the women were all all well dressed
 (fem.) (fem.) (masc.)

The following sentence from German shows that floating quantifiers are also subject to Case agreement:

- (4) Den Studenten habe ich allen/*alle ein Buch gegeben.
 the students have I all all a book given
 (dat.) (dat.) (acc.)

Yet another weakness in the Adverbial Analysis is the fact that it cannot explain why floating quantifiers seem to require a c-commanding, local antecedent. This is not what one would expect of adverbs. The following French example from Sportiche (1988) illustrates this:

- (5) *Les enfants l'ont persuadé [de tous acheter ce livre].
 the children him have persuaded to all buy this book

One final weakness in the Adverbial Analysis that I would like to mention is the fact that it has very little to say about what kind of adverb a floating quantifier is and how its positioning is determined. Jackendoff (1972) distinguished between three types of adverbs that appear adjacent to a verbal element, namely, manner adverbs, sentential adverbs and subject-oriented adverbs. Floating quantifiers do not seem to correspond to any one of these types of adverb. Let's look at each type individually.

Manner adverbs, unlike floating quantifiers, modify an action and must therefore be adjacent to a verb:

- (6) a. The students have all carefully read the book.
 b. *The students have carefully all read the book.

Also, if two or more manner adverbs are used together, they must be conjoined. The fact that *all* and *carefully* are not conjoined in (6a) shows that *all* is not a manner adverb. Note the following examples:

- (7) a. The students have carefully and thoroughly read the book.
 b. *The students have carefully thoroughly read the book.

Sentences that contain a manner adverb can be paraphrased by converting the adverb into an adjective. This cannot be done with the quantifier *all*:

- (8) a. The students have been careful to read the book well in advance of the test.
 b. *The students have been all to read the book well in advance of the test.

If floating quantifiers are not manner adverbs, could they be sentential adverbs? Sentential adverbs are more flexible in their positioning than manner adverbs and are more or less positionally interchangeable with floating quantifiers:

- (9) a. The students have probably all read the book.
 b. ?The students have all probably read the book.

Nonetheless, floating quantifiers cannot be sentential adverbs. Sentential adverbs, as their name indicates, modify an entire proposition. This is why sentences with sentential adverbs can be paraphrased by converting the adverb to an adjective and using a cleft structure. This kind of paraphrasing does not work with a floating quantifier:

- (10) a. It is probable that the students have read the book.
 b. *It is all that the students have read the book.

If floating quantifiers are not manner adverbs or sentential adverbs, are they perhaps subject-oriented adverbs? Subject-oriented adverbs, like manner adverbs, must be conjoined if they co-occur:

- (11) a. The students rudely and stupidly insulted the teacher who helped them.
 b. *The students rudely stupidly insulted the teacher who helped them.

The quantifier *all* is not conjoined with a subject-oriented adverb:

- (12) a. The investors have wisely all withdrawn their money.
 b. *The investors have wisely and all withdrawn their money.

Subject-oriented adverbs like *stupidly* and *clumsily* refer to a personal quality of the subject. The quantifier *all* does not do this. Also, subject-oriented adverbs, like sentential adverbs such as the one in (9a), have a strong tendency to precede a floating quantifier:

- (13) a. The employees have stupidly all signed the agreement.
 b. */?The employees have all stupidly signed the agreement.

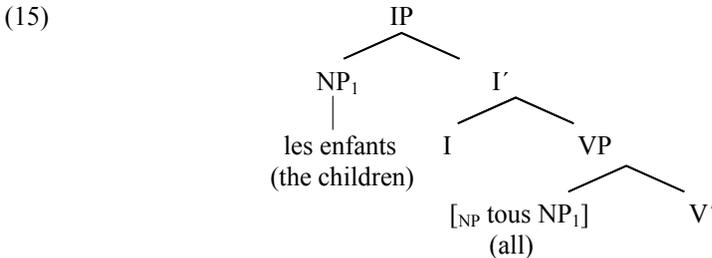
One can accept (13b) as grammatical if one considers the adverb *stupidly* not as a subject-oriented adverb but as a manner adverb, but it is difficult to imagine what it would mean to sign an agreement in a stupid manner. In any case, the fact that floating quantifiers tend to come after subject-oriented adverbs suggests that they are not subject-oriented adverbs. I must also point out that sentences with subject-

oriented adverbs can often be paraphrased by topicalising the adverb. This cannot be done with a floating quantifier:

- (14) a. Stupidly, the employees signed the agreement.
 b. *All, the employees signed the agreement.

The data in (6) to (14) show that floating quantifiers do not behave like adverbs and cannot be categorized as any known adverbial type.

Sportiche (1988) noted the unsatisfying aspects of the Adverbial Analysis and developed a different approach to floating quantifiers. He argued that a floating quantifier was not an adverbial adjoined to a verbal phrase but a nominal inside of NP that ended up adjacent to a verbal phrase because it had been left behind or *stranded* when its complement moved to [SPEC, IP]. This approach came to be known as the *Stranding Analysis*. Sportiche referred to floating quantifiers as *determiner quantifiers*, implying that they select nominal phrases as their complement. The following diagram illustrates Sportiche's analysis:¹

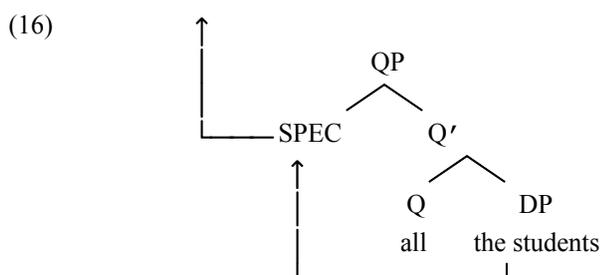


Sportiche's theory had many attractive features. For one thing, it offered independent motivation for the VP-Internal Subject Hypothesis, which was being developed at approximately the same time that Sportiche was proposing the Stranding Analysis. Furthermore, the Stranding Analysis seemed to resolve all four of the problems with the Adverbial Analysis just presented. The relationship between (1a) and (1b) becomes immediately clear. The two sentences can easily be derived from the same base-structure. The "mystery" of why floating quantifiers show Case and Φ -feature agreement with other elements in the nominal domain also disappears, since the quantifiers themselves are nominal elements. The issue of the so-called anaphoric nature of floating quantifiers is also resolved. As the diagram in (15) illustrates, floating quantifiers do not have to be considered to be anaphora at all. They are simply stranded quantifiers that c-command the trace of the element that has stranded them. This explains why they retain scope over their complement even after being stranded. It also explains why example (5) is ungrammatical. In (5) a quantifier is located in a position that has never been occupied by the nominal phrase in which the quantifier was generated. The quantifier could therefore never have been stranded in that position. Finally, the

¹ Sportiche (1988) p. 428.

question of what kind of adverb a floating quantifier is and how it gets into its preverbal position is also eliminated by the Stranding Analysis.

Sportiche treated floating quantifiers as determiner-like adjuncts within a nominal phrase. Cardinaletti and Giusti (1989), although they were not addressing the issue of floating quantifiers, proposed the idea that a quantifier is actually a phrasal head and introduced the term *Quantifier Phrase*. Shlonsky (1991) put the final touches on the Stranding Analysis by proposing that a floating quantifier is a functional head that heads a Quantifier Phrase and selects a DP as its complement. Under this approach the complement DP can strand the quantifier in QP when it moves up to a higher position:



When I use the term *Stranding Analysis* in this thesis, I mean an analysis in which a quantifier heads a QP, selects a DP as its complement, and can be optionally stranded by that complement in QP when the complement moves to subject position. In this way, examples (1a) and (1b) are derived from a common source.

Given the empirical evidence that supports the Stranding Analysis, and given the fact that the Stranding Analysis resolved the problems created by the Adverbial Analysis and provided additional support for the VP-Internal Subject Hypothesis, one would have expected it to become the generally accepted standard analysis for floating quantifiers. This is not the case. Some linguists have adopted the Stranding Analysis, notably Giusti (1990 and 1994), but since the mid-1990s there has been a strong tendency to return to analyses in which floating quantifiers are base-generated in adverbial positions, as adjuncts to verbal phrases, outside the nominal domain. For example, Baltin (1995), Doetjes (1997), Benmamoun (1999), Kobuchi-Philip (2003b), Bobaljik (2003), Bošković (2004) and Fitzpatrick (2006) have all argued for the Adverbial Analysis of floating quantifiers. They cite examples in which the Stranding Analysis seems to be unable to explain why a quantifier can or cannot appear in certain positions that should theoretically be available for stranding. Let's take a simple example. If one assumes, as it was normal to assume at the time when the Stranding Analysis was developed, that passive subjects and the subjects of unaccusative verbs are base-generated as complements of V like direct objects, then the Stranding Analysis incorrectly predicts the grammaticality of the following sentences:

- (17) a. *The people have arrived all.
 b. *The people were seen all.

This problem was noted by Sportiche himself and by others, including Baltin (1995) and Bobaljik (2003). The problem is that Baltin, Bobaljik and other critics of the Stranding Analysis do not consider certain innovations that have come about in linguistic theory during the past several years, some of which have serendipitously aided the Stranding Analysis. An important example is the Split VP Hypothesis, which originated in Larson (1988). I will discuss this hypothesis in more detail in the next section of this chapter. For now I will simply point out its immediately relevant aspects.

The Split VP Hypothesis began with the claim that there is a verbal phrase above VP called vP. This led to the idea that agentive subjects are base-generated in [SPEC, vP] rather than in [SPEC, VP] and direct objects, passive subjects and subjects of unaccusative verbs are base-generated in [SPEC, VP] rather than as complements of V. If one follows this approach, the Stranding Analysis does not make any false predictions about (17). On the contrary, it correctly predicts the ungrammaticality of the sentences in (17), in which the quantifier is located below its base-position. Another development that has serendipitously helped the Stranding Analysis is the Split IP-Hypothesis that originated in Pollock (1989). This hypothesis led to the introduction of a new functional category for subject agreement, AgrSP, which effectively created an additional position for stranding. The same can be said of the introduction of AgrOP, a functional category for object agreement developed in Chomsky (1995).

As I will show during the course of this thesis and especially in Chapter 5, in spite of serendipitous improvements to the Stranding Analysis, it is still faced with unresolved issues. The issues faced by the Adverbial Analysis have not gone away, either. The debate between proponents of the Stranding and Adverbial Analyses is thus far from over, and this brings me to the purpose of this thesis.

There is only one way to resolve the debate between followers of the Adverbial Analysis and the followers of the Stranding Analysis, and that is to look at a lot more empirical data. That is precisely what I intend to do in this thesis. I will take the reader through a large variety of different sentential and phrasal constructions in several languages in the Germanic and Romance language families. We will look at active sentences, passive sentences, sentences that contain as many as five different verbal elements, sentences with raising verbs, sentences with control verbs, sentences with small clauses, sentences with relative clauses, sentences with remnant movement, sentences with A-movement, sentences with A-bar movement, and sentences with the continental West Germanic *infinitivus pro participio* (IPP) construction.

Not only will we look at floating quantifiers in all of these constructions, we will also analyse the effect that negation can have on each construction when a floating quantifier is involved. This is extremely important because the literature has

completely ignored the role that negation can play in the phenomenon of floating quantifiers. By analysing the effect of negation within the framework of the Stranding Analysis, I will be able to offer explanations for facts that have heretofore not been explained. One example is the fact that when a universal quantifier co-occurs with negation, the Germanic languages allow two readings while the Romance languages allow only one, as the following examples from English and Italian demonstrate:

(18) All the students have not read the book. $[\neg > \forall], [\forall > \neg]$

(19) Tutti gli studenti non hanno letto il libro. $[\forall > \neg]$
 all the students not have read the book

Another example of something that has never been explained but that I will explain is the fact that negated quantifiers can be stranded in the Germanic languages but not in the Romance languages, as the following English and Italian examples show:

(20) a. The students have not all read the book.

b. *Gli studenti hanno letto non tutti il libro.
 the students have read not all the book

I will also look at another kind of floating quantifier that has been badly ignored in the literature, and that is what I call the *universal numeric quantifier*, which can also be floated when negated. This is exemplified in the following Dutch sentences:

(21) a. *Alle drie* de studenten hebben het boek gelezen.
 all three the students have the book read

b. De studenten hebben *alle drie* het boek gelezen.
 the students have all three the book read

(22) a. *Niet alle drie* de studenten hebben het boek gelezen.
 not all three the students have the book read

b. De studenten hebben *niet alle drie* het boek gelezen.
 the students have not all three the book read

My approach will be to go thoroughly and methodically through all the data from the standpoint of the Stranding Analysis to see how far this analysis can take us. This will be done in the first four chapters. In Chapter 5 we will look at some of the more important adverbial approaches that have been presented in recent years and see how they fare against the Stranding Analysis. What we will see is that the Stranding Analysis is much more successful in explaining quantifier float than has been argued in recent years. I will also show that none of the adverbial approaches proposed in recent years is without its flaws. My conclusion will be that quantifier

stranding is a real occurrence in language and that the Stranding Analysis should not be discounted. Nonetheless, I will also conclude that some instances of quantifier float are best explained under an adverbial approach. The Stranding Analysis and the Adverbial Analysis are therefore not necessarily mutually exclusive approaches to floating quantifiers, but may actually complement each other.

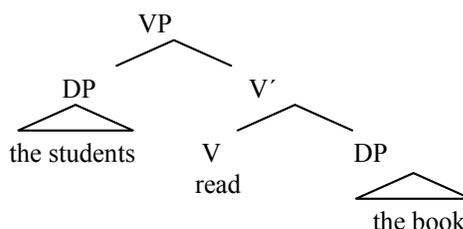
This thesis contains six chapters, including this introductory chapter. In the remainder of this chapter I will lay out the theoretical foundations of the arguments that I will be making in the following chapters. In Chapter 2, I present data from five different languages that provide evidence for the validity of the Stranding Analysis. Chapter 3 is basically a continuation of Chapter 2, but it expands the scope of Chapter 2 by extending the analysis to the badly neglected subject of floating negated quantifiers such as *not all* and its equivalents in other languages. In Chapter 4, I deal with another topic that has received very little attention in the literature, namely floating universal numeric quantifiers such as *all three* and its cross-linguistic equivalents. I will present my own theory of floating universal numeric quantifiers within the framework of the Stranding Analysis. In Chapter 5, having already presented the strengths of the Stranding Analysis in Chapters 2, 3 and 4, I present the Adverbial Analysis and evaluate its strengths and weaknesses vis à vis the Stranding Analysis. Chapter 6 contains a summary and conclusions and some suggestions for future research.

Before moving on to the discussion of the Stranding Analysis and the Adverbial Analysis in the following chapters, it is necessary that I make the reader familiar with the underlying theoretical assumptions upon which I will base my arguments. I will do this in the remainder of this introductory chapter, which I have divided into three sections. In Section 1, I present my arguments and assumptions regarding the base-positions of subjects and objects and the hierarchical structure within the verbal domain. In Section 2, I present my views on the hierarchical structure within the nominal domain and the internal structure of DP. In Section 3, I present an overview of my theory of constituent negation (in this case quantifier negation).

1. Base Positions of Subjects and Objects and the Hierarchy in the Verbal Domain

If one follows the Stranding Analysis and assumes that floating quantifiers are nominal elements base-generated inside a nominal phrase such as QP, then the most fundamental question is this: Where is the base-position of subjects and objects? Only by answering this question can one begin to determine which position or positions quantifiers can be stranded in. With the introduction of the VP-Internal Subject Hypothesis in Kitagawa (1986) it became more or less standard to consider subjects to be base-generated in [SPEC, VP] and objects to be complements of V:

(23)



Shortly after the introduction of the VP-Internal Subject Hypothesis, theoreticians began to argue for the existence of another verbal phrase above VP, which has been called vP. This analysis, referred to as the Split VP Hypothesis, began with Larson (1988) and has been further pursued in Sportiche (1990), Koopman and Sportiche (1991), Chomsky (2000), Grewendorf (2002), Adger (2003) and elsewhere. Under this widely accepted approach, verbs move from V to v if they are transitive or causative. Also, the base-position of agentive subjects is [SPEC, vP] rather than [SPEC, VP] and direct objects are base-generated in [SPEC, VP] rather than as complements of V.

There are a number of good arguments in support of the Split VP Hypothesis. It can account for ditransitive structures such as *John gave Mary a book* within a binary branching system by base-generating the first or primary object in [SPEC, VP] and the second object as the complement of the verb. This approach also correctly predicts that in most languages that have ditransitive structures it is only the primary object, the object in [SPEC, VP], that can be passivised.

Another advantage in the Split VP Hypothesis is that it helps us to more easily deal with transitivity and causativity, which involve agentivity. By postulating that vP is the location where transitivity and causativity originate and where the corresponding θ -roles are assigned, we can differentiate between agentive verbs and non-agentive verbs in a formal way. This is especially useful in explaining structures found in many languages that involve the incorporation of one verb into another one to form a causative verb. This incorporation process can be explained as movement of V to v. Adger (2003) and Baker (1988) contain descriptions of causative structures that involve incorporation.

Yet another advantage in base-generating subjects in [SPEC, vP] and direct objects in [SPEC, VP] is the fact that if direct objects originate in [SPEC, VP], when they move to [SPEC, AgrOP] they move from SPEC to SPEC rather than from a complement position to a SPEC position. For this reason and the reasons discussed in the preceding two paragraphs, I assume that agentive subjects are base-generated in [SPEC, vP] while direct objects, passive subjects and unaccusative subjects are base-generated in [SPEC, VP].

Besides the assumptions on the base-positions of subjects and objects discussed above, there are other assumptions that are essential to a discussion of floating quantifiers. Consistent with Chomsky (1995), I assume that in passive and

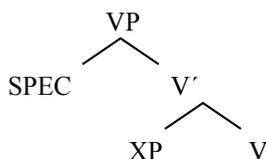
unaccusative structures verbs do not move from V to v, since there is no agent and thus no θ -role to be assigned in [SPEC, vP] in these instances.

Following Den Besten (1983) I also assume that in V2 languages such as German, Dutch and Swedish the V2 effect is obtained by movement of V to C and some other element, usually the subject, to [SPEC, CP].

Following traditional X-bar Theory as originally developed in Chomsky (1970) I assume that every verbal projection has both a specifier and a complement position. I also assume, as is customary in the literature, that each verbal element in a sentence has its own projection. For example, a Perfect auxiliary such as *have* in English, *haben* in German or *avere* in Italian is the head of a Perfect Phrase, a Progressive auxiliary such as *be* in English or *stare* in Italian heads a Progressive Phrase, modal verbs such as the English *must*, the German *müssen* and the Italian *dovere* head a Modal Phrase, and a passive auxiliary such as the English *be*, the German *werden* and the Italian *essere* heads a Passive Phrase.

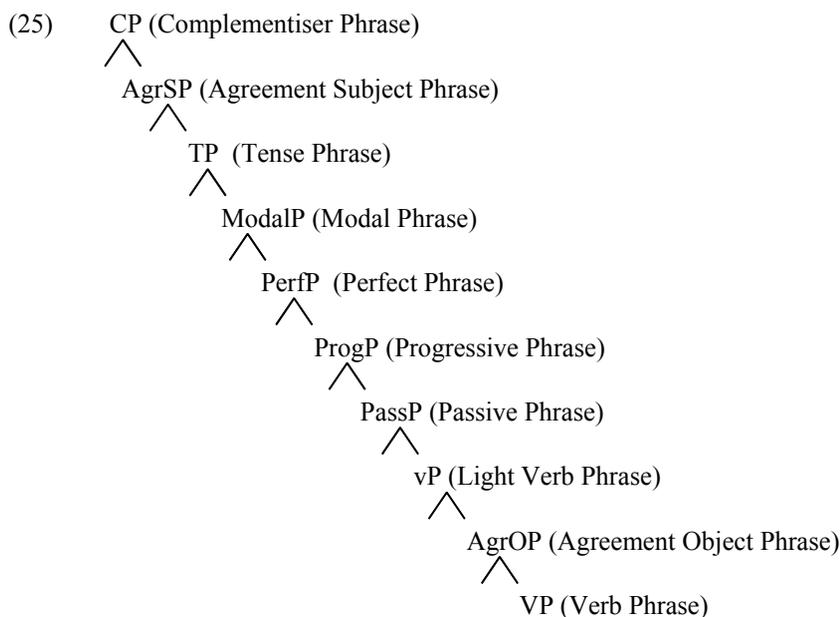
Regarding Germanic OV languages, I follow the approach which initiated with Bach (1962) and Koster (1975), and which still has many followers, whereby German and Dutch are *underlyingly* OV languages. This is in opposition to the claim made, for example, in Kayne (1994) and Zwart (1997) that all languages are underlyingly VO and that OV word order is derived. The claim that German and Dutch are underlyingly OV implies that these languages are head-final and left-branching in the verbal domain, so that specifiers and complements are both to the left of the head of a verbal phrase:

(24)



Under this approach, verbal heads move rightward “up the tree” and their specifiers move leftward. The result is that the verbal elements form a sort of cluster at the end of a clause and non-verbal elements cannot be found between them.

In order to accommodate sentences with several verbal elements, such as *All the children may have been watching the movie* and *All the patients may have been being examined by the doctor* I will assume the following hierarchical structure, in which each phrase has a SPEC and complement position:



The structure in (25) is the one that I need in order to present my arguments. This is not to say that it is etched in stone. One might claim, for example, that some of the categories, such as AgrSP and AgrO, are not always necessary, or that certain categories are missing, such as Focus. One could even claim that the order of the elements is different or can vary. It would be beyond the scope of this thesis to enter a debate on the hierarchy in the verbal domain. The point is that I need all of the categories in (25) to make my arguments. Especially important are the VP/vP distinction, the idea that each verbal element heads its own phrase, and the idea that each phrase has a specifier and a complement.

Before moving on to the next section I would like to address the question of whether or not a hierarchy such as (25) implicitly predicts that all phrases in the hierarchy can be occupied at once. In languages such as English and Spanish, they can. In Italian, which possesses the same verbal categories as English and Spanish, there are certain combinations that are simply not allowed. For example, progressives can combine with modals and passives in Spanish and English but not in Italian. Examples will be given in Chapter 2. It would be outside the scope of this thesis to offer reasons for language-specific variation like this. I simply want to point out that I am going to assume that the fact that in some languages the hierarchy in (25) cannot be fully occupied does not mean that it is invalid. In other words, by positing a hierarchy, I am making a statement about the *order* in which elements co-occur with respect to each other. I am not claiming that all positions in the hierarchy can be occupied at once. In support of this assumption I refer to the adverbial hierarchy proposed in Cinque (1999). There is plenty of empirical support for Cinque's hierarchy, since the order in which adverbial types can appear with respect to other adverbial types is generally quite fixed. However, a sentence in which all the

adverbial categories are occupied at once is unimaginable. This does not mean that the hierarchy is invalid.

With that background on the verbal domain, I will now state my assumptions regarding the hierarchy in the nominal domain and the internal structure of DP.

2. The Hierarchical Structure in the Nominal Domain

Since under the Stranding Analysis a quantifier heads a QP and selects a DP as its complement, it is very important to understand what DP is and how it is structured. I assume that the nominal domain, like the verbal domain, consists of a hierarchy of phrases that in turn consist of a head, a specifier and a complement. The hierarchy seems to consist of the following rankings:

- (26) a. Determiner > Cardinal Numeral > Adjective > Noun
 b. Possessive > Cardinal Numeral > Adjective > Noun

The following phrases from English and German illustrate this hierarchy:

- (27) a. The three little pigs...
 b. Her four young children ...
- (28) a. Die drei kleinen Schweinchen...
 the three little pigs
- b. Ihre vier kleinen Kinder...
 her four little children

It has been argued in the literature, for example in Schoorlemmer (1998), that possessive pronouns in the Germanic languages and in Romance languages such as French and Spanish are inherently definite and consequently move to the determiner position. I support this claim. This means that the (b) sentences in (27) and (28) have the same structure as the (a) sentences in that there is something occupying D. In Romance languages such as Italian, Portuguese and Romanian, possessive pronouns are not inherently definite and do not move to D. The result is that possessive pronouns in these languages co-occur with definite and indefinite determiners. The following phrases from Italian illustrate this:

- (29) a. Il mio amico... b. Un mio amico...
 the my friend a my friend

This means that the hierarchies in (26a) and (26b) can be collapsed as follows:

- (30) Determiner > Possessive > Cardinal Numeral > Adjective > Noun

The following Italian phrase confirms this hierarchy:

- (31) I miei quattro migliori amici...
 the my four best friends

Since a quantifier selects a DP, the following represents the complete nominal hierarchy:

- (32) Q > D > Poss > CardNum > A > N

The same comments that I made about the verbal hierarchy in (25) are also applicable to this nominal hierarchy. Many linguists have posited several other positions in the nominal hierarchy and have supported their claims. In Giusti (1993), for example, there is a Focus position inside QP/DP, and there is more than one QP node, which allows floating quantifiers to be distinguished from other kinds of quantifiers, including numerals. Similar more complex analyses of the nominal domain can be found in Sleeman (1996) and elsewhere. I only wish to point out that (32) is the *minimal* hierarchy that I need in order to present my arguments. Also, as I pointed out at the end of the last section, positing a hierarchy implicitly predicts that since all of the phrasal categories in that hierarchy exist, they should all be able to be occupied at once. In the Germanic languages, apart from the fact that determiners and possessive pronouns do not co-occur, it does seem possible to have something in every position, as the following German phrase demonstrates:

- (33) Alle die/seine vier klugen Kinder...
 all the/his four bright children

In Italian, however, if all six phrasal head positions are occupied at once, speakers reject the phrase as being overladen. Filling five positions is fine, but filling six is too much:

- (34) a. Le sue due bianche mani...
 the her two white hands
- b. Tutti i miei dieci anni dedicati alla scienza...
 all the my ten years dedicated to science
- c. Tutte le sette belle ragazze...
 all the seven pretty girls
- d. Tutte le mie belle amiche...
 all the my pretty girlfriends
- e. */?Tutte le mie sette belle amiche...
 all the my seven pretty girlfriends

It is not immediately clear why the (e) sentence is unacceptable and it would be beyond the scope of this thesis to open a discussion on this now. I will simply reiterate the assumption that I made in the last section while discussing the hierarchy in the verbal domain, namely, that a hierarchy such as (32) cannot be said to be invalid just because it cannot be completely filled. The purpose of the hierarchy is to establish the order in which different nominal elements appear with respect to each other.

I have posited the nominal hierarchy in (32) and have claimed that each phrase has a head, specifier and complement. In other words, quantifiers, determiners, possessive pronouns, numerals, adjectives and nouns are all nominal heads. The question is whether there is a way to determine that they are actually all heads. There is indeed evidence that these nominal elements are all heads, and that is the fact that they agree with each other in Φ -features and Case. The following sentence from Neapolitan contains all six nominal categories and all of them, even the numeral, show Φ -feature agreement:

- (35) Tutte e ddoje ‘e ccriature sòje songo allere.
 all and two the children her are happy
 Fem. Fem. Fem. Fem. Fem. Fem.
 Pl. Pl. Pl. Pl. Pl. Pl.

The following Latin sentence also contains all six nominal categories, and they show not only Φ -feature agreement but Case agreement as well:²

- (36) Agrippina lexit totos tres bonos libros meos.
 Agrippina read all three good books my
 Masc Masc Masc Masc Masc.
 Pl. Pl. Pl. Pl. Pl.
 ACC ACC ACC ACC ACC

The claim that heads in the nominal domain agree in Case and Φ -features is significant. It implies that if a nominal element does not agree with the other nominal elements in Case and Φ -features, it is not a head but a specifier. I raise this issue because it has been argued that genitives such as *John’s* and possessive pronouns such as *his* are base-generated in the same place and have the same final landing-site. In Culicover (1997), Cardinaletti (1998) and Adger (2003), for example, it is claimed that both genitives and possessive pronouns are base-generated in [SPEC, NP], where they are assigned their θ -role, and then move to [SPEC, DP], where they are assigned genitive case. One could also take the opposite approach. Instead of arguing that possessive pronouns and genitives are both specifiers, one could claim that they are both syntactic heads located in D. This

² This sentence is obviously my own, but I am confident that it is grammatical. The existence of the universal quantifier/numeral combination *totos tres* (nominative *toti tres*) is documented. See Menger (1892). What is important here is that nominal categories that occupy head positions, including numerals, agree in Case and Φ -features.

could be argued based on the observation that in the Germanic languages prenominal genitives and possessive pronouns do not co-occur with determiners.

There is of course another way to approach genitives and possessive pronouns, and that is to say that they are not in the same position. Den Besten (2006) and Schoorlemmer (1998), for example, treat possessive pronouns as heads and genitives as specifiers. I will now present evidence in support of this latter view by showing that genitives and possessive pronouns have neither the same base-position nor the same final landing site. I will conclude that genitives are maximal projections that originate in [SPEC, NP] and move to [SPEC, DP] while possessive pronouns are the heads of PossP. I will also show that the possessive dative constructions found in German and Dutch can be handled in the same way as genitives. My arguments will be based on Case, Φ -feature agreement, θ -role assignment and co-occurrence. I begin with arguments related to Case.

A true genitive such as the one found in languages like German, Russian and Latin is clearly an inflection for genitive case. Furthermore, this case remains the same regardless of the case of the noun associated with that genitive form. Take the following sentences from German:

- (37) a. Die Königin hat [des Königs Bruder] gesehen.³
 the queen has the king's brother seen
- b. Die Königin hat [seinen Bruder] gesehen.
 the queen has his brother seen
- (38) a. Die Königin hat [des Königs Bruder] einen Kuß gegeben.
 the queen has the king's brother a kiss given
- b. Die Königin hat [seinem Bruder] einen Kuß gegeben.
 the queen has his brother a kiss given

In (37a) the noun *Bruder* (*brother*) is in the accusative case, since it is the direct object of the verb *gesehen* (*seen*). The DP *des Königs* (*the king's*) is in the genitive case. Example (37b) is the same as (37a) except that the genitive DP *des Königs* has been replaced with the possessive pronoun *seinen* (*his*). The morphology on this possessive pronoun shows that it is in the accusative case like the noun it modifies,

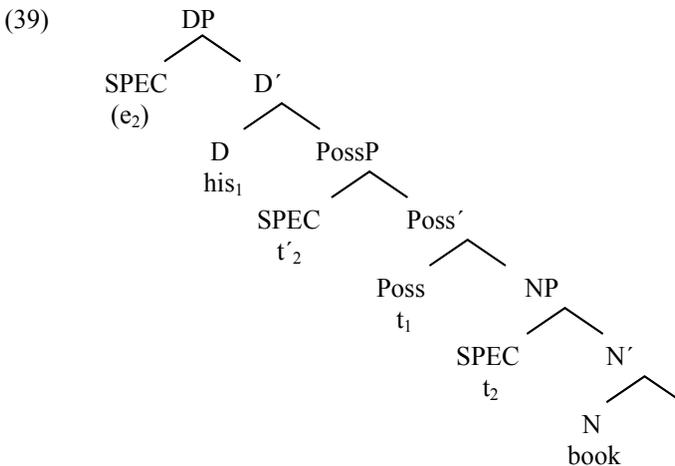
³A prenominal genitive such as the one in this sentence sounds archaic and unnatural if not ungrammatical. It is normally found only in fairy tales, poetry and biblical passages. Otherwise genitives occur post-nominally. The prenominal form is used here only for ease of presentation. This genitive form should not be confused with the Saxon genitive, which is also represented by an *-s* attached to a noun. The Saxon genitive differs from the masculine singular genitive form in (37) and (38) in three ways. First of all, it can naturally occur in prenominal position, as in *Peters Haus* (*Peter's house*). Secondly, it can be attached to feminine as well as masculine nouns, as in *Marias Haus* (*Mary's house*). Thirdly, it is normally used only with proper nouns and names. For a discussion see Weerman and De Wit (1999). The analysis that I am proposing here in order to distinguish genitives and possessive datives from possessive pronouns is valid for the Saxon genitive as well.

not the genitive case. If the genitive DP in (37a) and the possessive pronoun in (37b) were the same type of element and occupied the same position, one would expect their Case to be the same. After all, Case is very much position-dependent.

The examples in (38) illustrate exactly the same phenomenon. In (38a) the noun *Bruder* (*brother*) is in the dative case, since it is the indirect object of the verb *gegeben* (*given*). The DP *des Königs* (*the king's*) is in the genitive case. Example (38b) is the same as (38a) except that the genitive DP *des Königs* has been replaced with the possessive pronoun *seinem* (*his*). The morphology on this possessive pronoun shows that it is in the dative case like the noun it modifies, not the genitive case.

To summarise, examples (37) and (38) show that genitive DPs retain their case regardless of the case of the noun that they modify, while possessive pronouns agree in case with the noun they modify. Therefore, genitives and possessive pronouns are not the same type of category and do not occupy the same position. The implication is that possessive pronouns and nouns are both heads while genitives must be specifiers.

Having looked at Case, let's now look at Φ -feature agreement and see what it tells us about possessive pronouns and genitives. By analysing the Φ -feature agreement patterns of genitives and possessive pronouns, I will show not only that these two elements occupy different positions but also that genitives can be analysed in the same manner as possessive datives, which occur in the continental West Germanic languages. I assume, consistent with Den Besten (2006), that a possessive pronoun moves from Poss to D and that it requires an empty category in [SPEC, DP] as its antecedent for co-indexation purposes. I also assume that this empty category originates in [SPEC, NP], where it is assigned a θ -role, and then moves cyclically to [SPEC, DP] for genitive case:



I would like to emphasise that the conclusion that possessive pronouns are heads and genitives and possessive datives are specifiers is really forced if we carefully consider the structure of (42). The dative case and morphology in (42) must be assigned and generated in the SPEC position occupied by the DP *dem Mann* (*the man*). There is no other place for this to happen, since the head position of the DP is occupied by a possessive pronoun. The genitive case in (40) is analogous to the dative case in (42) in its agreement pattern and must therefore also be in the SPEC position of the phrase. All this evidence reinforces the assumption that possessive pronouns are heads while genitives and possessive datives are specifiers, as claimed in Den Besten (2006) and Schoorlemmer (1998). I will not concern myself here with the manner in which Case is assigned in the SPEC position of DP, although I suspect that it is assigned structurally. Whether dative or genitive is assigned will depend not only on the language but on the register within a language, since the possessive dative is usually considered to be sub-standard and the genitive standard.

We now come to the third factor that I want to consider in this discussion of the differences between genitives and possessive pronouns, namely, θ -role assignment. I assume that genitives such as *John's* in the phrase *John's house* and possessive datives such as *dem Mann* in example (42) must be assigned a θ -role. They are clearly arguments (perhaps subjects) of the head noun, suggesting that their base-position is [SPEC, NP], and there is nothing inherently or lexically genitive about them that would make the assignment of a θ -role superfluous. The DP *John* should certainly receive the same θ -role in the following two sentences, and in the second sentence the noun *house* is the only possible source of a θ -role:

- (43) a. John owns a house in England.
 b. John's house is in England.

In (43b) and in (42) a θ -role can be assigned by the head nouns. This raises the question of how a possessive pronoun can receive a θ -role if it is not generated in [SPEC, NP] but is the head of PossP. I would argue that possessive pronouns are inherently or lexically possessive and have no need of a θ -role as such. They do need some type of antecedent for co-indexation and agreement purposes, but they have this. In (42), for example, the antecedent of the possessive pronoun is *dem Mann*, while in (41) it is a null-element.

Note that head nouns can assign θ -roles not only to specifiers but to complements as well, and that it must be possible for genitive case to be assigned in a complement position as well as in a SPEC position. The following German sentences illustrate:

- (44) a. Johannes Freunde haben angerufen.
 John's friends have called
 b. Freunde Johannes haben angerufen.
 friends (of) John's have called

It would be beyond the scope of this thesis to begin a discussion of this topic now. Let me just say that the idea that a noun can assign a θ -role to both a specifier and a complement and that Case can also be assigned in a complement position is nothing new, as the following German phrase from Lindauer (1998) shows:

- (45) Kolumbus' Entdeckung Amerikas
 Columbus-GEN discovery America-GEN
 (Columbus's discovery of America)

The final factor that I want to consider in comparing genitives and possessive pronouns is the criterion of co-occurrence, since it is probably the best test for determining whether or not two items occupy the same position. If two things can co-occur, then they are most probably in different positions and not the same thing. In Icelandic, possessive pronouns and the Saxon genitive co-occur, as can be seen in the following phrase from Delsing (1993):

- (46) hús-ið hans Jón-s
 house the his John-GEN

In this section I have laid out my arguments and assumptions on the nominal domain. The most important idea is that under the Stranding Analysis floating quantifiers are nominals that head a QP and select a DP. Inside of DP there is the following hierarchy:

- (47)
-
- ```

graph TD
 D --- Poss
 D --- Node1[]
 Poss --- CardNum
 Poss --- Node2[]
 CardNum --- A
 CardNum --- Node3[]
 A --- N

```

Furthermore, I have offered evidenced based on four different criteria that possessive pronouns are syntactic heads while genitives and possessive datives are specifiers. This approach has many advantages. It explains the differences in  $\Phi$ -feature and Case agreement patterns that I have shown, it explains why possessive pronouns do not require a  $\theta$ -role, it explains why in some languages possessive pronouns and genitives can co-occur, and it allows us to analyse genitives and possessive datives in a unified manner.

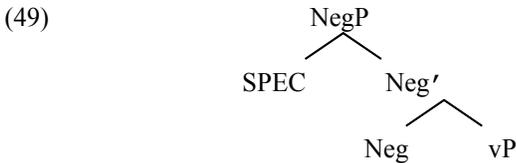
Before moving on to the next chapter it is necessary to introduce the reader to the concept of constituent negation as it applies to floating quantifiers. This is especially important given that I will be discussing floating negated quantifiers in Chapter 3.

### 3. Constituent Negation

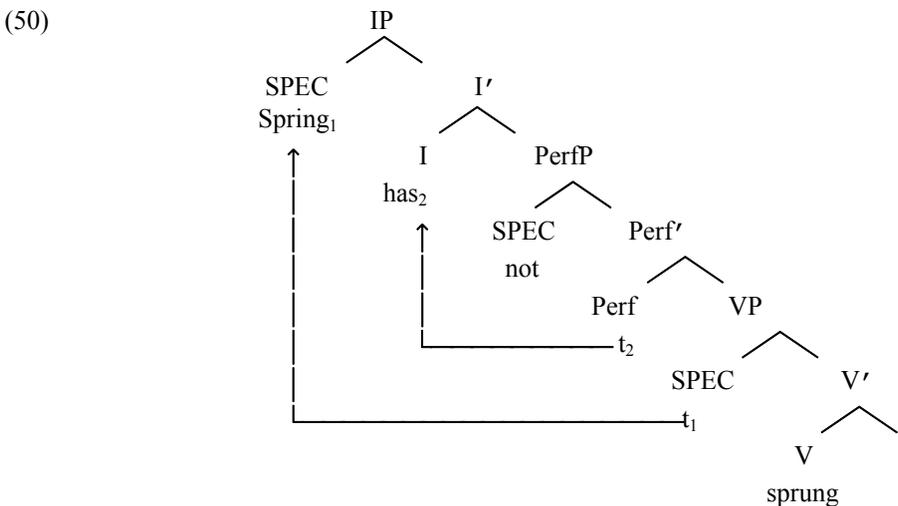
The subject of floating quantifiers has come up often enough in the literature, but the subject of *negated* floating quantifiers has been ignored:

- (48) a. *Not all* the students have read the book.  
 b. The students have *not all* read the book.

In Chapter 3 I will present an in-depth analysis of quantifier negation in the Germanic and Romance languages and propose my own hypothesis. In the meantime there are certain basic things that the reader needs to know about how I will approach this subject. My hypothesis of constituent negation (in this case quantifier negation) is basically an adaptation of the theory of sentential negation in Zeijlstra (2004). In Zeijlstra (2004), it is argued that negation is not universally a functional category. In the Romance languages, sentential negation is a functional category and there is a Negation Phrase that is headed by the negation marker and dominates all verbal phrases:

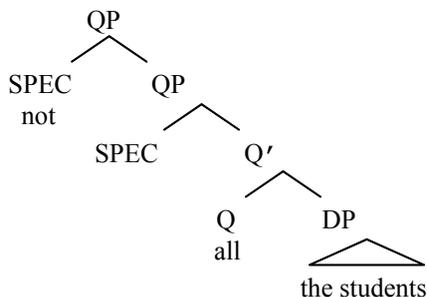


In the Germanic languages, however, sentential negation is not a functional category. There is no NegP and the negation marker is not a head but a maximal projection occupying the SPEC position of the highest verbal element in a clause. The following diagram shows how this works. AgrSP and TP are collapsed into IP for ease of presentation.



My approach to constituent (quantifier) negation is consistent with Zeijlstra's theory of sentential negation. In the Germanic languages, I claim that the negation marker in a negated quantifier is a specifier inside QP, as in (51). The reason for positing two specifier positions in QP will be made clear in Chapter 3.

(51)



In the Romance languages, since the negation marker is a head rather than a maximal projection, I claim that it cannot be base-generated inside QP. The structure in (51) is therefore not possible in the Romance languages. The prediction that follows from this claim is that the stranding of negated quantifiers should not be possible in the Romance languages even though it is possible in the Germanic languages, as shown in (48). This prediction is borne out, as the following examples from Italian, Romanian, Portuguese and Spanish demonstrate:

- (52) a. \*Gli studenti hanno letto non tutti il libro.  
the students have read not all the book
- b. \*Studentii au citit nu toti cartea.  
students the have read not all book the
- c. \*Os alunos têm lido nem todos o livro.  
the students have read not all the book
- d. \*Los alumnos han leído no todos el libro  
the students have read not all the book

I will go into much more detail on negated quantifiers in Chapter 3. What is important for the time being is that the reader understand that in the Germanic languages negation markers are specifiers while in the Romance languages they are heads, with the result that negated quantifiers can be stranded in the Germanic languages but not in the Romance languages.

I have now provided the reader with the theoretical foundations for the arguments that I will make in this thesis. We are now ready to begin looking at data and formulating hypotheses. In the next chapter, we will be examining data from five languages that support the Stranding Analysis of floating quantifiers.



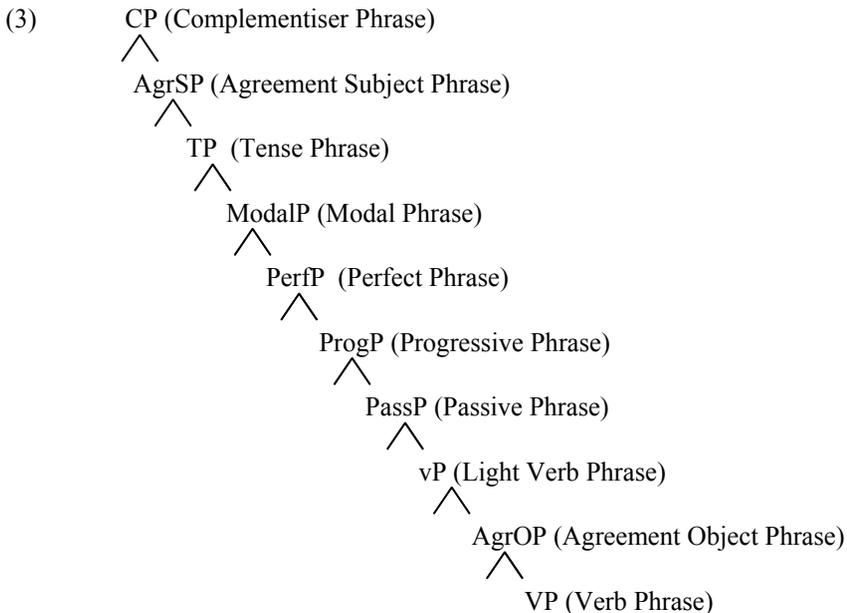
## Chapter 2: Stranding Positions for Quantifiers

### 0. Introduction

The purpose of this chapter is to provide evidence in support of the Stranding Analysis of floating quantifiers originally developed in Sportiche (1988) by presenting data involving several different kinds of sentential constructions in several languages. This chapter deals only with non-negated floating quantifiers. Chapters 3 and 4 will be presented in the same theoretical framework as this chapter but will cover floating negated quantifiers (Chapter 3) and floating universal numeric quantifiers (Chapter 4), as exemplified in the following two sentences:

- (1) a. *Not all* the students have read the book.  
b. The students have *not all* read the book.
- (2) a. *All three* students have read the book.  
b. The students have *all three* read the book.

The theoretical foundations for my analysis were presented in Chapter 1, so we can immediately begin to look at data. The reader is reminded that I assume the following structure in the verbal domain:



This chapter is divided into eight sections. In Sections 1 through 5 I present data from five languages, English, Italian, Spanish, Romanian and German, in order to test the Stranding Analysis. In order to determine which configurations and positions

allow stranding, all possible combinations of verbal elements are considered. Section 6 deals with the stranding of object quantifiers. Section 7 is about quantifier stranding in constructions involving raising verbs, control verbs, A-bar Movement, Small Clauses and the topicalisation of verbal clusters (remnant movement) in the continental West Germanic languages. Section 8 contains a summary.

### 1. Quantifier Stranding in English

We begin with the following sentence:

- (4) All the children may have been watching the movie.

I assume that in this sentence the subject *all the children* is in [SPEC, AgrSP], the modal *may* has moved from the head position of ModalP to AgrS, the auxiliary *have* is in the head position of PerfP, the participle *been* is in the head position of ProgP, the main verb *watching* is in the head position of vP, and the direct object *the movie* is in [SPEC, AgrOP], having moved there from [SPEC, VP]. If the Stranding Analysis is correct, a subject that originated in [SPEC, vP] and has passed through all the SPEC positions between its base-position and its final landing site in [SPEC, AgrSP] should have been able to strand the quantifier *all* in any of those intermediate SPEC positions. The following examples suggest that this is indeed the case:

- (5) a. All the children may have been watching the movie.  
 b. The children all may have been watching the movie.  
 c. The children may all have been watching the movie.  
 d. The children may have all been watching the movie.  
 e. The children may have been all watching the movie.  
 f. \*The children may have been watching all the movie.

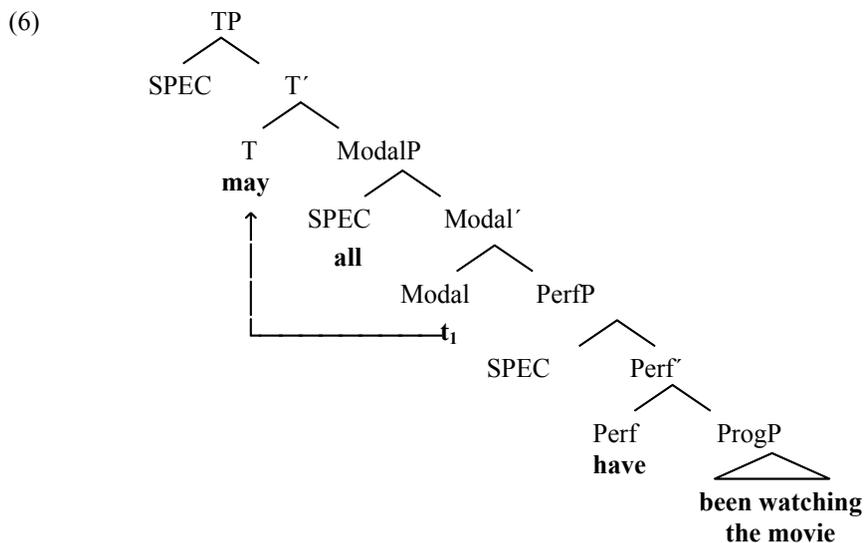
In (5a) the subject QP *all the children* has moved in its entirety to [SPEC, AgrSP]. No stranding has taken place. Example (5b) raises an interesting question. One would normally assume that the modal verb had moved to AgrS and that the subject was in [SPEC, AgrSP].<sup>1</sup> This would mean that the quantifier *all* and its complement-DP *the children* had simply been inverted in SPEC of AgrSP, which should not be possible. Another possible explanation is that modals in English do not always move to AgrS. This is not implausible when one considers the fact that English modals show no signs of agreement. If in (5b) the subject DP *the children* is in [SPEC, AgrSP] and the modal has remained in the head position of ModalP or perhaps even in T, one could argue that the quantifier has been stranded in [SPEC,

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<sup>1</sup> That is, in English, since modals and the auxiliaries *be* and *have* undergo Subject-Auxiliary inversion in questions and do not require do-support, it is assumed that they move to AgrS. Since main verbs require do-support it is assumed that they remain in v and do not move to AgrS.

ModalP] or [SPEC, TP] and that no inversion of the subject DP and the quantifier has taken place. I will assume this.<sup>2</sup>

In (5c), it appears that the quantifier is in [SPEC, PerfP], since it is adjacent to the Perfect auxiliary, but it could theoretically also be in the SPEC position of ModalP if the modal verb has moved up to T, as the following diagram illustrates:



In (5d) the quantifier is adjacent to the progressive auxiliary, in [SPEC, ProgP]. In (5e) it is in [SPEC, vP], its base-position. This sentence seems a bit downgraded in relation to the previous sentences, but certainly not ungrammatical. Example (5f) is ungrammatical because the quantifier is below its base position, [SPEC, vP].

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<sup>2</sup> A comparison of English and French shows that modals do not always move to AgrS in English. The following French sentences show that certain adverbs cannot be left-adjoined to AgrS but must remain below it:

\*Nous toujours devons être honnêtes.    Nous devons toujours être honnêtes.  
 we always must be honest            we must always be honest

The English glosses of both these sentences are grammatical. This suggests that the modal in the first English gloss has not moved to AgrS and that modal movement to AgrS is optional in English.

Now let's look at how stranding works in a passive sentence in English:

- (7) a. All the patients may have been being examined.  
 b. The patients all may have been being examined.  
 c. The patients may all have been being examined.  
 d. The patients may have all been being examined.  
 e. The patients may have been all being examined.  
 f. \*/?The patients may have been being all examined.  
 g. \*The patients may have been being examined all.

There are no surprises in sentences (7a) through (7d). In (7a) no stranding has taken place. Examples (7b), (7c) and (7d) show the same pattern as (5b), (5c) and (5d), respectively, with stranding in ModalP, PerfP and ProgP. Example (7e) shows stranding in PassP. Example (7g), like (5f), is ungrammatical because the quantifier is below its base-position, which in (7g) is [SPEC, VP].

Example (7f) poses a challenge. In this sentence, I assume that the passivised verb *examined* is in the head position of VP and has not moved to *v*, meaning that the quantifier is stranded in [SPEC, VP], its base-position. To most speakers, (7f) sounds unnatural and probably ungrammatical. This sentence is comparable to (5e), in which a quantifier has been stranded in its base-position, which would also be its  $\theta$ -position. The question is whether the ungrammaticality of (7f) has anything to do with the claim made in Bobaljik (2003) and Bošković (2004) that quantifiers cannot be floated in their  $\theta$ -position. I do not believe that there is a connection. For one thing, if Bobaljik and Bošković want to argue that quantifier floating in a  $\theta$ -position is impossible, they cannot explain why the active sentence in (5e) sounds considerably better than the passive sentence in (7f), and they also cannot explain why in other languages stranding in a  $\theta$ -position is unproblematic even in the equivalent of (7f), as I will show in the next sections.

Given the implausibility of the claim by Bobaljik and Bošković, there may be another reason for why (5e) is acceptable while (7f) is not. Passive participles in English are adjectival, as can be seen in phrases such as *a ruined life*, *wasted time*, *a lost opportunity*, *the attached file*, *required documents*, *approved funding*, *a frightened animal*, *the written word*, *a confused student*, and so on. It is not uncommon for an adjective, or a participle used as an adjective, to be preceded by the quantifier *all* with the meaning *completely*. Examples are as follows:

- (8) a. He is all ready.                      b. She is all wet.  
 c. The project is all done.              d. The powder is all used up.  
 e. I am all tired out.                      f. He is all confused.  
 g. I'm all shook up.                        h. The window got all blurry.  
 i. Her face was all red.                    j. The child came home all messy.

It might very well be that when English speakers hear the word *all* before the past participle of a passive verb, which is interpreted as an adjective, their first reaction is to interpret the quantifier as an adverbial meaning *completely*, which blocks the

stranded quantifier interpretation. Even though this is only an intuitive explanation for the questionable grammaticality of (7f), there is a way to test it. Unaccusative verbs are like passive verbs in that their grammatical subjects are base-generated as objects. However, the past participles of unaccusative verbs, unlike the past participles of passive verbs, are not adjectival:

- (9) a. \*Arrived boys...      b. \*A come teacher...      c. \*The gone dogs...

Since unaccusative past participles are not adjectival, when the quantifier *all* precedes an unaccusative past participle it should not be able to have the adverbial interpretation of *completely* and its stranded quantifier interpretation should therefore not be blocked the way it is in the case of passive past participles. The prediction is that a sentence like (7f) would become grammatical if the passive verb were replaced with an unaccusative verb. This prediction is borne out. Example (10) sounds much better than (7f).

- (10) ?The patients may have been all coming to the hospital.

There is still further evidence that the ungrammaticality of (7f) is caused not by the stranding of a quantifier in [SPEC, VP] but by the adjacency of the quantifier and the past participle. If a manner adverb is inserted between the quantifier and the past participle in (7f), the sentence improves significantly:

- (11) ?The patients may have been being all thoroughly examined.

In this example, the manner adverb *thoroughly* modifies only the verb *examine* and is therefore in an inner SPEC position of VP. The quantifier is stranded in an outer SPEC position of VP.<sup>3</sup> The insertion of the adverb between the quantifier and the participle rescues the sentence. To summarize, the problem with (7f) seems to have nothing to do with  $\theta$ -positions or the inability to strand a quantifier in [SPEC, VP] in a passive sentence. The reason for the ungrammaticality of (7f) is related to the fact that passive participles are adjectival and the stranding of a quantifier before an adjectival element forces an anomalous adverbial interpretation of the quantifier. Pending the discovery of a better explanation, I will assume that these explanations for the ungrammaticality of (7f) are correct.

To summarize this sub-section, in English a quantifier can be stranded in its base-position and in every other SPEC position between its base-position and its final landing site. The only exception is [SPEC, VP] in passive sentences, but an explanation was offered for this. English can be said to offer good evidence in

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<sup>3</sup> It is logical to assume that a manner adverb such as *thoroughly*, unlike a sentential adverb such as *probably*, must be close to the verb it modifies and must therefore occupy a lower SPEC position than the SPEC positions in an A-chain. The following examples illustrate this:

The doctors may have all carefully examined the patients.  
\*The doctors may have carefully all examined the patients.

support of the Stranding Analysis. I would now like to compare English to another VO language that is from another language family, Italian.

## 2. Quantifier Stranding in Italian

Italian, like English, has modals, auxiliaries, progressives and passives, but is less liberal than English in its use of the progressive with auxiliaries, modals and passives:

- (12) a. \*Deve stare leggendo il libro.<sup>4</sup> (Modal + Prog)  
 (she/he) must be reading the book
- b. \*È stato leggendo il libro. (Perf + Prog)  
 (she/he) is been reading the book
- c. \*/?Sta essendo letto.<sup>5</sup> (Pass + Prog)  
 (it) is being read

This means that the following verbal combinations are possible in Italian:

- (13) 1. Verb                      5. Pass+V                      8. Perf + Modal+V  
 2. Modal+V                    6. Perf + Pass+V                9. Modal+Perf+Pass+V  
 3. Perf+V                      7. Modal + Pass+V               10. Modal+Perf+V  
 4. Prog+V

We will examine each of these patterns as it relates to stranding. It will be seen that Italian strands quantifiers the way English does, with two differences. One difference is that in Italian, inflected verbal elements always move to AgrS, so the equivalents of (5b) and (7b) are not possible and will be omitted from the data. One might suggest that the word order in (5b) and (7b) could be produced in Italian by simply base-generating the quantifier after the noun it modifies. After all, Italian is a language in which adjectives normally follow nouns, and quantifiers behave like adjectives in their agreement patterns. As it will be shown in Section 4 of this chapter, there are languages, such as Romanian, in which the universal quantifier has adjectival properties and can appear post-nominally like an adjective. In Italian, however, there is no evidence that the universal quantifier has this adjectival characteristic, so sentences with the word order in (5b) and (7b) cannot be generated in Italian.

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<sup>4</sup> If the modal *deve* (*must*) has an epistemic rather than deontic meaning, this sentence is possible.

<sup>5</sup> Passives in Italian can be formed not only with the copula *essere* (*be*) but also with the verbs *venire* (*come*) and *andare* (*go*). In the examples in this chapter I will limit myself to passives with *essere*. In this sentence the use of *venire* greatly improves acceptability.

Another difference between Italian and English that is relevant to the present discussion is the fact that subject quantifiers can appear after the main verb in Italian but not in English:

- (14) a. The students are all reading.  
 b. \*The students are reading all.  
 c. Gli studenti stanno tutti leggendo.  
 the students are all reading  
 d. Gli studenti stanno leggendo tutti.  
 the students are reading all

This difference between English and Italian has to do with the fact that verbal elements such as past participles, gerunds and infinitives can optionally move higher in Italian than they can in languages such as English and French. This phenomenon has been noted in Belletti (1990), Cinque (1999) and elsewhere. In (14a) the main verb is in *v* and the quantifier is stranded in [SPEC, *v*P]. In (14b), the main verb is still in *v* and the quantifier is in a position lower than its base-position, causing ungrammaticality. The (c) example can be described in the same way as its English counterpart in (b). In (14d), the quantifier has been stranded in [SPEC, *v*P] but the gerund has undergone optional movement to a higher position.

To further illustrate this phenomenon of the optional upward movement of verbal elements in Italian, let's compare Italian with English and French. The three languages show structural similarity in their handling of the Perfect tense, as in (15), modals, as in (16), and progressives, as in (17):

- (15) a. The students have all read the book.  
 b. Les étudiants ont tous lu le livre. (French)  
 the students have all read the book  
 c. Gli studenti hanno tutti letto il libro. (Italian)  
 the students have all read the book
- (16) a. The students must all read the book.  
 b. Les étudiants doivent tous lire le livre. (French)  
 the students must all read the book  
 c. Gli studenti devono tutti leggere il libro. (Italian)  
 the students must all read the book

- (17) a. The students are all reading the book.  
 b. (French has no progressive.)  
 c. Gli studenti stanno tutti leggendo il libro.  
 the students are all reading the book

However, the following three sentences, which are patterned after (15c), (16c) and (17c), show that verbal elements in Italian can optionally move to a higher position:

- (18) a. Gli studenti hanno letto tutti il libro.  
 the students have read all the book  
 b. Gli studenti stanno leggendo tutti il libro.  
 the students are reading all the book  
 c. Gli studenti devono leggere tutti il libro.  
 the students must read all the book

These sentences are not possible in French or English. Belletti argues that past participles move up to receive their Perfect morphology. One could perhaps say the same about gerunds, which might be moving up, as in (18b), to merge with progressive morphology. One could even say the same about infinitives like the one in (18c), which could be moving up to pick up its infinitival ending. This argumentation does not explain why the movement is optional in Italian and it also does not explain why no such movement is possible in English and French. I take it to be a language-specific option. As we will see later, Italian is not the only Romance language that allows this optional movement. Spanish and Romanian do also.

There is further evidence in Italian of the optional movement of verbal elements:

- (19) a. Non ha più mangiato.  
 not (she/he) has any more eaten  
 (She/he has not eaten anymore.)  
 b. Non ha mangiato più.  
 not (she/he) has eaten any more  
 (She/he has not eaten anymore.)
- (20) a. Sono spesso venuti.            b. Sono venuti spesso.  
 (they) are often come            (they) are come often

The movement seen in (19) and (20) is not possible in French:

- (21) a. Il n'a plus mangé.      b. \*Il n'a mangé plus.  
           he not has more eaten      he not has eaten more
- (22) a. Ils sont souvent venus.      b. \*Ils sont venus souvent.  
           they are often come      they are come often

With that background, we can now begin to examine some Italian data following the schema in (13). In each set of sentences, the (a) sentence is an example in which no stranding has taken place.

Verb:

- (23) a. Tutti gli studenti leggono il libro.  
           all the students read the book
- b. Gli studenti leggono tutti il libro.  
           the students read all the book
- c. \*/?Gli studenti leggono il libro tutti.  
           the students read the book all

In the (b) sentence the quantifier has been stranded its base-position, [SPEC, vP], and the verb has moved to AgrS. In (c), a subject quantifier is below the direct object, which is in [SPEC, AgrOP]. It is theoretically impossible for a subject quantifier whose base-position is [SPEC, vP] to be below the direct object. However, it must be pointed out that not all speakers reject a sentence-final stranded quantifier such as the one in the (c) sentence. For those who consider it acceptable, one would have to argue that when the verbal element moves it somehow “pied-pipes” the direct object. In the remaining data, transitive sentences with a sentence-final quantifier will be excluded so as to avoid repeating this type of example and explanation.

Modal + V:

- (24) a. Tutti gli studenti devono leggere il libro.  
           all the students must read the book
- b. Gli studenti devono tutti leggere il libro.  
           the students must all read the book
- c. Gli studenti devono leggere tutti il libro.  
           the students must read all the book

In the (b) sentence, the quantifier could be in SPEC of vP, but it could also be in SPEC of ModalP, since the modal has moved to AgrS. In (c) the quantifier is in [SPEC, vP] but the infinitive has moved to a higher position.

Perf + V:

- (25) a. Tutti gli studenti hanno letto il libro.  
all the students have read the book
- b. Gli studenti hanno tutti letto il libro.  
the students have all read the book
- c. Gli studenti hanno letto tutti il libro.  
the students have read all the book

In the (b) sentence, the quantifier could be in SPEC of vP or in SPEC of PerfP, since the Perfect auxiliary has moved to AgrS. In (c) the quantifier is in [SPEC, vP] but the past participle has moved to a higher position.

Prog + V:

- (26) a. Tutti gli studenti stanno leggendo il libro.  
all the students are reading the book
- b. Gli studenti stanno tutti leggendo il libro.  
the students are all reading the book
- c. Gli studenti stanno leggendo tutti il libro.  
the students are reading all the book

In the (b) sentence, the quantifier could be in SPEC of vP or in SPEC of ProgP, since the Progressive auxiliary has moved to AgrS. In (c) the quantifier is in [SPEC, vP] but the gerund has moved to a higher position.

Pass + V:

- (27) a. Tutti i libri sono letti.  
all the books are read
- b. I libri sono tutti letti.  
the books are all read
- c. I libri sono letti tutti.  
the books are read all

In the (b) sentence, the quantifier could be in SPEC of VP, or it could be in SPEC of PassP, since the Passive auxiliary has moved to AgrS. In (c) the quantifier has remained in its base-position, [SPEC, VP], and the past participle has moved around it.

Perf + Pass + V:

- (28) a. Tutti i libri sono stati letti.  
 all the books are been read
- b. I libri sono tutti stati letti.  
 the books are all been read
- c. I libri sono stati tutti letti.  
 the books are been all read
- d. I libri sono stati letti tutti.  
 the books are been read all

In (b) the quantifier precedes the passive auxiliary. It could be in [SPEC, PassP] but also in [SPEC, PerfP], since the Perfect auxiliary has moved to AgrS. In the (c) sentence the quantifier is in [SPEC, VP]. In (d) the quantifier is also in [SPEC, VP] but the past participle has moved to a higher position, around the quantifier.

Modal + Pass + V:

- (29) a. Tutti i libri devono essere letti.  
 all the books must be read
- b. I libri devono tutti essere letti.  
 the books must all be read
- c. I libri devono essere tutti letti.  
 the books must be all read
- d. I libri devono essere letti tutti.  
 the books must be read all

In (b) the quantifier precedes the passive auxiliary. It could be in [SPEC, PassP] or in [SPEC, ModalP], since the modal has moved to AgrS. In the (c) and (d) sentences it is in [SPEC, VP]. In (d) the past participle has moved to a higher position.

Perf + Modal + V:

- (30) a. Tutti gli studenti hanno dovuto leggere il libro.  
 all the students have must read the book
- b. Gli studenti hanno tutti dovuto leggere il libro.  
 the students have all must read the book
- c. Gli studenti hanno dovuto tutti leggere il libro.  
 the students have must all read the book
- d. Gli studenti hanno dovuto leggere tutti il libro.  
 the students have must read all the book

In the (b) sentence the quantifier precedes the past participle of the modal. It could be in [SPEC, ModalP] or [SPEC, PerfP], since the Perfect auxiliary has moved to AgrS. In (c) and (d) it is in [SPEC, vP]. In (d) the infinitive has moved to a higher position.

Modal + Perf + Pass + V:

- (31) a. Tutti i libri devono essere stati letti.  
 all the books must be (have) been read
- b. I libri devono tutti essere stati letti.  
 the books must all be (have) been read
- c. ?I libri devono essere tutti stati letti.  
 the books must be (have) all been read
- d. I libri devono essere stati tutti letti.  
 the books must be (have) been all read
- e. I libri devono essere stati letti tutti.  
 the books must be (have) been read all

In the (b) sentence the stranded quantifier precedes the Perfect auxiliary. It could be in [SPEC, PerfP] or in [SPEC, ModalP]. In the (c) sentence it is in front of the passive auxiliary, in [SPEC, PassP]. In (d) and (e) the quantifier is stranded in [SPEC, VP]. In (e) the past participle has moved to a higher position.

Modal+Perf+V:

- (32) a. Tutti gli studenti devono aver letto il libro.  
 all the students must have read the book
- b. Gli studenti devono tutti aver letto il libro.  
 the students must all have read the book
- c. Gli studenti devono aver tutti letto il libro.  
 the students must have all read the book
- d. Gli studenti devono aver letto tutti il libro.  
 the students must have read all the book

In the (b) sentence the stranded quantifier precedes the Perfect auxiliary. It could be in [SPEC, PerfP] but also in [SPEC, ModalP]. In the (c) sentence it is in front of the main verb, in [SPEC, vP]. In (d) it is also in [SPEC, vP] and the past participle has moved to a higher position.

To summarize our findings and conclusions in this section, Italian, like English, shows good evidence that a quantifier can be stranded in its base-position and in any other SPEC position between its base-position and the final landing site of its complement DP. We will now look at Spanish, which also allows stranding, but not quite as freely as English and Italian.

### 3. Quantifier Stranding in Spanish

Spanish is structurally very similar to Italian. Like Italian, it has a progressive aspect, but unlike Italian it allows the progressive to combine with other verbal elements such as modals, Perfect auxiliaries and passives. This means that the following combinations of verbal elements will have to be examined:

- (33)
- |                       |                            |
|-----------------------|----------------------------|
| 1. Verb               | 11. Modal+Prog+Pass+V      |
| 2. Modal+V            | 12. Modal+Perf+Prog+Pass+V |
| 3. Perf+V             | 13. Perf+Prog+V            |
| 4. Prog+V             | 14. Perf+Pass+V            |
| 5. Pass+V             | 15. Perf+Prog+Pass+V       |
| 6. Modal+Perf+V       | 16. Prog+Pass+V            |
| 7. Modal+Prog+V       | 17. Perf+M+V               |
| 8. Modal+Pass+V       | 18. Perf+M+Prog+V          |
| 9. Modal+Perf+Prog+V  | 19. Perf+M+Pass+V          |
| 10. Modal+Perf+Pass+V | 20. Perf+M+Prog+Pass+V     |

Before we look at the data, some introductory remarks are necessary. The reader is reminded that Spanish is spoken by more than 340,000,000 people in a vast geographic area comprising two-dozen countries on three continents. This makes for

a lot of variation in speech and grammaticality judgements. My informants were from Northern Spain, Andalucía, Mexico and Perú. I have done my best to glean out a sort of “average” or “tendential” judgement for each sentence. The universal quantifier in Spanish is like its counterpart in Italian in that it cannot function adjectivally and therefore does not appear post-nominally. Also, non-finite verbal elements, like their counterparts in Italian, can optionally move up and around a quantifier.

The stranding of subject quantifiers to the right of a direct object is generally unacceptable in Spanish, as it is in Italian, because when a verbal element optionally moves up, it does not take a direct object with it. Therefore, sentences with post-nominal quantifiers and with subject quantifiers stranded to the right of a direct object will be omitted from the data. The reader will see that Spanish is almost as flexible in quantifier stranding as English and Italian. Whereas the latter two languages allow stranding in virtually any SPEC position, Spanish makes one exception. It does not allow stranding between a Perfect auxiliary and its past participle. With that background, we can begin to analyse the data following the schema in (33).

Verb:

- (34) a. Todos los estudiantes leen el libro.  
           all the students read the book
- b. Los estudiantes leen todos el libro.  
           the students read all the book

In the (b) sentence the quantifier is stranded in [SPEC, vP], its base-position. The verb has moved to AgrS.

Modal + V:

- (35) a. Todos los estudiantes deben leer el libro.  
           all the students must read the book
- b. Los estudiantes deben todos leer el libro.  
           the students must all read the book
- c. Los estudiantes deben leer todos el libro.  
           the students must read all the book

In the (b) sentence the quantifier appears to be stranded in [SPEC, vP] but it could also be in [SPEC, ModalP], since the modal has moved out of ModalP and up to AgrS. In the (c) sentence the quantifier is stranded in [SPEC, vP] and the infinitive has moved around the quantifier as we have seen it do in Italian.

Perf + V:

- (36) a. Todos los estudiantes han leído el libro.  
 all the students have read the book
- b. \*Los estudiantes han todos leído el libro.  
 the students have all read the book
- c. Los estudiantes han leído todos el libro.  
 the students have read all the book

In the (b) sentence the quantifier has been stranded in [SPEC, vP]. Normally, this would not be a problem, but in this case the quantifier is located between a Perfect auxiliary and a past participle, which, as I mentioned at the beginning of this section, is not acceptable in Spanish. In (c) the quantifier is still in [SPEC, vP] but the past participle has moved around the quantifier as we have seen it do in Italian. The quantifier is no longer between a Perfect auxiliary and a past participle, so the sentence is saved. The (c) sentence sort of suggests that this movement of the participle is obligatory in this instance.

Prog + V:

- (37) a. Todos los estudiantes están leyendo el libro.  
 all the students are reading the book
- b. Los estudiantes están todos leyendo el libro.  
 the students are all reading the book
- c. Los estudiantes están leyendo todos el libro.  
 the students are reading all the book

In the (b) sentence the quantifier seems to be in [SPEC, vP] but it could also be in [SPEC, ProgP]. In the (c) sentence the quantifier is in [SPEC, vP] and the gerund has moved around it. The (b) and (c) sentences illustrate very well that stranding in [SPEC, vP] is not a problem in and of itself and that when a verbal element is not the complement of the Perfect auxiliary its upward movement is optional. This will be confirmed many times in the remaining data.

Pass + V:

- (38) a. Todos los libros son leídos.  
           all the books are read
- b. Los libros son todos leídos.  
           the books are all read
- c. ?Los libros son leídos todos.  
           the books are read all

In (b) the quantifier could be either in [SPEC, VP] or [SPEC, PassP]. The (c) sentence is grammatical for some, ungrammatical for others and questionable for others. In the remaining data we will see that the movement of a passive participle around a quantifier is problematic. Why would a passive participle be less able to move around a quantifier than other verbal elements like infinitives, gerunds and past participles? There is one thing that separates passive participles from all the other non-finite verbal elements in Spanish, and that is the fact that they show  $\Phi$ -feature agreement. It is not unreasonable to assume that this has something to do with the restrictions on their movement. Their  $\Phi$ -feature agreement makes them highly adjectival, and the movement of adjectives above other elements in the nominal domain, such as quantifiers, may simply be a problem in Spanish. While this observation on  $\Phi$ -feature agreement may be interesting, it does not explain why the upward movement of a passive participle is not a problem in Italian, since passive participles in Italian also show  $\Phi$ -feature agreement. The upward movement of passive participles is also not a problem in Romanian, as we will see in the next section.

Modal+Perf+V:

- (39) a. Todos los estudiantes deben haber leído el libro.  
           all the students must have read the book
- b. Los estudiantes deben todos haber leído el libro.  
           the students must all have read the book
- c. \*/?Los estudiantes deben haber todos leído el libro.  
           the students must have all read the book
- d. ?Los estudiantes deben haber leído todos el libro.  
           the students must have read all the book

The (b) sentence shows stranding in [SPEC, ModalP] or [SPEC, PerfP]. In (c) we see strong resistance to stranding between a Perfect auxiliary and a past participle, even though the perfect auxiliary is an infinitive. The (d) sentence is like (c) except that the past participle has moved around the quantifier. This is the same

phenomenon that we saw in (36). Movement of the past participle rescues the sentence.

Modal+Prog+V:

- (40) a. Todos los estudiantes deben estar leyendo el libro.  
           all the students must be reading the book
- b. Los estudiantes deben todos estar leyendo el libro.  
           the students must all be reading the book
- c. Los estudiantes deben estar todos leyendo el libro.  
           the students must be all reading the book
- d. Los estudiantes deben estar leyendo todos el libro.  
           the students must be reading all the book

These sentences follow the patterns of previous examples. There is nothing that blocks stranding, given that no Perfect auxiliary is involved.

Modal + Pass + V:

- (41) a. Todos los libros deben ser leídos.  
           all the books must be read
- b. ?Los libros deben todos ser leídos.  
           the books must all be read
- c. Los libros deben ser todos leídos.  
           the books must be all read
- d. \*Los libros deben ser leídos todos.  
           the books must be read all

In (b) the quantifier is stranded either in [SPEC, ModalP] or [SPEC, PassP]. In (c) it is in [SPEC, VP], its base-position. In (d) the passive participle has moved around the quantifier. In (38c) we also saw that the passive participle seemed to resist being moved around a quantifier, unlike other verbal elements.

## Modal+Perf+Prog+V:

- (42) a. Todos los estudiantes deben haber estado leyendo el libro.  
 all the students must have been reading the book
- b. ?Los estudiantes deben todos haber estado leyendo el libro.  
 the students must all have been reading the book
- c. \*Los estudiantes deben haber todos estado leyendo el libro.  
 the students must have all been reading the book
- d. Los estudiantes deben haber estado todos leyendo el libro.  
 the students must have been all reading the book
- e. ?Los estudiantes deben haber estado leyendo todos el libro.  
 the students must have been reading all the book

In (b) the quantifier is stranded in [SPEC, ModalP] or [SPEC, PerfP]. In (c) the quantifier is stranded between a Perfect auxiliary and its past participle and, as expected, most speakers find the sentence unacceptable. In (d), quantifier stranding in [SPEC, vP] is fine. In (e) the gerund has moved around the quantifier.

## Modal + Perf + Pass + V:

- (43) a. Todos los libros deben haber sido leídos.  
 all the books must have been read
- b. ?Los libros deben todos haber sido leídos.  
 the books must all have been read
- c. \*Los libros deben haber todos sido leídos.  
 the books must have all been read
- d. Los libros deben haber sido todos leídos.  
 the books must have been all read
- e. \*Los libros deben haber sido leídos todos.  
 the books must have been read all

In the (b) sentence the quantifier could be in [SPEC, ModalP] or [SPEC, PerfP]. In the (c) sentence, the quantifier has been stranded between a Perfect auxiliary and a past participle, again showing that this position is not available for stranding. The (d) sentence was accepted by all informants, which is consistent with expectations, given that the quantifier is in [SPEC, VP] and not between a Perfect auxiliary and a past participle. In the (e) sentence we again see that the movement of a passive participle around the quantifier is problematic.

## Modal+Prog+Pass+V:

- (44) a. Todos los libros deben estar siendo leídos.  
all the books must be being read
- b. \*/?Los libros deben todos estar siendo leídos.  
the books must all be being read
- c. Los libros deben estar todos siendo leídos.  
the books must be all being read
- d. Los libros deben estar siendo todos leídos.  
the books must be being all read
- e. \*Los libros deben estar siendo leídos todos.  
the books must be being read all

The general unacceptability of the (b) sentence is difficult to explain. If one looks at the (b) sentences from (39) through (43) one sees that speakers are sometimes but not always doubtful when a quantifier is floated after a finite modal verb, especially in sentences that contain more than two verbal elements. It seems that speakers are not consistent even with themselves in judging sentences like this. In the (c) sentence the quantifier is stranded in [SPEC, PassP] while in (d) it is in [SPEC, VP]. In (e), we see the familiar problem of moving a passive participle around a quantifier.

## Modal+Perf+Prog+Pass+V:

- (45) a. Todos los libros deben haber estado siendo leídos.  
all the books must have been being read
- b. \*/?Los libros deben todos haber estado siendo leídos.  
the books must all have been being read
- c. \*Los libros deben haber todos estado siendo leídos.  
the books must have all been being read
- d. Los libros deben haber estado todos siendo leídos.  
the books must have been all being read
- e. Los libros deben haber estado siendo todos leídos.  
the books must have been being all read
- f. \*Los libros deben haber estado siendo leídos todos.  
the books must have been being read all

My comments on the (b) sentence would be the same as my comments on the immediately preceding (b) sentence. It is not easy to explain. Regarding the (c) sentence, we again see a problem with stranding a quantifier between a Perfect auxiliary and a past participle. Examples (d) and (e) show unproblematic stranding in [SPEC, PassP] and [SPEC, VP], respectively, and the (f) sentence again shows that passive participles, unlike other verbal elements, resist movement around a quantifier.

Perf+Prog+V:

- (46) a. Todos los estudiantes han estado leyendo el libro.  
           all the students have been reading the book
- b. \*Los estudiantes han todos estado leyendo el libro.  
           the students have all been reading the book
- c. Los estudiantes han estado todos leyendo el libro.  
           the students have been all reading the book
- d. Los estudiantes han estado leyendo todos el libro.  
           the students have been reading all the book

These sentences fall nicely into the expected pattern. In the (b) sentence stranding has taken place between a Perfect auxiliary and a past participle. In (c) and (d) stranding has occurred in [SPEC, vP]. In (d) a gerund has moved around a quantifier.

Perf +Pass+V:

- (47) a. Todos los libros han sido leídos.  
           all the books have been read
- b. \*Los libros han todos sido leídos.  
           the books have all been read
- c. Los libros han sido todos leídos.  
           the books have been all read
- d. \*Los libros han sido leídos todos.  
           the books have been read all

These sentences also fit the usual pattern. In (b) stranding has taken place between a Perfect auxiliary and a past participle. In (c) the quantifier has been stranded in [SPEC, VP] and in (d) a passive participle has moved around a quantifier.

Perf+Prog+Pass+V:

- (48) a. Todos los libros han estado siendo leídos.  
 all the books have been being read
- b. \*Los libros han todos estado siendo leídos.  
 the books have all been being read
- c. ??Los libros han estado todos siendo leídos.  
 the books have been all being read
- d. Los libros han estado siendo todos leídos.  
 the books have been being all read
- e. \*Los libros han estado siendo leídos todos.  
 the books have been being read all

The (b) sentence is “perfectly” predictable, since stranding between a Perfect auxiliary and a past participle has again created ungrammaticality. I cannot explain the generally negative reaction to (c). Example (d) shows unproblematic stranding in [SPEC, VP]. In (e) we again see that movement of a passive participle around a quantifier is not tolerated.

Prog+Pass+V:

- (49) a. Todos los libros están siendo leídos.  
 all the books are being read
- b. Los libros están todos siendo leídos.  
 the books are all being read
- c. Los libros están siendo todos leídos.  
 the books are being all read
- d. \*Los libros están siendo leídos todos.  
 the books are being read all

These sentences also fit the expected pattern. In (b) stranding has taken place in [SPEC, ProgP] or [SPEC, PassP] and in (c) the quantifier is in its base-position, [SPEC, VP]. In (d) a passive participle has been moved around a quantifier.

## Perf +Modal+V:

- (50) a. Todos los estudiantes han debido leer el libro.  
 all the students have had to read the book
- b. \*Los estudiantes han todos debido leer el libro.  
 the students have all had to read the book
- c. Los estudiantes han debido todos leer el libro.  
 the students have had all to read the book
- d. Los estudiantes han debido leer todos el libro.  
 the students have had to read all the book

In (b) we see the usual problem with a Perfect auxiliary and a past participle. In (c) and (d) the quantifier is unproblematically stranded in [SPEC, vP]. In (d) the infinitive has moved around the quantifier.

## Perf+Modal+Prog+V:

- (51) a. Todos los estudiantes han debido estar leyendo el libro.  
 all the students have had to be reading the book
- b. \*Los estudiantes han todos debido estar leyendo el libro.  
 the students have all had to be reading the book
- c. Los estudiantes han debido todos estar leyendo el libro.  
 the students have had all to be reading the book
- d. Los estudiantes han debido estar todos leyendo el libro.  
 the students have had to be all reading the book
- e. Los estudiantes han debido estar leyendo todos el libro.  
 the students have had to be reading all the book

There are no surprises in these sentences. In (b) the Perfect cluster has been violated. In (c) and (d) stranding has occurred in [SPEC, ProgP] and [SPEC, vP], respectively. Sentence (e) is the same as (d) except that the gerund has moved around the quantifier.

## Perf+Modal+Pass+V:

- (52) a. Todos los libros han debido ser leídos.  
all the books have had to be read
- b. \*Los libros han todos debido ser leídos.  
the books have all had to be read
- c. \*/?Los libros han debido todos ser leídos.  
the books have had all to be read
- d. Los libros han debido ser todos leídos.  
the books have had to be all read
- e. \*Los libros han debido ser leídos todos.  
the books have had to be read all

Example (b) is easy to explain because it involves a Perfect auxiliary and a past participle. I cannot explain the general unacceptability of (c). See for example (51c), which was not judged to be ungrammatical. Example (d) shows unproblematic stranding in [SPEC, VP] and (e) is an instance of movement of a passive participle around a quantifier.

## Perf+Modal+Prog+Pass+V:

- (53) a. Todos los libros han debido estar siendo leídos.  
all the books have had to be being read
- b. \*Los libros han todos debido estar siendo leídos.  
the books have all had to be being read
- c. \*/?Los libros han debido todos estar siendo leídos.  
the books have had all to be being read
- d. Los libros han debido estar todos siendo leídos.  
the books have had to be all being read
- e. Los libros han debido estar siendo todos leídos.  
the books have had to be being all read
- f. \*Los libros han debido estar siendo leídos todos.  
the books have had to be being read all

Example (b) involves a Perfect auxiliary cluster. Example (c) is like the (c) example in the last set of sentences. It is difficult to explain why it is found ungrammatical or at least very downgraded. Examples (d) and (e) show unproblematic stranding in

[SPEC, PassP] and [SPEC, VP], respectively, and (f) involves the movement of a passive participle around a quantifier.

To summarize our findings in Spanish, it generally allows stranding in any specifier position unless that position is between a Perfect auxiliary and its past participle. Like Italian, and like Romanian, as we will see in the next section, Spanish allows the movement of verbal elements to a higher position, around a quantifier, but unlike Italian and Romanian, it makes an exception for passive participles, which cannot move up. I suggested that this may have to do with the fact that passive participles, unlike other verbal elements, show  $\Phi$ -feature agreement, but this argument would not explain Italian and Romanian, which do allow the movement of passive participles. There were some sentences in the data whose ungrammaticality was difficult to explain. These were (44b), (45b), (48c), (52c) and (53c). These sentences all contain a large number of verbal elements and are semantically a bit complicated. Some of my informants told me that the sentences were marginal even without stranding.

#### 4. Quantifier Stranding in Romanian

Before presenting the Romanian data it is necessary to point out some important aspects of the language. First of all, definite articles are post-nominal affixes. Secondly, the Romanian universal quantifier *toți* (feminine *toate*) shows signs of being more adjectival than its equivalents in other Romance languages such as Italian, French and Spanish because it can appear in post-nominal adjectival position like a normal modifier:

- (54) a. ?Studentii *toți* au văzut filmul.  
 students the all have seen film the
- b. ?Studentii *toți* pot vedea filmul.  
 students the all can see film the

This order causes downgrading for some speakers but it is completely impossible in Italian, French and Spanish.<sup>6</sup> Another characteristic of Romanian that I must point out is that Romanian verbal elements, like their counterparts in Italian and Spanish, can optionally move up around a quantifier:

- (55) a. ?Studentii pot *toți* vedea filmul.  
 students the can all see film the
- b. Studentii pot vedea *toți* filmul.  
 students the can see all film the

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<sup>6</sup> The universal quantifier *todos* (feminine *todas*) in Brazilian and European Portuguese is also adjectival and can appear post-nominally like a normal modifier.

In this example, the infinitive *vedea* in the (a) sentence moves around the quantifier to form the (b) sentence. All non-finite verbal elements can undergo this optional movement in Romanian, including passive participles. (Recall that Spanish does not allow the optional movement of passive participles, while Italian does.)

I must also mention that the Romanian universal quantifier can also appear in sentence-final position, although this causes downgrading for some speakers:

- (56) a. ?*Studentii au văzut filmul toți.*  
 students the have seen film the all
- b. ?*Studentii pot vedea filmul toți.*  
 students the can see film the all

This is very comparable to the Italian sentence (23c) in Section 2, repeated here:

- (57) \*/?*Gli studenti leggono il libro tutti.*  
 the students read the book all

In Section 2, as an explanation for (23c), I suggested that for those speakers who accept this type of sentence, when the verbal element moves around the quantifier, it “pied-pipes” the direct object. I would suggest the same explanation for Romanian sentences such as those in (57). Sentences such as those in (54) and (56) will be excluded from the data that follow in order to avoid repetition.

The last thing that I will point out about Romanian is that it has no progressive aspect like the one found in Italian, Spanish and English.

With that brief introduction, we can look at several different sentential patterns and see how quantifier stranding works or doesn’t work in Romanian. The reader will notice an interesting similarity between Romanian and Spanish. In both languages, quantifier stranding is generally possible in any SPEC position unless that position is between a Perfect auxiliary and a past participle. All the (a) sentences are examples in which no stranding has taken place.

Verb:

- (58) a. *Toți studentii citesc cartea.*  
 all students the read book the
- b. *Studentii citesc toți cartea.*  
 students the read all book the

In the (b) sentence the verb has moved to AgrS and the quantifier has been stranded in [SPEC, vP].

Modal + V:

- (59) a. Toți studenții pot vedea filmul.  
 all students the can see film the
- b. ?Studenții pot toți vedea filmul.  
 students the can all see film the
- c. Studenții pot vedea toți filmul.  
 students the can see all film the

In the (b) sentence, the quantifier might have been stranded in [SPEC, ModalP], given that the modal verb *pot* has moved up to AgrS, or in [SPEC, vP]. In the (c) sentence the quantifier is in [SPEC, vP] and we see that the infinitive has moved around the quantifier. The fact that this movement creates an improvement over the (b) sentence suggests that there is a tendency in Romanian for verbal elements to form a cluster that blocks stranding between them.

Perf + V:

- (60) a. Toți studenții au văzut filmul.  
 all students the have seen film the
- b. Studenții au văzut toți filmul.  
 students the have all seen film the
- c. \*Studenții au toți văzut filmul.  
 students the have all seen film the

In the (b) sentence the quantifier is in [SPEC, vP] and the past participle has moved around the quantifier. In the (b) sentence we see that the gap between a Perfect auxiliary and its past participle is inaccessible for stranding, just as in Spanish.

Pass + V:

- (61) a. Toate filmele sunt văzute.  
 all films the are seen
- b. Fimele sunt toate văzute.  
 films the are all seen
- c. ?Fimele sunt văzute toate.  
 films the are seen all

In the (c) sentence the quantifier is in [SPEC, VP] and we see the same movement of a verbal element around the quantifier that we have seen in Italian. In the (b)

sentence the quantifier could be stranded in [SPEC, VP], since this is a passive sentence, or in [SPEC, PassP], since the passive auxiliary *sunt* has moved to AgrS.

Perf + Pass + V:

- (62) a. Toate filmele au fost văzute.  
all films the have been seen
- b. Filmele au fost toate văzute.  
films the have been all seen
- c. \*Filmele au toate fost văzute.  
films the have all been seen

In the (b) sentence the quantifier has been stranded in [SPEC, VP] between the past participle and the passive auxiliary. The (c) sentence is ungrammatical because the quantifier has been stranded between the Perfect auxiliary and the past participle of the passive auxiliary.

Modal + Pass + V:

- (63) a. Toate filmele pot fi văzute.  
all films the can be seen
- b. Filmele pot fi toate văzute.  
films the can be all seen
- c. ?Filmele pot toate fi văzute.  
films the can all be seen

In the (b) sentence the quantifier is stranded in [SPEC, VP], between the passive participle and the infinitive of the passive auxiliary. In the (c) sentence it is in a position between the finite modal verb and the infinitive of the passive auxiliary, which could be [SPEC, ModalP] or [SPEC, PassP].

Perf + Modal + V:

- (64) a. Toți studenții au putut vedea filmul.  
all students the have been able to see film the
- b. Studenții au putut toți vedea filmul.  
students the have been able all to see film the
- c. \*Studenții au toți putut vedea filmul.  
students the have all been able to see film the

In the (b) sentence the quantifier is stranded in [SPEC, vP]. In the (c) sentence we see yet another example of how the position between the Perfect auxiliary and its past participle is closed to stranding.

Perf + Modal + Pass + V:

- (65) a. Toate filmele au putut fi văzute.  
       all films the have been able to be seen
- b. \*Filmele au toate putut fi văzute.  
       films the have all been able to be seen
- c. ?Filmele au putut toate fi văzute.  
       films the have been able all to be seen
- d. Filmele au putut fi toate văzute.  
       films the have been able to be all seen

We again see the same patterns as before. Stranding is acceptable as long as it is not between the Perfect auxiliary and its past participle, as in the (b) sentence.

To summarize our findings in Romanian, quantifier stranding seems to be possible in any SPEC position except the one between a Perfect auxiliary and a past participle. We found the same in Spanish. In the next section we will look at how an OV language behaves when it comes to stranding.

## 5. Quantifier Stranding in Germanic OV Languages

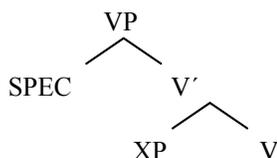
Before I begin a discussion of the OV Germanic languages it is important that I make the reader familiar with the principal theoretical assumptions that I will base my arguments on. The tree diagram in (68), which I will make use of shortly in order to help explain my data, will help the reader visualise the effects of my assumptions.

My first assumption is that German and Dutch are underlyingly OV languages, that is, they are head-final and left-branching in the verbal domain.<sup>7</sup> What this means is that specifiers and complements are both to the left of the head of a verbal phrase:

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<sup>7</sup> This approach originated in Emmon Bach (1962) and Jan Koster (1975) and still has a lot of followers. See Zwart (1997) for a discussion and an alternative underlying VO analysis.

(66)



Under this approach, verbal heads move rightward “up the tree” and their specifiers move leftward. The result is that in the base-structure of a sentence the verbal elements form a sort of cluster at the end of a clause.

Another assumption that I make, which is based on den Besten (1983), is that the V2 effect in the Germanic languages is brought about by movement of the finite verb to C and movement of another element, usually the subject, to [SPEC, CP].

As I mentioned in Chapter 1, following arguments in Zeijlstra (2004) and Cirillo (2007a) I assume that in the Germanic languages the sentential negation marker is base-generated in the SPEC position of the highest verbal element and the negation marker in a negated quantifier such as *not all* is base-generated in [SPEC, QP].

I assume that when definite direct objects are scrambled in German and Dutch, they are moved to a position just below TP. I have not included this position in (68) because its exact location is controversial. My belief is that scrambled elements are simply adjoined to the highest verbal phrase in a clause. It would be beyond the scope of the present work to begin a discussion of this position here. For now suffice it to say that the scrambling position is just below TP.<sup>8</sup>

In subordinate clauses in the Germanic OV languages, I assume that the finite verb remains in its base-position and does not move to any higher position such as T or AgrSP. The only verbal movement in a subordinate clause is the movement of a main verb from V to v in order to assign a  $\theta$ -role to an agentive subject. There is one exception to this assumption regarding subordinate clauses, and that relates to the

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<sup>8</sup> In both main and subordinate clauses in German and Dutch the scrambling position of definite direct objects is above sentential negation:

- (i) Er hat *das Buch* wahrscheinlich nicht gelesen.  
he has the book probably not read
- (ii) ...dass er *das Buch* wahrscheinlich nicht gelesen hat.  
that he the book probably not read has

Following Zeijlstra (2004), negation in the Germanic languages is in the SPEC position of the highest verbal phrase. Since the scrambling position is above negation, it must be above all verbal phrases, including ModalP, PerfP, PassP, vP and VP. The scrambling position must therefore be just below TP.

Because scrambling involves a kind of focus, it would be logical to assume that the scrambling position is the SPEC position of a functional phrase reserved for focus. The problem with this approach is that it causes Locality issues. That is, a subject moving from vP to [SPEC, AgrSP] would presumably be blocked by an element occupying the intermediate position of [SPEC, FocusP]. This suggests that scrambled items are simply adjoined to the highest verbal phrase below TP.

so-called IPP (*infinitivus pro participio*) construction, in which the finite verb does undergo some kind of movement. I will discuss this later in this section.

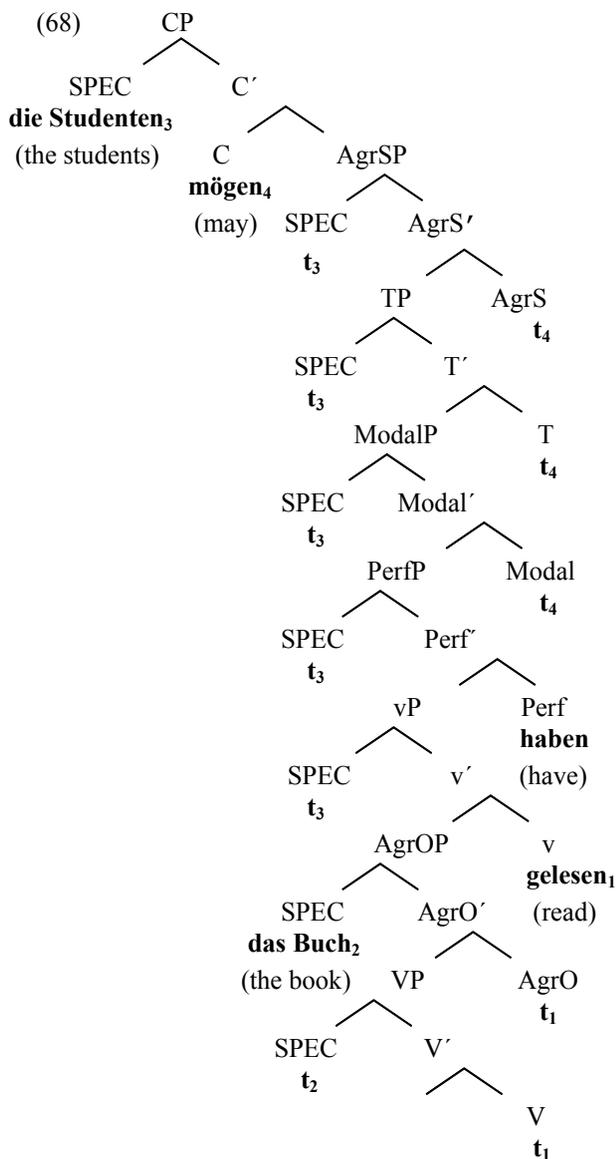
Although a finite verb does not move to AgrS in subordinate clauses, I assume that a subject moves to [SPEC, AgrSP]. Since the finite verb does not move to AgrS, it is obviously not for the sake of agreement that the subject moves to [SPEC, AgrSP]. I assume that the subject moves for Case or for EPP purposes. Evidence in support of this assumption will be presented in the discussion of example (76) below.

I have now laid out my assumptions on the structure of main and subordinate clauses in the Germanic OV languages. As already mentioned, the tree diagram in (68) will help the reader visualise the effects of these assumptions as we go through our data. My assumptions are rather well-founded in the literature. The question is whether or not the Stranding Analysis of floating quantifiers is compatible with them. In order to test the Stranding Analysis, I will present data from German, beginning with main clauses and then proceeding to the more complicated issue of subordinate clauses. We begin with the following German sentences, which mean *The students should all have read the book*. The reader is referred to the diagram in (68).

- (67) a. Alle die Studenten mögen das Buch gelesen haben.  
           all the students may the book read have
- b. \*Die Studenten alle mögen das Buch gelesen haben.  
           the students all may the book read have
- c. Die Studenten mögen alle das Buch gelesen haben.  
           the students may all the book read have
- d. Die Studenten mögen das Buch alle gelesen haben.  
           the students may the book all read have
- e. \*Die Studenten mögen ein Buch alle gelesen haben.  
           the students may a book all read have
- f. \*Die Studenten mögen das Buch gelesen alle haben.  
           the students may the book read all have

In the (a) sentence no stranding has taken place. The subject QP *alle die Studenten* (*all the students*) has moved intact to [SPEC, CP]. In the (b) example, the quantifier *alle* and the subject DP *die Studenten* both seem to be in [SPEC, CP], above the verb, but in inverted order. There is no way for the model to generate this sentence, which seems to be a V2 violation. In (c), assuming that the direct object *das Buch* (*the book*) is in [SPEC, AgrOP], the quantifier *alle* could be stranded in any SPEC position in (68) where  $t_3$  appears, producing the same word order in all cases. In (d), the definite direct object *das Buch* has been scrambled to a higher position that I have not included in (68). This would mean that in (d) the quantifier *alle* could again be stranded in any position occupied by  $t_3$  in (68). I include the example in (e)

only to show that indefinite direct objects, unlike definite direct objects, are normally not scrambled. It is therefore not the stranding position of *alle* that is problematic in (e) but the scrambling of an indefinite direct object. The ungrammaticality of (f) is due to the fact that the quantifier is located to the right of the main verb. As the reader can see from (68), nominal elements move leftward up the tree while verbal elements move rightward. It is therefore impossible for the quantifier to have gotten to the right of the verb.



Regarding main clauses, we can conclude that the Stranding Analysis is compatible with our theoretical assumptions and can account for the data. The situation becomes more complicated when we consider subordinate clauses. In order to show how subordinate clauses in German impact the Stranding Analysis, I will need to devote considerable space to describing the relevant grammatical rules and to demonstrating some of the issues that subordinate clauses raise for linguistic theory in general. First of all, as mentioned in the assumptions at the beginning of this section, finite verbs in subordinate clauses generally remain in their base-position:

- (69) a. Der Student wird den Film gesehen haben.  
 the student will the film seen have
- b. \*...dass der Student den Film wird gesehen haben.  
 that the student the film will seen have
- c. ...dass der Student den Film gesehen haben wird.  
 that the student the film seen have will

In these sentences, we see that the past participle *gesehen* (*seen*) is the complement of the Perfect auxiliary. In the (a) sentence, a main clause, the finite modal verb has moved to C. In the (b) sentence, a subordinate clause, the finite verb has attempted to move up the way it did in (a), but this produces ungrammaticality. In the (c) sentence we see that the finite modal verb has correctly remained in its base-position.

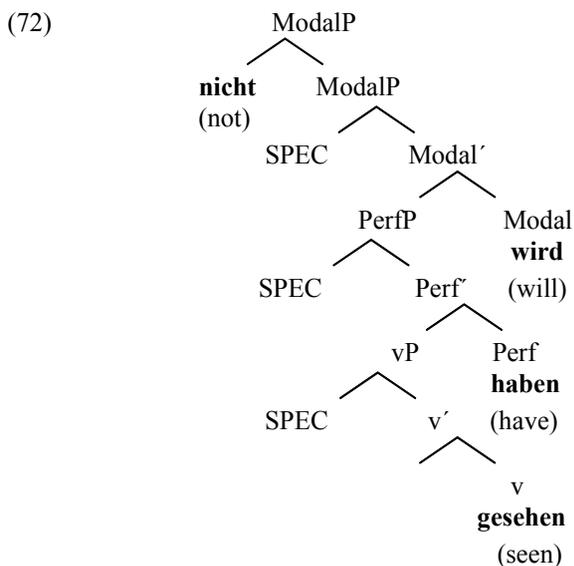
There is an exception to the rule illustrated in (69c), and that is the IPP (*infinitivus pro participio*) construction. In an IPP construction, two exceptional phenomena occur. First of all, as the term *infinitivus pro participio* indicates, an infinitive is used where one would expect a past participle. Secondly, if an IPP construction occurs in a subordinate clause, the finite verb appears to undergo some kind of movement, which it does not do in a non-IPP subordinate clause. This poorly understood phenomenon is called *Oberfeldumstellung* in German and *Auxiliary Flip* in English. The following sentences illustrate how it works. They are similar to the sentences in (69) except that the infinitive *sehen* (*to see*) is used instead of the past participle *gesehen* (*seen*):

- (70) a. Der Student hat den Film sehen können.  
 the student has the film to see to be able  
 (The student has been able to see the film.)
- b. \*...dass der Student den Film sehen können hat.  
 that the student the film to see to be able has
- c. ...dass der Student den Film hat sehen können.  
 that the student the film has to see to be able

In the (a) sentence, a main clause, the auxiliary has moved to C as one would expect. In (b), the finite verb has not moved, producing ungrammaticality. Contrast this with (69c), which is not an IPP construction. In (70c), the finite auxiliary has moved and the sentence is grammatical, in contrast with (69b). The question that immediately comes to mind is this: Where is the finite verb moving to in (70c)? It is not moving to C, since C is occupied by the complementiser *dass*. Negation provides us with an important clue. The reader is reminded that sentential negation in the Germanic languages is located in the SPEC position of the highest verbal element. The following sentences are the negated versions of (69c) and (70c):

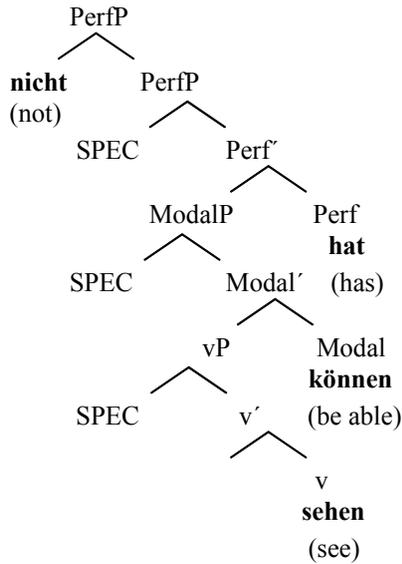
- (71) a. ...dass der Student den Film nicht gesehen haben wird.  
           that the student the film not seen have will
- b. ...dass der Student den Film nicht hat sehen können.  
           that the student the film not has to see to be able

In (71a), which has no IPP construction, the negation marker is located in the SPEC position of the phrase headed by the finite modal verb *wird* (*will*), which has not moved from its base-position. This can be seen in the following diagram:



But what about (71b), an IPP construction, in which the finite auxiliary seems to have undergone some kind of movement? The following tree diagram represents (71b):

(73)



As it stands, (73) shows incorrect word order (*nicht sehen können hat*). To achieve the desired word order (*nicht hat sehen können*), the auxiliary must move, but where does it move to? As can be seen in (71b), when the modal moves, it must remain below negation. A look at (73) tells us that if the modal moves but remains below negation, then it does not really move at all, at least not upward. It must therefore remain in its position as head of PerfP, just below the negation marker. In other words, it simply exchanges positions with its complement, which in (73) is ModalP. PerfP becomes head-initial and right-branching. A very detailed description of IPP constructions is provided in den Besten and Edmondson (1983) and they refer to the phenomenon as *inversion*. This term is well chosen, since in an IPP construction a head verb and its complement do seem to simply exchange positions.

If we claim that this kind of inversion takes place in an IPP construction, we are in effect making a prediction. We are predicting that in an IPP construction non-verbal material located in specifier positions will be able to appear between the inverted auxiliary and the other verbal elements. The diagrams in (68), (72) and (73) can help the reader visualise this. When the phrase headed by the finite verbal element becomes head-initial and right-branching, the finite verb will be to the left of all the SPEC positions in the clause, which contain nominal elements and adjuncts. The following examples show that our prediction is borne out.<sup>9</sup>

<sup>9</sup> See Lattewitz (1997) p. 168-169.

- (74) a. ...dass der Außenseiter oft hat Derbys gewinnen können.  
           that the outsider often has derbies to win to be able  
           (...that the outsider has often been able to win derbies.)
- b. ...dass da hätten Glocken läuten müssen.  
           that there had bells ring must  
           (...that bells should have been ringing there.)

In (74a) we see a direct object that has remained in [SPEC, VP] or [SPEC, AgrOP] and in (74b) we see a subject that has remained in [SPEC, vP]. Inversion has caused the auxiliary to be in front of them. Note that the direct object in (74a) and the subject in (74b) are indefinite. For the sake of completeness, I would like to show what happens when the examples in (74) contain definite arguments. The inversion approach to IPP that we are discussing predicts that definite items will be able to appear where the indefinite items appear in (74). This prediction is not borne out. The sentences in (75) are the same as those in (74) except that the indefinite items have been made definite.<sup>10</sup>

- (75) a. \*...dass der Außenseiter hat die Derbys gewinnen können.  
           that the outsider has the derbies to win to be able  
           (...that the outsider has been able to win the derbies.)
- b. \*...dass da hätten die Glocken läuten müssen.  
           that there had the bells ring must  
           (...that the bells should have been ringing there.)

There will be more on this definite/indefinite distinction later in this section.

Ignoring the problem with the definite items in (75) and concentrating on (74), it would seem that the hypothesis that IPP constructions involve a kind of inversion of head and complement, thereby allowing non-verbal material to appear inside the verbal cluster, makes the right predictions, even though no one really knows what this inversion is.<sup>11</sup>

One might ask whether Auxiliary Flip in IPP constructions could be better accounted for if one followed the Antisymmetry Theory developed by Kayne (1994) and picked up by Zwart (1997) and others, whereby all languages (including German and Dutch) are underlyingly SVO and syntactic phrases, including those in the verbal domain, are always head-initial and right-branching. This approach does

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<sup>10</sup> The sentences in (75) are not from Lattewitz. I have simply modified the direct objects in Lattewitz's sentences in (74), and presented them to informants, in order to show the definiteness effect.

<sup>11</sup> I have not included a discussion of the IPP phenomenon in Dutch, which is more complicated than its German counterpart because it involves movement in addition to the inversion of the finite verbal element. For the data that will be presented in the remainder of this chapter it is sufficient for the reader to understand how IPP works in German.

not seem to be any better at explaining IPP constructions than the SOV approach pursued in this thesis. Lattewitz (1997), for example, follows Kayne's approach and offers a rather detailed discussion of IPP constructions in German. She ends her discussion by concluding that the Minimalist approach does not provide a satisfying account of the "extraordinary word order" in German IPP constructions.<sup>12</sup> I will therefore stick with my approach, which consists of the assumptions mentioned at the beginning of this section plus the Stranding Analysis of floating quantifiers and the hypothesis that Auxiliary Flip or *Oberfeldumstellung* in an IPP construction involves the inversion of the head verb and its complement.<sup>13</sup>

I have now provided the reader with a rather lengthy and detailed background on the rules governing subordinate clauses in German, including IPP constructions. We can now consider the consequences of these rules for the theory of the Stranding Analysis. We will see that the Stranding Analysis is compatible with floating quantifier data in German subordinate clauses, even in the poorly understood IPP construction.

Before we look at subordinate clauses, the reader is quickly reminded that in main clauses, because the finite verb (the highest verbal element) moves to C, a quantifier stranded in the SPEC position of that verbal element will appear to the right of it. Example (67c), repeated here, is a good illustration of this:

- (67) c. Die Studenten mögen alle das Buch gelesen haben.  
           the students may all the book read have

However, in subordinate clauses, if all the verbal elements remain in their base-positions (with the exception of IPP constructions), a quantifier should never be able to appear to the right of any verbal element, since nominal elements move leftward up the tree. Let's look at some concrete examples of subordinate clauses without an IPP construction, patterned after the sentences in (67):

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<sup>12</sup> Lattewitz (1997) p. 174.

<sup>13</sup> Schmid (2005) offers a promising Optimality Theory approach to IPP constructions, but it would be beyond the scope of this work to consider such an approach. An Optimality Theory approach concentrates on explaining why an IPP construction, which seems to violate certain rules or constraints, is preferred over alternative constructions that violate more highly ranked constraints.

- (76) a. \*...dass die Studenten mögen alle das Buch gelesen haben.  
           that the students may all the book read have
- b. \*...dass die Studenten alle mögen das Buch gelesen haben.  
           that the students all may the book read have
- c. \*...dass die Studenten alle das Buch mögen gelesen haben.  
           that the students all the book may read have
- d. ...dass die Studenten alle das Buch gelesen haben mögen.  
           that the students all the book read have may
- e. ...dass die Studenten das Buch alle gelesen haben mögen.  
           that the students the book all read have may
- f. \*...dass die Studenten das Buch gelesen alle haben mögen.  
           that the students the book read all have may
- g. \*...dass die Studenten das Buch gelesen haben alle mögen.  
           that the students the book read have all may

Sentences (a) through (c) show that in a non-IPP construction any movement of the finite verb to a higher position causes ungrammaticality. It is not the positioning of the quantifiers in these sentences that makes the sentences unacceptable but the movement of the finite verb. The (d) sentence was ungrammatical as a main clause, as can be seen in (67b). In (76d), however, the subject DP is in [SPEC, AgrSP] and the Perfect auxiliary is in its base-position, the head position of PerfP. The quantifier *alle* has been stranded in [SPEC, PerfP], or perhaps [SPEC, TP], so that not inversion but true stranding has taken place. This provides strong support for the assumption that I made at the beginning of this section that subjects in subordinate clauses move to [SPEC, AgrSP] even though inflected verbs do not move to AgrS. Sentence (76e) is the same as (76d) except that the definite direct object has been scrambled around the subject quantifier to a position below [SPEC, TP] as described above. Examples (76f) and (76g) show that it is impossible for a stranded quantifier to appear anywhere inside the verbal cluster if no movement has taken place in the verbal domain, which is exactly what the model predicts.

The examples in (76) are straightforward and show that the Stranding Analysis is compatible with the approach whereby German is underlyingly OV and right-branching in the verbal domain and there is no movement of verbal elements in subordinate clauses. I would now like to show what happens with IPP constructions in subordinate clauses when quantifiers are stranded. Observe the following sentences, which are comparable to the examples in (76) except that they involve an IPP or double-infinitive instead of a past participle:

- (77) a. \*...dass die Studenten alle das Buch lesen sollen hätten.  
           that the students all the book read should had
- b. ...dass die Studenten alle das Buch hätten lesen sollen.  
           that the students all the book had read should
- c. \*/?...dass die Studenten das Buch hätten alle lesen sollen.  
           that the students the book had all read should

Based on (76d), in which a finite modal verb in a subordinate clause has remained in its base position with felicitous results, one would expect (77a) to be grammatical. However, because this is an IPP construction, the finite verb must undergo inversion. This can be seen in (77b). Example (77c) is the crucial sentence here. That some speakers accept it is understandable, since we have already seen that IPP constructions are predicted to allow non-verbal elements to appear between the finite verb and the other verbal elements. The question is why (77c) is rejected by many speakers. As pointed out in Lattewitz (1997), generally, non-verbal material is accepted inside the verbal cluster in an IPP construction only if it is construed as being a part of the predicate. Examples would be a manner adverb, a predicate adjective, a locative PP or an indefinite (but not a definite) DP:

- (78) a. ...dass er das Buch hätte vorsichtig lesen müssen.  
           that he the book had carefully to read must  
           (...that he should have read the book carefully.)
- b. ...dass er das Fleisch hat roh essen müssen.  
           that he the meat has raw to eat must  
           (...that he has had to eat the meat raw.)
- c. ...dass er den Wagen hat nach Hause fahren wollen.  
           that he the car has to house to drive to want  
           (...that he has wanted to drive the car home.)
- d. ...dass der Außenseiter hat Derbys gewinnen können.  
           that the outsider has derbies to win to be able  
           (...that the outsider has been able to win derbies.)

Example (77c) is rejected by most speakers because the stranded quantifier is not construed as being associated with the predicate. When Auxiliary Inversion occurs in an IPP construction, any non-verbal material that is not construed as being part of the predicate must be “evacuated” from the verbal domain below the point of inversion.<sup>14</sup>

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<sup>14</sup> Other interesting discussions of the IPP phenomenon and the effects that it has on the positioning of other constituents can be found in Richter (2000), Haider (2003) and Seuren (2003).

Let's now take a look at what happens when object quantifiers are involved instead of subject quantifiers. The examples in (79) are patterned after the ones in (77) but contain object quantifiers:

- (79) a. ...daß der Student die Bücher alle hätte lesen sollen.  
           that the student the books all had read should
- b. \*/?...daß der Student die Bücher hätte alle lesen sollen.  
           that the student the books had all read should

The (a) sentence, which seems to be universally acceptable, is difficult to explain if one follows the Auxiliary Inversion approach. The subject *der Student* (*the student*) appears to be in [SPEC, AgrSP]. The direct object *die Bücher* (*the books*) has apparently been scrambled to a position just below TP. The auxiliary *hätte* would be in the head position of PerfP, which has undergone inversion with its complement. So far, everything makes sense. The problem is that it is impossible to determine which position the stranded quantifier *alle* (*all*) is in. There is theoretically no position available for it. The word order *die Bücher alle* (*the books all*) would be easy to explain in a non-IPP construction, in which no Auxiliary Inversion had taken place. Under this scenario, in which all verbal phrases would remain head-final and left-branching, positions would be available for the direct object and the stranded quantifier. For example, the object DP *die Bücher* (*the books*) could very well be in [SPEC, AgrOP] and the quantifier *alle* in its base-position in [SPEC, VP]. Or, the object DP could have been scrambled to the scrambling position below TP and the quantifier could be stranded in [SPEC, AgrOP]. To summarise, as shown in (79a), the positioning of the auxiliary indicates that it has undergone some kind of head-complement inversion, but the positioning of the DP object and the stranded quantifier suggests the opposite, namely, that no inversion has taken place and that all verbal phrases are still head-final. This is the paradox of IPP constructions.

Let's look now at (79b), which is comparable to (77c) and is also rejected by many speakers. If one assumes Auxiliary Inversion in this sentence, one must explain why the non-verbal material inside the verbal cluster, which in this case is a stranded quantifier, is not allowed. Again following the arguments in Lattewitz (1997), one can explain (79b) by saying that the stranded object quantifier is not construed as being part of the predicate and therefore should have been removed from the verbal domain below the point of auxiliary inversion. Intuitively, one might expect an object quantifier to be more easily construed as being part of the predicate than a subject quantifier. Example (79b) is therefore expected to be more acceptable than (77c), which is confirmed by my informants.

To summarise this section, if we assume that German is underlyingly OV, that is, head-final and left-branching in the verbal domain, we find that the Stranding Analysis of floating quantifiers can explain very well the positioning of quantifiers in both matrix and non-IPP subordinate clauses. It turns out that the number of positions available for stranding is limited by the fact that verbal elements move

rightward, forming a cluster, while nominal elements move leftward. The IPP phenomenon poses a dilemma, but since it is not well understood and poses dilemmas in other research areas as well, I do not feel that it would be correct to say that the Stranding Analysis fails to explain floating quantifiers in German just because of problems with IPP constructions. On the contrary, given that some speakers do accept (77c) and (79b), the Stranding Analysis also makes the correct predictions for IPP constructions.

## 6. The Stranding of Object Quantifiers

With the exception of the examples in (79) in the section on German, the data presented in this chapter have dealt only with the stranding of subject quantifiers. The question of whether object quantifiers can be stranded must also be addressed. For the sake of convenience, (79a) is repeated here:

- (80) ...daß der Student die Bücher alle hätte lesen sollen.  
           that the student the books all had read should

In this sentence, an object DP seems to have stranded a quantifier. There is a difference between this kind of stranding and all the other types of stranding that we have seen involving subject quantifiers. In the examples of subject quantifier stranding, a quantifier can appear in basically any SPEC position in the A-chain of the subject DP. In (80) what we really have is a case of scrambling. The definite DP *die Bücher* has been scrambled out of QP. The following German sentences also contain a direct object that has been moved. These are cases of topicalisation. In the second sentence the quantifier has been stranded:

- (81) a. Alle die Bücher hat er gelesen.  
           all the books has he read
- b. Die Bücher hat er alle gelesen.  
           the books has he all read

My claim is that unless a language is a so-called scrambling language like German, one will not find stranded object quantifiers. There may be an explanation for this. In both scrambling and non-scrambling languages, subjects have the possibility of moving through quite a number of positions before reaching their final landing site, depending upon how many verbal phrases a sentence contains. That is why subject-quantifier stranding occurs in a large number of positions in both scrambling and non-scrambling languages. For objects, the situation is different. A non-scrambling language by definition does not have a position available for scrambling. This means that objects in non-scrambling languages have a much narrower range of possible movement and consequently have limited stranding potential.

Besides instances in which objects are scrambled, there is one other situation in which object quantifier stranding is not only possible but obligatory, and that is the case of object clitic pronouns in the Romance languages. In the literature, there

have been different ways of approaching clitics. One approach has been to say that clitics are base-generated as complements of verbs and move leftward, leaving behind a trace, as in Kayne (1975). Another approach, exemplified in Jaeggli (1982) and elsewhere, is to say that clitics are base-generated as affixes to a verb and that the direct object position is occupied by *pro*. The approach that I will take follows from the assumptions and arguments that I have presented so far. Universal quantifiers select definite DPs. Pronouns are definite DPs and can therefore be selected by a universal quantifier. In the West Germanic languages, if a pronoun is selected by a universal quantifier it must move to the left of that quantifier. In Romance languages like Italian and Spanish this movement is optional. The following sentences from German and Italian illustrate:

- (82) a. Sie alle sind gekommen.                      b. \*Alle sie sind gekommen.  
           they all are come                                      all they are come
- c. Tutti loro sono venuti.                      d. Loro tutti sono venuti.  
           all they are come                                      they all are come

Furthermore, a pronoun, just like a full DP, can strand a quantifier. The following sentences correspond to the sentences in (82) with stranding:

- (83) a. Sie sind alle gekommen.                      b. Loro sono tutti venuti  
           they are all come                                      they are all come

I follow Kayne (1975) and assume that object clitics originate in an argument position, but I assume that that argument position is [SPEC, VP] rather than a complement position of V. It is in [SPEC, VP] that they receive their  $\theta$ -role.

Clitics, unlike other direct objects, cannot be assumed to remain in their base-position, which is a SPEC position. They must eventually become attached to a verbal element, meaning that they must eventually co-occupy a head position. Clitic pronouns can be left- or right-adjoined to a verb, as the following examples from Spanish demonstrate:

- (84) a. La quisiera ver.                                      b. Quisiera verla.  
           her I would like to see                                      I would like to see her

The (a) sentence contains a case of so-called clitic climbing, in which a pronoun moves up and is left-adjoined to a finite verb instead of remaining in a lower position and being right-adjoined to an infinitive. This poses an interesting question regarding the Stranding Analysis: If a clitic has been selected by a quantifier, and if it climbs before being left-adjoined to a finite verb, can it strand a quantifier in an intermediate position? Observe the following Italian sentences, which contain a main verb, a modal verb and a Perfect auxiliary:

- (85) a. Li ho voluti tutti leggere.  
 them have (I) wanted all to read
- b. Li ho tutti voluti leggere.  
 them have (I) all wanted to read
- c. Li ho voluti leggere tutti.  
 them have (I) wanted to read all
- d. Tutti li ho voluti leggere.  
 all them have (I) wanted to read
- e. \*Li tutti ho voluti leggere.  
 them all have (I) wanted to read

In the first four of these sentences the clitic has been attached to the highest verbal element, which is the Perfect auxiliary. In (a) the quantifier has been stranded in vP. In (b) it has been stranded in ModalP. In (c) it could be in VP, but it could also be in vP, since the verb has the option of moving around the quantifier, as explained in Section 2. In (d), it may look like the clitic has pied-piped its selecting quantifier all the way to its final landing site, but I do not believe that this would be the proper analysis. In this sentence it is a kind of topicalisation of the quantifier that we see, and the quantifier must receive strong stress. The (e) sentence shows that the clitic pronoun must attach to the verb, meaning that if it climbs it must strand the quantifier somewhere or the sentence will crash. These sentences are very interesting because the Stranding Analysis predicts that a clitic will be able to strand an associated quantifier on its way from its base-position to its final landing site, and this is precisely what the data in (85) demonstrate.

I have hypothesised that a climbing clitic can strand a quantifier on its way to attaching itself to a verbal element. The data in (85) support this claim. However, more careful consideration of this hypothesis reveals that there are some technical details that need to be worked out. The most crucial detail is the question of the stranding positions in (85). What are these positions exactly? A clitic that climbs to the highest verbal element cannot be passing through SPEC positions. There are no SPEC positions available for objects. With the exception of [SPEC, AgrOP], the SPEC positions between VP and AgrSP are reserved for subjects. If the clitic is not moving cyclically through SPEC positions in (85), how is it moving? Is it moving into the head position occupied by the main verb, V, and then moving up through the head positions v, Modal and Perf, attaching itself to this last element? This would mean that it was stranding a quantifier in verbal head positions. It would be far beyond the scope of this thesis to develop a whole new theory of clitic movement. The point is that climbing clitics seem to be going through a series of local movements, as is evidenced by their ability to strand a quantifier in intermediate positions as shown in (85).

As further evidence that clitics strand quantifiers, I offer the following sentence, which is (85b) without clitic climbing:

- (86) \*Ho tutti voluto leggerli.  
I have all wanted to read them

What this sentence shows is that if the clitic does not move up, the quantifier cannot move up unless it is topicalised, as in (85d). In other words, the quantifier moves up with the clitic and is stranded. This is what my hypothesis predicts.

To summarise this section, quantifier stranding is something that happens to subject quantifiers unless a language is a scrambling language or it has climbing object clitics.

## 7. Stranding under Raising, Control, A-bar Movement, SCs and Topicalisation

### 7.0 Introduction

The data presented in the above sections cover A-movement in mono-clausal sentences. An analysis of quantifier stranding would not be complete without a discussion of other types of movement and structures. I will begin this section by taking a look at raising constructions.

### 7.1 Raising Verbs

In a raising construction, it is thought that the subject originates in a lower clause and moves to a higher one. Assuming that this is true, it should theoretically be possible in a raising construction for a subject DP that moves to a higher clause to strand a quantifier in the lower clause. The following data from English, Italian and German suggest that this is indeed the case:

- (87) a. ?The students seem [all to have enjoyed the film].  
b. The students seem [to all have enjoyed the film].  
c. The students seem [to have all enjoyed the film].
- (88) a. Gli studenti sembrano [aver tutti apprezzato la pellicola].  
the students seem to have all enjoyed the film.  
b. Gli studenti sembrano [aver apprezzato tutti la pellicola].  
the students seem to have enjoyed all the film.
- (89) a. ...daß die Studenten [alle den Film genossen zu haben] scheinen.  
that the students all the film enjoyed to have seem  
b. ...daß die Studenten [den Film alle genossen zu haben] scheinen.  
that the students the film all enjoyed to have seem

Regarding the English examples, in the (a) sentence we see a quantifier stranded in [SPEC, IP] of the lower clause. In (b) and (c) the quantifier is again stranded in the lower clause in [SPEC, PerfP] and [SPEC, vP], respectively. In example (a) in the Italian sentences a quantifier is stranded in [SPEC, vP] of the lower clause. The (b) sentence is the same as the (a) sentence, except that the past participle of the main verb in the lower clause has undergone optional movement to a higher position. In both German sentences a quantifier has been stranded in [SPEC, vP] of the lower clause. These sentences, which are from a Germanic VO language, a Romance language and a Germanic OV language, show good evidence that stranding is possible in raising constructions, which is exactly what one would expect if the subjects of raising verbs originate in the lower clause.

## 7.2 Control Verbs

### 7.2.0 Introduction

The theoretical implications of structures involving control verbs are different from those of raising verbs because in the case of control verbs the subject is generally not believed to originate in the lower clause but in the upper one, and the subject of the lower clause is believed to be the empty category PRO. If a subject does not originate in a lower clause, it cannot strand a quantifier there. One would therefore not expect to see floating quantifiers in control structures. The following examples, again from English, Italian and German, show that this expectation is unfounded:

- (90) a. ?The students tried [all to pass the examination].  
 b. The students tried [to all pass the examination].
- (91) Gli studenti hanno provato [a superare tutti l'esame].  
 the students have tried to pass all the examination
- (92) a. ...daß die Studenten versucht haben [alle die Prüfung zu bestehen].  
 that the students tried have all the examination to pass
- b. ...daß die Studenten versucht haben [die Prüfung alle zu bestehen].  
 that the students tried have the examination all to pass

There are perhaps three approaches that one might take in attempting to explain the grammaticality of these sentences. We will look at each approach separately.

### 7.2.1 Control Structures Involve Movement

The first approach would be to accept the arguments in Boeckx and Hornstein (2003) and Boeckx, Hornstein and Nunes (2007) whereby control involves movement of the subject from the lower clause to the higher one, just like raising. Under this approach the floating quantifiers in sentences (90) to (92) would be the result of stranding. This analysis is of course in opposition to that of Culicover and Jackendoff (2001) and many others who claim that control involves PRO and no

movement of the subject from the lower clause to the upper one. It would be beyond the scope of the present work to enter this debate. For the time being I will take a conservative approach and assume that the traditional, non-movement analysis is the correct one. Raising verbs like *seem* and *appear* do not assign  $\theta$ -roles. Consequently, a subject that is raised from the lower clause to the upper one receives only one  $\theta$ -role. In control structures, the verbs in both the upper and lower clauses theoretically assign  $\theta$ -roles. This would mean that if there really is movement of the subject in a control structure, it is assigned two  $\theta$ -roles. In any case, if it turns out that Boeckx, Hornstein and Nunes are right and control involves movement, there is not much to explain in (90) to (92) because they can be accounted for under the Stranding Analysis.

### 7.2.2 Quantifier can Select PRO

The second approach that one might take in order to explain the acceptability of examples (90) to (92) would be to postulate that a universal quantifier can select PRO as its complement, and that the subjects in the lower clauses in (90) to (92) are QPs with the following structure:

(93) [<sub>QP</sub> Q [<sub>DP</sub> PRO]]

This is basically the structure that is proposed in Sportiche (1988) for floating quantifiers in control clauses. Using the following French sentences, Sportiche argues that a floating quantifier in an infinitival (control) clause is in a position below IP:<sup>15</sup>

- (94) a. Ils ont décidé de ne pas tous partir en même temps.  
           they have decided to not all leave at same time
- b. \*Ils ont décidé de tous ne pas partir en même temps.  
           they have decided to all not leave at same time

Sportiche's reasoning is as follows: In a finite clause, the verb moves to a position between the negation markers *ne* and *pas*, so that *pas* must be located below I:

- (95) Ils ne partent pas.  
       they not leave not  
       (They do not leave.)

Therefore, Sportiche concludes that since *pas* is below I in (94a) the quantifier *tous* is also below I and must therefore be in VP. I do not find Sportiche's arguments and the structure in (93) to be to be unreasonable. The problem is that the assumptions regarding negation that he made in his 1988 paper are understandably outdated in

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<sup>15</sup> Sportiche (1988) p. 437. Note that I have glossed *de* as *to*. This is not an ideal glossing, since the English infinitival marker *to* is considered to be the head of IP while the French *de* is considered to be a complementiser. See for example Müller and Riemer (1998) p. 69.

light of more recent theories of negation such as Zeijlstra (2004). In these more recent analyses, the negation marker *ne* is in the head position of NegP and *pas* is in [SPEC, NegP]. NegP dominates IP. In other words, in (94a) the quantifier *tous* could be in [SPEC, IP] or [SPEC, VP]. My English examples in (90) in fact show evidence that both positions are available to a quantifier. The fact that (90a) is somewhat downgraded with respect to (90b) can also be explained. It is generally believed that PRO is not assigned Case (or is assigned Null Case) and therefore has no reason to move to a higher position.<sup>16</sup> In (90b), assuming the structure in (93), the quantifier and PRO have remained in their base-position in [SPEC, VP]. In (90a), however, the quantifier and PRO are in [SPEC, IP] and this unnecessary movement causes downgrading.

There are two possible weaknesses in the structure in (93). First of all, there is the issue of how the quantifier that heads the QP can be assigned Case. Secondly, PRO is generally considered to be both pronominal and anaphoric. Universal quantifiers do not select anaphora:

- (96) a. \*The students helped all each other/each other all.  
 b. \*The students helped all themselves/themselves all.

I do not see these as major weaknesses. As we will see later in this section, Case assignment is sometimes difficult to explain even when PRO and a floating quantifier are not involved. Also, the fact that universal quantifiers generally do not select anaphora such as those in (96) is not a compelling reason for concluding that PRO cannot be selected by a universal quantifier. PRO may well be anaphoric, but it is also pronominal, and universal quantifiers can select pronouns.

### 7.2.3 Floating Quantifier as Substitute for PRO

The third way of approaching the acceptability of the sentences in (90) to (92) is a bit unorthodox but it may have fewer weaknesses than the other approaches. I would like to suggest, contrary to the standard approach, that PRO is not obligatory in the lower clause of a control structure if there is another element there that can replace it. In (90) to (92) PRO is not necessary because the universal quantifier is present and this quantifier not only serves as the subject of the verb of the lower clause, but it can be semantically bound by the controlling matrix clause subject by pragmatic, discourse-related mechanisms à la Montague (1974) or à la Kamp (1981). We know that universal quantifiers can stand alone as an argument. Due to their definiteness, it stands to reason that they can also be semantically linked to an argument already introduced in the discourse. In (97), the quantifier in the second sentence is semantically or pragmatically bound by the subject of the first sentence:

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<sup>16</sup> See Haegeman (1994), 262-275 or Adger (2003) 304-311 for the classic arguments concerning PRO and Case.

- (97) The leaders began to discuss the war. All agreed that the situation had become worse.

I would suggest that the same thing might be happening in (90) to (92) and that there is no raising, no selection of PRO by a universal quantifier and no adverbial use of a quantifier. This approach raises one problem, and that is the question of how the quantifier in the lower clause in a control structure is assigned Case. I will not be deterred by this problem, because there are numerous examples in which Case assignment is a mystery. Consider the following two examples from Italian, in which nominative case has been assigned by an infinitive and a gerund:

- (98) a. L'aver io vissuto tanti anni all'estero...  
           to have I lived so many years abroad...  
       b. Avendo io detto questo avresti avuto tutte le ragioni di offenderti.  
           having I said this (you) had had all the reasons to be offended  
           (If I had said this you would have had every reason to be offended.)

In Spanish, infinitives can also assign nominative case:

- (99) Préstame tu peina pequeña para yo peinarme.  
           lend me your comb little for I comb myself

Thus, open questions about case assignment are no reason for rejecting my proposal that the quantifier in the lower clause in a control structure can fulfil the same function as PRO.

To summarise, in this sub-section I have shown that floating quantifiers occur in the lower clause of a control structure. If control involves movement, as suggested by Boeckx et alii (2003) and (2007), these occurrences of floating quantifiers can be explained by the Stranding Analysis. If Boeckx et alii are wrong, the Stranding Analysis is inapplicable to control structures and one must assume either that universal quantifiers can select PRO, as suggested in Sportiche (1988), or that universal quantifiers can replace PRO, as I have proposed. In the next sub-section I will discuss quantifier stranding under two types of A-bar movement.

### 7.3 A-bar Movement

In this sub-section I will discuss quantifier stranding in wh-questions and relative clauses. The Romance languages do not allow a wh-word or phrase to co-occur with a universal quantifier in a wh-question, regardless of whether the quantifier is stranded or not. I will assume that this is due to the selectional (lexical) properties of universal quantifiers in the Romance languages and will be concerned in this sub-section only with wh-questions in the Germanic languages.

When a universal quantifier and a wh-word or phrase co-occur in the Germanic languages, I assume that there is a QP headed by a quantifier that selects a DP

containing a *wh*-word. The *wh*-word, because it must be fronted to [SPEC, CP], first moves to [SPEC, QP.] There will be more on this later in this sub-section. We begin with the following English sentences:

- (100) a. The students have all contributed to the tsunami fund.  
 b. \*Who has/have all contributed to the tsunami fund?  
 c. Who all has/have contributed to the tsunami fund?

The contrast between the (a) and (b) examples shows that English does not allow a *wh*-word to strand a quantifier even though, as shown in the (c) example, English is not opposed in principle to combining a universal quantifier with a *wh*-word. A quantifier can also be combined with an object *wh*-word, however stranding is not possible in this instance either:

- (101) a. What/whom/who all did you see?  
 b. \*What/whom/who did you see all?

Note that in *wh*-questions in English a universal quantifier may only select a bare *wh*-word. If a *wh*-word has selected an NP-complement, the resultant DP cannot be selected by a universal quantifier, regardless of whether that quantifier is stranded or not and regardless of whether it is a subject quantifier or an object quantifier:

- (102) a. \*Which all students have come?  
 b. \*Which students all have come?  
 c. \*Which students have all come?  
 d. \*Which all students did you see?  
 e. \*Which students all did you see?  
 f. \*Which students did you see all?

The Stranding Analysis predicts that quantifiers will appear in any position in an A-chain. Example (100b) shows that one cannot necessarily extend this prediction to A-bar movement, at least not in English. We will now look at German. The following sentences are the German equivalents of the English sentences in (100):

- (103) a. Die Studenten haben alle für die Tsunami-Opfer gespendet.  
           the students have all for the tsunami victims donated  
 b. \*Wer hat alle für die Tsunami-Opfer gespendet?  
           who has all for the tsunami victims donated  
 c. \*Wer alle hat für die Tsunami-Opfer gespendet?  
           who all has for the tsunami victims donated

At first glance it may seem that German does not allow stranding in a question and does not even allow the combination of an interrogative word with a universal quantifier. However, there is something else going on here. The German word *wer* (*who*) is always singular. This is not the case in English (or Dutch, for that matter).

What causes the ungrammaticality of (103b) and (103c) is the combination of a singular *wh*-word with a plural quantifier. If the quantifier *alle* in these examples is replaced with its adverbial form *alles*, both sentences become grammatical:

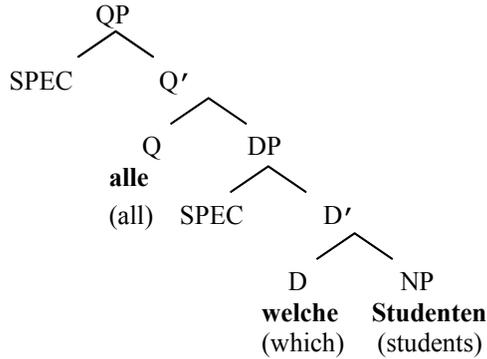
- (104) a. Wer hat alles für die Tsunami-Opfer gespendet?  
           who has all for the tsunami victims donated
- b. Wer alles hat für die Tsunami-Opfer gespendet?  
           who all has for the tsunami victims donated

Since *alles* is an adverbial, these data do not tell us much about quantifier stranding *per se*. The only way to test for stranding in German *wh*-questions is to use plural *wh*-words. The following examples are based on the English sentences in (102):

- (105) a. \*Welche alle Studenten sind gekommen?  
           which all students are come
- b. ?Welche Studenten alle sind gekommen?  
           which students all are come?
- c. Welche Studenten sind alle gekommen?  
           which students are all come
- d. \*Welche alle Studenten hast du gesehen?  
           which all students have you seen
- e. ?Welche Studenten alle hast du gesehen?  
           which students all have you seen
- f. Welche Studenten hast du alle gesehen?  
           which students have you all seen

These sentences show that German, unlike English, allows a full DP headed by an interrogative word to be selected by a universal quantifier. Furthermore, examples (c) and (f) show that German, again unlike English, allows stranding in a *wh*-question. For the sake of completeness, I will quickly explain the grammatical status of examples (a), (b), (d) and (e). I assume the following base-structure for the interrogative phrases in (105):

(106)



As is well known, wh-phrases in the Germanic languages move leftward and end up in [SPEC, CP]. In (106), the interrogative DP *welche Studenten* must first move to [SPEC, QP]. After this, one of two things can happen. Either the DP will move out of QP to [SPEC, CP], producing (105c) and (105f), or the entire QP will move to [SPEC, CP], producing (105b) and (105e). Examples (105a) and (105d) are ungrammatical because in these sentences the interrogative determiner *welche* has moved from its head position in D to [SPEC, QP] without its complement. This type of movement is never possible, as the following examples show:

- (107) a. Which books have you read?  
 b. \*Which have you read books?

How might one explain why German allows stranding in a wh-question while English does not? The Stranding Analysis deals fundamentally with A-movement. The data in this sub-section suggest that the extension of stranding to A-bar movement might be parameterised. There is much discussion of this in the literature. It has been claimed, for example, that German allows stranding in questions because the wh-words undergo A-movement before undergoing A-bar movement. A discussion of this can be found in Bobaljik (2003).<sup>17</sup> I find this explanation unsatisfying. Take, for example, the ungrammatical English sentence in (100b). One would normally assume that in this sentence the subject has moved from [SPEC, vP] to [SPEC, TP] and then to [SPEC, AgrSP] before moving to [SPEC, CP]. In other words, the subject in (100b) has undergone A-movement before undergoing A-bar movement, yet stranding is not possible. Relative clauses, which also represent A-bar movement, may shed some light on this question. Note the following English, German and Italian sentences, in which a quantifier has been stranded in a restrictive relative clause:

<sup>17</sup> Bobaljik (2003) p. 118-123.

- (108) \*I spoke to the students who had all seen the film
- (109) \*Ich sprach mit den Studenten die den Film alle gesehen hatten.<sup>18</sup>  
I spoke with the students who the film all seen had
- (110) \*Parlai con gli studenti che ebbero veduto tutti il film.  
I spoke with the students who had seen all the film

These examples seem to show that there is a general problem with stranding in relative clauses.<sup>19</sup> However, more careful consideration reveals that it is semantics that prevents stranding here. Because these sentences contain restrictive relative clauses, the relative words in the embedded clauses are partitives that refer only to a subset of the subject (the students) mentioned in the main clause. It is semantically anomalous for a relative word with a partitive, restrictive meaning to be modified by a universal quantifier. This can be clearly demonstrated by converting the sentences in this group to non-restrictive relative clauses, which are perfectly grammatical:

- (111) I spoke to the students, who had all seen the film
- (112) Ich sprach mit den Studenten, die den Film alle gesehen hatten.  
I spoke with the students who the film all seen had
- (113) Parlai con gli studenti, che ebbero veduto tutti il film.  
I spoke with the students who had seen all the film

These sentences show that the distinction between A-movement and A-bar movement does not suffice to explain why English does not allow stranding in wh-questions. One would have to claim that wh-questions involve a different kind of A-bar movement from the A-bar movement in relative clauses. Pending further research, we are forced into two unsatisfactory conclusions—that the extension of quantifier stranding from A-movement to A-bar movement is parameterised, and that in English, at least, wh-questions and relative clauses may have to be treated as two different types of A-bar movement. It is admittedly rather conspicuous that the selectional properties of the English universal quantifier differ depending upon whether the quantifier appears in a wh-question, where it can only select a bare wh-word, or in a relative clause, where it can select a full DP headed by a wh-word. Nonetheless, it is difficult to imagine how this would cause the movement that takes place in a wh-question to differ from the movement in a relative clause. The idea

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<sup>18</sup> According to German punctuation rules, a comma separates a relative clause from a main clause regardless of whether the relative clause is restrictive or non-restrictive. I have purposely omitted the comma in this example just to show that it is a restrictive relative clause.

<sup>19</sup> There is one situation that can render these (b) sentences grammatical, and that is a situation in which the speaker is talking about groups of students rather than individual students. Imagine two groups of students. All the members of one group have seen the film but not all the members of the other group have seen it. If I have spoken to the students in the first group, then I can say, “I spoke to the (group of) students who had all seen the film.” My thanks to Hans den Besten for calling my attention to this.

that stranding in *wh*-questions is parameterised is supported by the fact that in at least one form of non-standard English it is possible for a *wh*-word to strand a quantifier in at least some situations. In the analysis of West Ulster English in McCloskey (2000), for example, a sentence with the structure of (102f) is judged to be grammatical and a sentence like (102c) is accepted by some speakers.

#### 7.4 Small Clauses

I would now like to discuss floating quantifiers in small clauses or SCs, that is, clauses of the form [DP XP] where XP is PP, AP, VP or NP:

- (114) a. We want [him off the team].  
 b. We found [the film entertaining].  
 c. Mary left [him crying].  
 d. I consider [him a fool].

SCs are not IPs, since they contain no agreement or tense. They are also not CPs, given that they never occur with complementisers and the subject of the SC can be assigned Exceptional Case by a main clause verb, as in (114), or by a preposition:

- (115) How can I get any work done with [her in the room]?

There is some disagreement in the literature as to what constitutes a SC because some authors, including Hoeksema (1991) and Neeleman (1994), have analysed traditional SCs as complex predicates. Examples are the following Dutch sentences from Hoeksema (1991):

- (116) a. Aart vindt iedereen ziek  
 Art finds everyone sick  
 b. Henk wierp z'n [sokken onder het bed].  
 Henk threw his socks under the bed

Hoeksema claims that these sentences contain complex predicates rather than SCs. His arguments are not syntactic at all but are based on semantic concepts such as inference and entailment. If Hoeksema is right, the quantifier *iedereen* in (116a) is the direct object of the complex predicate *ziek vinden*, meaning *to believe sick*. If the more traditional analysis is correct, *iedereen* is the subject of the SC predicate *ziek*, but it receives Case from the matrix clause verb. Thus, in both the SC analysis and the complex predicate analysis the quantifier *iedereen* is effectively the direct object of the matrix verb. Floating quantifiers actually provide evidence against Hoeksema's analysis, as I will now show. Let's take a look at some data that could be construed as stranding in a SC, again from English, Italian and German:

- (117) a. I consider [all the students intelligent].  
 b. I consider [the students all intelligent].

- (118) a. Considero [tutti gli studenti intelligenti].  
 consider (I) all the students intelligent
- b. Considero [gli studenti tutti intelligenti].  
 (I) consider the students all intelligent
- (119) a. Ich finde [alle die Studenten intelligent].  
 I find all the students intelligent
- b. Ich finde [die Studenten alle intelligent].  
 I find the students all intelligent

Following arguments in Radford (1997) and elsewhere, the subject of an SC must move to [SPEC, AgrOP] in the matrix clause for the assignment of Exceptional Case.<sup>20</sup> It would follow from this that the DP within the subject QP could also move by itself and strand the quantifier in the SC, and that is exactly what (117) to (119) show. Note that if we take Hoeksema's approach, we must explain why in the (b) sentences in (117) to (119) the quantifier and its complement DP have reversed order. We could explain the German example in (119b) by saying that some kind of scrambling has taken place, but for the (b) sentences in (117) and (119), which are from non-scrambling languages, such an explanation would not work.

### 7.5 Stranding and Topicalisation (Remnant Movement)

I will end this section with a discussion of the interaction of quantifier stranding and the topicalisation (scrambling) of verbal clusters in the continental West Germanic languages. These verbal clusters can include, for example, two infinitives, as in (120a), a past participle and an infinitive, as in (120b), or a passive participle and a Perfect past participle, as in (120c).<sup>21</sup>

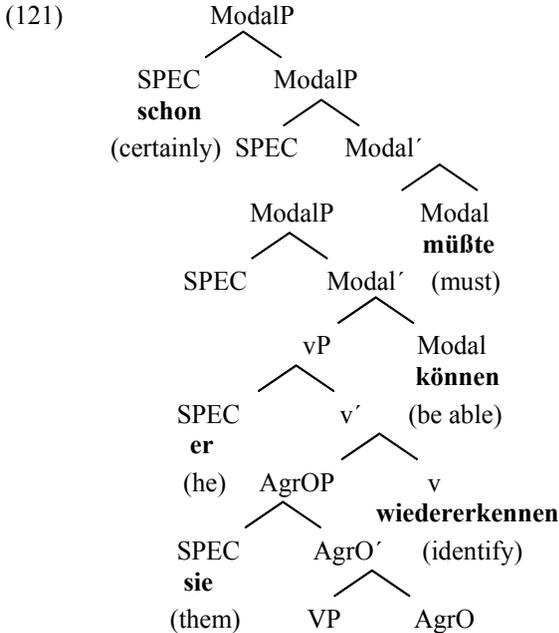
- (120) a. Wiedererkennen können müßte er sie schon.  
 to identify to be able must he them certainly  
 (He should certainly be able to identify them.)
- b. Übersehen haben wird man sie sicher nicht.  
 overlooked have will one them surely not  
 (One will surely not have overlooked them.)
- c. Übersehen worden ist sie noch nie.  
 overlooked been is she yet never  
 (She has never been overlooked.)

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<sup>20</sup> Radford (1997) 237-240.

<sup>21</sup> Haider (2003) p. 95.

This type of movement is referred to in the literature as remnant movement.<sup>22</sup> In the examples in (120), assuming that each verbal element is the head of a separate verbal phrase such as ModalP, PerfP, PassP or vP, the two fronted verbal elements do not form a constituent. However, even though they do not form a constituent together, they are contained in the same maximal projection. Let's look at the structure of (120a) for the sake of illustration:



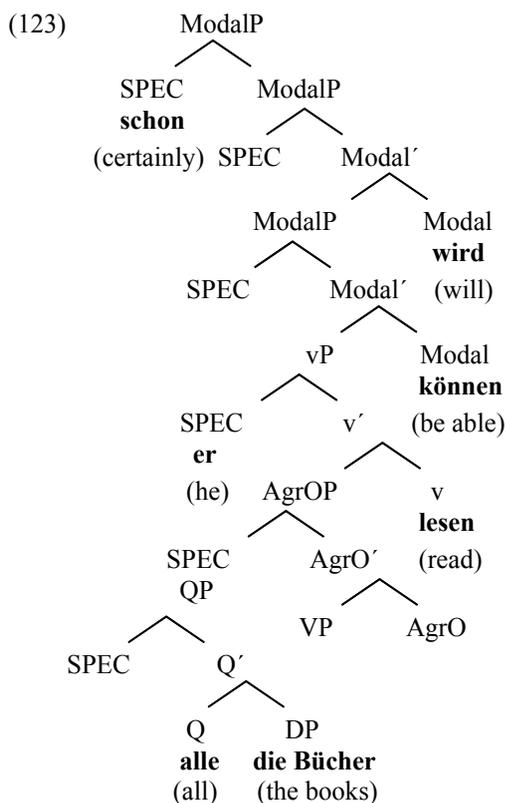
In order to derive (120a) from this base-structure, a few things have to happen. First of all, let's assume that the subject *er* (*he*) moves to [SPEC, AgrSP] for nominative case. Let's also assume that the modal *müßte* (*must*) moves to C for V2 purposes and that the definite direct object *sie* (*them*) is scrambled to a position just below TP. After these steps have been made, only one more thing has to happen in order for us to derive (120a): In order to satisfy V2 requirements and perhaps the EPP, something will have to move to [SPEC, CP]. In this case it will be the cluster *wiedererkennen können*. But as the reader can see by looking at (121), these two verbs do not form a constituent. If we want to move a constituent that contains both *wiedererkennen* and *können*, the entire lower ModalP headed by *können* must move up, including the trace of the subject pronoun *er* (*he*) and the trace of the scrambled object pronoun *sie* (*them*). This will produce (120a). The only issue here is that a government and binding problem might be created because the traces of the subject *er* and the object *sie* are no longer c-commanded by their antecedents. I must assume that this problem is resolved by reconstruction as proposed in den Besten and Webelhuth (1990). I will also point out that even if the definite direct object *sie* is

<sup>22</sup> See for example Webelhuth and den Besten (1987) or Müller (1990).

not scrambled but remains in [SPEC, AgrOP], topicalisation of the ModalP headed by *können* still results in the following grammatical sentence:<sup>23</sup>

- (122) Sie wiedererkennen können müßte er schon.  
 them to identify to be able must he certainly  
 (He should certainly be able to identify them.)

In the discussion that follows I will show how the topicalisation of verb clusters as illustrated in (120) to (122) bears on the Stranding Analysis of floating quantifiers. In order to do this I will use the structure in (123), which is similar to (121) except that it contains a QP headed by a strandable quantifier:



Starting from this structure, we will consider the following sentences, which have the meaning *He will certainly be able to read all the books*:

<sup>23</sup> This sentence is not from Haider (2003). I have modified Haider's sentence in (120a) to make my own point.

- (124) a. Er wird schon alle die Bücher lesen können.  
 he will certainly all the books to read to be able
- b. Alle die Bücher wird er schon lesen können.  
 all the books will he certainly to read to be able
- c. Die Bücher wird er schon alle lesen können.  
 the books will he certainly all to read to be able
- d. Alle die Bücher lesen können wird er schon.  
 all the books to read to be able will he certainly
- e. Alle die Bücher lesen wird er schon können.  
 all the books to read will he certainly to be able
- f. Lesen können wird er alle die Bücher schon.  
 to read to be able will he all the books certainly
- g. \*Die Bücher lesen können wird er schon alle.  
 the books to read to be able will he certainly all

Let's briefly analyse these sentences. In the (a) sentence no scrambling or topicalisation has taken place. The subject pronoun *er* (*he*) has moved to [SPEC, CP] and the modal verb *wird* (*will*) is in C. In (b) the object QP *alle die Bücher* (*all the books*) has been topicalised and is presumably in [SPEC, CP]. In (c) the object DP *die Bücher* (*the books*) has been topicalised and the quantifier *alle* (*all*) stranded in QP. In (d) the entire ModalP headed by *können* (*to be able*) has been topicalised and moved to [SPEC, CP]. The diagram in (123) will help the reader visualise this. In the (e) sentence the entire vP headed by the verb *lesen* (*to read*) is topicalised. Keep in mind that the subject pronoun *er* (*he*) has moved to [SPEC, AgrSP] and is no longer in the vP. In (f), we have the same structure that we had in (120a). The definite direct object QP *alle die Bücher* has been scrambled to a position just below TP and the entire ModalP headed by *können* has been topicalised. The ungrammatical (g) sentence is the most important sentence for us. The question is whether it is evidence against the Stranding Analysis of floating quantifiers. I would argue that it is not. In (g), the topicalised segment is *die Bücher lesen können*. By looking at (123) the reader can see that this string of words does not form a constituent. There is no way for this string to be topicalised as a unit. In order for the quantifier *alle* to be stranded, the DP *die Bücher* has to move out of QP in the manner seen in (124c). This is not what is happening in (124g). Therefore, one cannot conclude that the topicalisation of verbal clusters in German provides evidence against the Stranding Analysis of floating quantifiers. On the contrary, the Stranding Analysis makes the right predictions about how remnant movement affects floating quantifiers.

## 8. Summary and Conclusions

In this chapter we have seen evidence from several languages that quantifiers can be stranded in virtually any A-chain position, as predicted by the Stranding Analysis. Languages such as English and Italian are quite liberal in that they place virtually no restrictions on which A-chain positions are available for stranding. The only exception is [SPEC, VP] in English passive constructions, but an explanation was offered for this. Spanish and Romanian are also rather permissive as far as stranding is concerned, but for some reason in these languages the Perfect auxiliary and its associated past participle seem to form a cluster that prevents stranding between them. German also confirms the Stranding Analysis if one assumes that it is underlyingly OV and left-branching in the verbal domain. German IPP constructions pose a challenge to the Stranding Analysis, but these constructions are not well understood and pose problems in all areas of linguistic research. Even in the case of IPP constructions, the Stranding Analysis makes the right predictions. Stranding is an operation that is undergone by subjects, with two exceptions. Scrambling languages like German allow the stranding of object quantifiers, and in languages like Italian a climbing object clitic can also strand a quantifier.

In this chapter we have also looked at floating quantifiers in a number of special constructions. The data involving raising verbs, relative clauses, small clauses and remnant movement are quite compatible with the Stranding Analysis. Structures involving control verbs are a challenge because under the traditional analysis of these structures there is no raising, which means that a floating quantifier in the lower clause in a control structure cannot be the result of stranding. Wh-questions also raise some difficult questions. It is not clear, for example, why English does not allow the stranding of quantifiers in wh-questions while German does. The extension of stranding from A-movement to A-bar movement seems to be parameterised.

The following chapter, Chapter 3, will be a continuation of this chapter except that it will deal with negated stranded quantifiers and will describe and explain some interesting differences between negated quantifiers in the Germanic and Romance languages.



## Chapter 3: Issues in the Study of Negated Floating Quantifiers

### 0. Introduction

In the previous chapter we examined the ability of the Stranding Analysis originally developed in Sportiche (1988) to account for floating quantifiers in the Germanic and Romance languages, but the data contained only non-negated quantifiers. The purpose of this chapter is to expand our evaluation of the Stranding Analysis by considering the floating of negated quantifiers as exemplified in the following German sentences:

- (1) a. *Nicht alle* die Studenten haben das Buch gelesen.  
not all the students have the book read
- b. Die Studenten haben *nicht alle* das Buch gelesen.  
the students have not all the book read

Based on the data presented in this chapter, I will propose my own theory of quantifier negation. My theory has three principal foundations. The first of these is the Stranding Analysis of floating quantifiers. The second is the theory of sentential negation presented in Zeijlstra (2004), which I adapt to constituent or quantifier negation. The third is the hypothesis in Cirillo (2007a) whereby a negation marker that is contained in a negated quantifier such as *not all* can be stranded by itself, without the quantifier, and thereby produce inverse scope.

While presenting my theory of quantifier negation in this chapter I will also be discussing some interesting differences between negated quantifiers in the Germanic and the Romance languages. For the sake of clarification, I point out that I use the term *negated quantifier* when referring to quantifiers such as those in (1) in order to distinguish them from *negative quantifiers* such as *no one* and *nothing* and their cross-linguistic equivalents.

After this brief introductory section, the remainder of this chapter is divided into seven additional sections. Section 1 is an introduction to the concept of negated quantifiers and presents evidence that negated quantifiers are truly negated constituents and not just quantifiers that fall under the scope of sentential negation. In Section 2, I take data from Chapter 2 and negate the stranded quantifiers to show that the Stranding Analysis can account for negated as well as non-negated stranded quantifiers. Most of the data in Section 2 will be from the Germanic languages, since, as shown in Chapter 1, the Romance languages do not allow the stranding of negated quantifiers. Reasons for this will be explored in Sections 5 and 6 of this chapter.

In Section 3, which concentrates mainly on the West Germanic languages, I expound on the hypothesis presented in Cirillo (2007a) whereby the negation marker

in a negated quantifier such as *not all* can be stranded by itself, without its associated quantifier. This idea, which I refer to as the *Neg Stranding Hypothesis*, can be seen as an outgrowth of the Stranding Analysis of floating quantifiers. I will argue that the Neg Stranding Hypothesis is the best way to explain the inverse scope reading in a sentence such as the following, which I will claim is the same as (1b) with Neg Stranding:

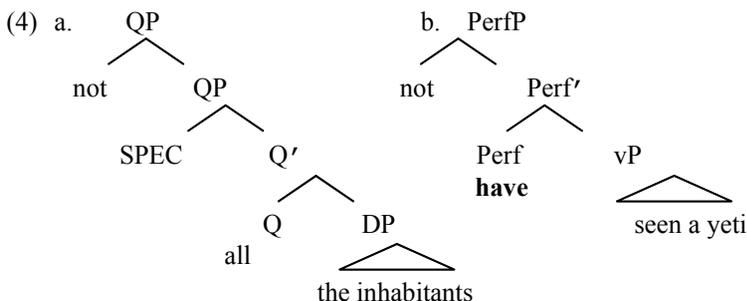
- (2) Alle die Studenten haben *nicht* das Buch gelesen.  
all the students have not the book read

Section 4 presents alternative approaches to the Neg Stranding Hypothesis, which are shown to be inadequate. Section 5 introduces negated quantifiers in the Romance languages and illustrates how they differ from their counterparts in the Germanic languages. In Section 6 I offer my own theory of negated quantifiers that attempts to explain the differences between the Romance and Germanic languages illustrated in the previous section. My theory is basically an adaptation of the theory of sentential negation in Zeijlstra (2004) to constituent (quantifier) negation. Section 7 is a brief summary of the chapter.

Before proceeding, a word on the terms *constituent negation* and *sentential negation* is in order, since these terms can be confusing. Consider the following two sentences:

- (3) a. Not all the inhabitants of Nepal have seen a yeti.  
b. Many inhabitants of Nepal have not seen a yeti.

Traditionally, one would say that (3a) was a case of constituent negation and (3b) a case of sentential negation. However, if one follows the arguments in Zeijlstra (2004) that a sentential negation marker in the Germanic languages is located in [SPEC, vP], one would have to say that sentential negation is also a form of constituent negation, that is, the negation of a verbal phrase. Applying Zeijlstra's theory to the nominal domain, I will argue in this chapter that the negation marker is in [SPEC, QP] in (3a) just as it is in the specifier position of a [SPEC, PerfP] in (3b):



The point of the analysis in (4) is that one must be a bit careful in using the term *sentential negation* because sentential negation is also constituent negation. The

terminology becomes more complicated if we consider scopal relations, since a so-called sentential negation marker can, by means of the proper c-command relationship, have the effect of a constituent negation marker such as the one in (4a). The following Italian sentences illustrate this:

- (5) a. Tutti gli studenti non sono venuti.  
 all the students not are come
- b. Gli studenti non sono tutti venuti.  
 the students not are all come

The (a) sentence would be construed as a case of normal sentential negation, since the negation marker immediately precedes the auxiliary verb and does not take scope over the universal quantifier. The only available reading is  $[\forall > \neg]$ . The (b) sentence is the same as the (a) sentence except that the universal quantifier has been stranded in its base-position, which is c-commanded by the negation marker. The only possible reading is  $[\neg > \forall]$ . Thus, the sentential negation marker in (5b) produces a constituent (quantifier) negation effect.

Another issue with the traditional distinction between constituent and sentential negation is that the negation of a verb or verbal phrase does not in and of itself suffice to produce sentential negation. As I will demonstrate in Section 1.1, in order to produce sentential negation, it must be the *finite* or *tensed* verb that is negated. Examples (6a) and (6b) would thus be instances of sentential and constituent negation, respectively:

- (6) a. The United States did not decide to sign the Kyoto Agreement.  
 b. The United States decided to not sign the Kyoto Agreement.

The reader can easily see that one must be careful in using the terms *sentential negation* and *constituent negation* and that clear definitions are necessary. In this chapter, the term *sentential negation* is to be interpreted as the negation of a finite verbal phrase like the ones in (3b), (5a) and (6a), and *constituent negation* is to be understood as the negation of any other constituent, such as the QP in (4a) or the complement vP in (6b). I will justify these definitions in Section 1.1 of this chapter with data from the Germanic and Romance languages when I discuss Klima (1964).

## 1. The Existence of Floating Negated Quantifiers

### 1.0 Introduction

During the course of my research I have been confronted (mainly in personal conversations and correspondence) with the challenge that a negated floating quantifier such as the one in (1b) is not a negated quantifier at all but a floating quantifier that falls under the scope of the “sentential” negation marker. Therefore, before discussing floating negated quantifiers, I want to demonstrate that they are in fact negated constituents independent of sentential negation and not simply quantifiers that happen to fall under the scope of sentential negation. I will do this in this section, which is divided into three sub-sections. In Section 1.1 I propose what I consider to be a clear definition of sentential negation. In Section 1.2 I discuss negated constituents in general, and in Section 1.3 I discuss negated quantifiers in particular.

### 1.1 Sentential Negation

The discussion of how to distinguish sentential from constituent negation seems to have originated with Klima (1964), who developed three tests for sentential vs. constituent negation and in so doing made some interesting, useful observations. Klima’s three tests are the *either/too test*, the *not even test* and the *positive question tag test*, illustrated in the following sentences:<sup>1</sup>

- (7) a. Bill doesn’t drive a car and John doesn’t either/\*too.  
 b. *Not* long ago Bill drove a car and John did \*either/too.
- (8) a. Bill doesn’t drive a car, not even a Fiat 500.  
 b. \**Not* long ago Bill drove a car, not even a Fiat 500.
- (9) a. Bill doesn’t drive a car, does he?  
 b. \**Not* long ago Bill drove a car, did he?

Klima made the observation that these tests apply not only to sentential negation, but also to negative quantifiers:

- (10) a. *Nobody* likes Mary, and John doesn’t either.  
 b. *Nobody* likes Mary, not even John.  
 c. *Nobody* drives a car, does he/do they?

As pointed out in Zeijlstra (2004), Klima’s tests have come under criticism because they sometimes produce conflicting results. Examples of criticism of Klima can be found in Jackendoff (1969 and 1972), Ross (1973) and Culicover (1981). I would like to add my own observation that negated quantifiers pass two out of three of Klima’s sentential negation tests, which they theoretically should not do:

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<sup>1</sup> Klima’s arguments and example sentences are presented in Zeijlstra 2004 (pages 47-51).

- (11) a. Not all linguists are bad, and not all anthropologists are either/\*too.  
 b. \*Not all linguists speak an Asian language, not even Japanese.  
 c. Not all the students read this book, did they?

The problems with Klima's tests notwithstanding, they help provide evidence that a negated complement (non-finite) verbal phrase does not produce sentential negation effects. Observe the following sentences:<sup>2</sup>

- (12) a. Bill decided to not sign the contract, and John did \*either/too.  
 b. \*Bill hates to not get up early, not even on Sundays.  
 c. \*Bill decided to not sign the contract, did he?

Apart from Klima's tests, I can offer additional evidence, this time from Italian, that the negation of a non-finite verbal complement does not have the effect of sentential negation. Consider the following two sentences:

- (13) a. I senatori non possono ratificarlo tutti. [ $\neg > \forall$ ]  
 the senators not can ratify it all  
 b. I senatori possono non ratificarlo tutti. [ $\forall > \neg$ ]  
 the senators can not ratify it all

The first sentence is a case of sentential negation, since the negation marker precedes the finite modal verb *possono*. The only possible reading is [ $\neg > \forall$ ], with the meaning *Not all the senators can ratify it*. The second sentence is a case of constituent negation, since the negation marker precedes the infinitival form *ratificarlo* (*ratify it*), which has a clitic pronoun attached to it. This sentence is interesting because it does not show signs of sentential negation. It has a [ $\forall > \neg$ ] reading. Based on the evidence presented in this sub-section, I will use the term *sentential negation* to mean the negation of a finite verbal phrase and *constituent negation* to mean the negation of any other constituent. In this chapter, I will of course be talking mainly about negated quantifiers.

Now that we have a definition of sentential negation, I would like to take a closer look at the meaning of *constituent negation* and to show that negated constituents are independent of sentential negation and not simply non-negated elements that happen to fall under the scope of the sentential negation marker.

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<sup>2</sup> This is my own observation and these sentences are not taken from Klima. I am simply applying Klima's tests to my own data.

## 1.2 Constituent Negation in General

Consider the following sentences from English, German and French, which contain a negated PP, DP and AdvP, respectively:

(14) He ran not through the yard but around the house.

(15) Er hat nicht den Hund sondern die Katze gefüttert.  
he has not the dog but the cat fed

(16) Il a habité pas très loin de la mer.  
he has lived not very far from the sea

In these sentences it is easy to demonstrate that the negation markers *not*, *nicht* and *pas* are not normal sentential negation markers that somehow take scope over a non-verbal constituent. Let's begin with (14). If this sentence were a case of sentential negation, it would most certainly have to contain *do*-insertion. There is additional evidence that (14) is an instance of PP negation and not sentential negation. Under normal circumstances, only like categories can be contrasted in a *not...but* construction. If in (14) the sentence as a whole rather than just a PP were being negated, a contrast with the second PP *around the house* would be ungrammatical. This becomes evident if we try to contrast unlike elements. In the following example a *not...but* construction does not work because a PP is being contrasted with a full sentence:

(17) \*He ran not through the yard but he ran around the house.

If the first clause in (17) contained sentential negation, a *not...but* construction would felicitously contrast the first clause with the full sentence *he ran around the house*. The reason for the ungrammaticality of (17) is thus the same as the reason for the grammaticality of (14). The first clause in both sentences contains constituent negation, not sentential negation, and this shows that constituent negation is a phenomenon independent of sentential negation.

Let's now consider whether or not (15) involves sentential negation. There are two signs that this sentence cannot involve sentential negation. First of all, the DP *den Hund* (*the dog*) is being contrasted with another DP, *die Katze* (*the cat*), in a *not...but* construction, which means that the negation marker must be negating the DP and not the finite verb. Secondly, in German a direct object can be topicalised:

(18) Den Hund hat er nicht gefüttert.  
the dog has he not fed

If the phrase *nicht den Hund* (*not the dog*) in (15) is a case of constituent negation, a negated QP, it should be possible to topicalise it. This expectation is met:

- (19) Nicht den Hund hat er gefüttert, sondern die Katze.  
 not the dog has he fed but the cat

This sentence, which is simply (15) with topicalisation, demonstrates unequivocally that *nicht den Hund* (*not the dog*) is a constituent, also in (15), and that no sentential negation (negation of a finite verbal phrase) is involved. Example (19) could not be a case of sentential negation anyway, because in the rare event that sentential negation appears sentence-initially in German it must be followed by the verb that it negates:

- (20) Nicht glaube ich an Himmel, Hölle oder Fegefeuer.  
 not believe I in heaven hell or purgatory

Finally, we look at (16). The fact that this sentence is grammatical in standard, non-colloquial French proves that it does not involve sentential negation. If it involved sentential negation, it would have to contain the negative particle *ne* and the negation marker *pas* would be in a different place, as follows:

- (21) Il n'a pas habité très loin de la mer.  
 he *ne* has not lived very far from the sea

The sentences in (14) through (21) show that a negated constituent is not necessarily a non-negated constituent that falls under the scope of sentential negation. There are two other criteria that can be used to demonstrate that sentential and constituent negation are different, namely, *positioning* and *co-occurrence*. Regarding positioning, we saw in (16) and (21) that the French negation marker *pas* occupies a different place depending upon whether it is a sentential or constituent negation marker. Furthermore, in English, sentential negation can never appear in sentence-initial position and in Italian it can only appear in sentence-initial position if it immediately precedes a verb. The following English and Italian sentences must therefore be instances of constituent negation:

- (22) Not all animals are mammals.  
 (23) Non ognuno può essere poeta.  
 not everyone can be poet

Perhaps the most convincing evidence that constituent negation is not simply a form of sentential negation that also takes scope over an additional constituent is the fact that sentential and constituent negation can co-occur:

- (24) Not everyone has not read the book.

We have demonstrated that negated constituents exist independently of sentential negation. To really drive home my point, I would now like to look at negated quantifiers in particular, since they are the main subject of this chapter.

### 1.3 Negated Quantifiers

What makes quantifiers different from many other kinds of syntactic elements is that they take scope. Since negation also takes scope, the combination of a quantifier with negation deserves special consideration. There is, I believe, convincing evidence for the existence of negated quantifiers. Consider the following two sentences:

- (25) Not all the students are reading the book.  
 (26) All the students are not reading the book.

Sentence (25) is unambiguous. Its only possible interpretation is as follows:<sup>3</sup>

- (27)  $\neg \forall x (Sx \rightarrow Rxb)$

The negation marker in (25) takes direct scope over the quantifier. This immediately suggests that *not all* forms a kind of constituent, that is, a negated quantifier. Example (26), unlike (25), is ambiguous. The negation marker in (26) can take scope over the quantifier, producing a reading identical to that of (25) and (27), or it can take scope over the ProgP *are reading the book*, producing the following reading:<sup>4</sup>

- (28)  $\forall x (Sx \rightarrow \neg Rxb)$

The fact that (26) needs to be analysed in two different ways, illustrated in (27) and (28), provides *semantic* evidence for the need to differentiate between sentential and quantifier negation. Besides this semantic evidence, there is also *syntactic* evidence for differentiating between a negated quantifier and sentential negation. One example of syntactic evidence, already presented with example (14) above, is the fact that *do*-insertion always applies in the case of indicative sentential negation in English, but not always in the case of negated quantifiers:

- (29) a. All boys do not like football.  
       b. Not all boys like football.  
       c. \*Not all boys do like football.

In these examples, the (a) sentence is ambiguous for sentential or quantifier negation, and *do*-insertion is obligatory. In the unambiguous (b) sentence, *do*-insertion is impossible, as is shown in (c). The (b) sentence therefore cannot be a case of sentential negation and must be an instance of constituent negation.<sup>5</sup>

<sup>3</sup> This is to be read, "Not for all X is it the case that if X is a student X is reading the book."

<sup>4</sup> This is to be read, "For all X it is the case that if X is a student X is not reading the book."

<sup>5</sup> The (c) sentence can of course be grammatical if the word *do* is very strongly emphasized, but this is only possible in a very specific context that involves contradiction or contrast.

Incidentally, the fact that the (a) sentence requires *do*-insertion regardless of whether the reading is one of sentential negation or quantifier negation may come as a surprise to some readers. A discussion of this here would take us too far away from our main topic. Interested readers are referred to the appendix to this chapter.

Additional evidence that negated quantifiers are independent of sentential negation can be found by looking at negative polarity items. In Zeijlstra (2004) it is shown that sentential negation but not a negated constituent licenses a negative polarity item or NPI.<sup>6</sup> I offer the following examples to illustrate that negated quantifiers do not license NPIs and are therefore like normal negated constituents, not like sentential negation:

- (30) a. All the boys have not eaten anything.  
 b. \*/? Not all the boys have eaten anything.

Sentence (30a) provides clear evidence that sentential and quantifier negation are independent, because it has two readings, and only the [ $\forall > \neg$ ] or sentential negation reading, with primary stress on *all*, licenses a NPI. However, if the negation marker in (30a) is stressed, the sentence has a [ $\neg > \forall$ ] or negated quantifier reading and it becomes just as ungrammatical or highly marginal as (30b).

The fact that in languages like German a negated object quantifier phrase can be topicalised also provides evidence that the negation marker forms a constituent with the QP:

- (31) a. Nicht alle die Bücher hat er gelesen.  
           not all the books has he read  
 b. Er hat nicht alle die Bücher gelesen.  
           he has not all the books read

Example (31a) could not possibly be a case of sentential negation. Example (31b) contains the same elements and has the same meaning and scopal relationships as (31a). It would not make sense to claim that (31a) is an instance of constituent negation and (31b) is sentential negation.

To close off this section I will return to the subject of the co-occurrence of sentential and quantifier negation, illustrated in the following German and Italian sentences:

- (32) Nicht alle die Studenten haben das Buch nicht gelesen.  
           not all the students have the book not read.  
 (33) Non tutti gli studenti non hanno letto il libro.  
           not all the students not have read the book

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<sup>6</sup> Zeijlstra 2004, pages 40 and 49.

What is interesting is that in the Germanic languages even a *stranded* negated quantifier can co-occur with a sentential negation marker, and the stranded negated quantifier must come before the sentential negation marker. The following German and English sentences demonstrate this:

- (34) a. Die Studenten haben das Buch nicht alle nicht gelesen.  
           the students have the book not all not read
- b. \*Die Studenten haben das Buch nicht nicht alle gelesen.  
           the students have the book not not all read
- (35) a. The students have not all not read the book.  
       b. \*The students have not not all read the book.

In these sentences the fact that the negated quantifier must come before the sentential negation marker, which is the negator of a finite PerfP, shows two things. It shows that constituent and sentential negation cannot be considered to be the same thing, and it shows that a floating negated quantifier cannot possibly be a normal (unnegated) floating quantifier that happens to fall under the scope of sentential negation.

We can conclude from the evidence in this sub-section that negated quantifiers exist and that they differ semantically and syntactically from what is traditionally referred to as sentential negation. We can also conclude that a negated quantifier can be stranded and that a stranded negated quantifier is not simply a floating quantifier that happens to fall under the scope of sentential negation. Based on this evidence, we can take a look at whether the Stranding Analysis can account for floating negated quantifiers.

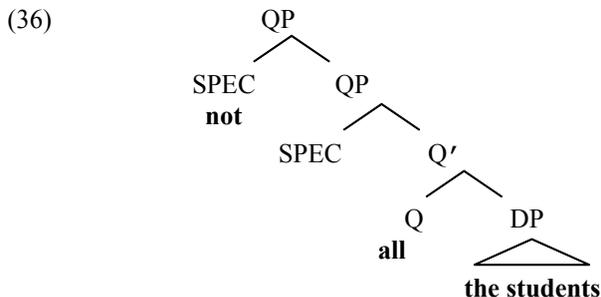
## 2. The Stranding Analysis and Negated Quantifiers

### 2.0 Introduction

In Chapter 2 we looked at non-negated floating quantifiers in a variety of different constructions within the framework of the Stranding Analysis. The goal of this section is the same as that of Chapter 2 except that we will be looking at negated quantifiers. Many of the examples that follow have been constructed by taking sentences from Chapter 2 and simply negating the quantifier. This section is divided into seven sub-sections. Section 2.1 deals with the stranding of negated quantifiers in mono-clausal sentences. Sections 2.2 and 2.3 cover raising verbs and control verbs, respectively. Section 2.4 is about the stranding of negated quantifiers under A-bar movement. Section 2.5 looks at Small Clauses and Section 2.6 is concerned with topicalisation and remnant movement. Section 2.7 is a brief summary.

As I will explain in Sections 5 and 6 of this chapter, negated quantifiers cannot be stranded in the Romance languages. Consequently, the data in this chapter are

primarily from the Germanic languages. As mentioned in Chapter 1 and in the introduction to this chapter, I assume the structure in (36) for negated quantifiers in the Germanic languages. This assumption is an extension of the arguments in Zeijlstra (2004) that sentential negation in the Germanic languages is not a syntactic head but a maximal projection that occupies a specifier position.



## 2.1 Stranded Negated Quantifiers in Mono-Clausal Sentences

We begin with data from English:

- (37)
- a. Not all the children may have been watching the movie.
  - b. \*The children not all may have been watching the movie.
  - c. The children may not all have been watching the movie.
  - d. The children may have not all been watching the movie.
  - e. The children may have been not all watching the movie.
  - f. \*The children may have been watching not all the movie.

Except for (b), these sentences elicit the same grammaticality judgements as their non-negated counterparts in Chapter 2. In (a) no stranding has taken place. I'll return to (b) shortly. In (c) the negated quantifier could be stranded in [SPEC, PerfP], since it is adjacent to the Perfect auxiliary, or it could be in [SPEC, ModalP] if the modal verb has moved to AgrS. In examples (d) and (e) the negated quantifier has been stranded in [SPEC, ProgP] and [SPEC, vP], respectively. In (f), the negated quantifier is below its base-position. Example (b) requires a more detailed explanation. As I mentioned in Section 1.2 and will further discuss in Section 3.1 and in the appendix to this chapter, problems of this sort often have to do with the fact that the negation marker in English, regardless of whether it is a sentential or constituent negation marker, normally requires some kind of support to its left, such as *do*-insertion. Example (37b) can thus perhaps be explained as follows:

As I discussed in Chapter 2, Section 1, under example (5b), there is evidence that modal verbs do not always move to T and AgrS in English. This is evidenced by the fact that (37b) without negation (which is example (5b) in Chapter 2, Section 1) is grammatical:

- (38) The children all may have been watching the movie.

In this sentence, and in (37b), if the modal verb is in its base-position, the quantifier could be in [SPEC, ModalP] or [SPEC, TP]. The negation marker in (37b) is unsupported, and *do*-insertion can never take place if an auxiliary or a modal is present. This is why (37b) is ungrammatical.<sup>7</sup> Let's now look at stranded negated quantifiers in English passive sentences:

- (39) a. Not all the patients may have been being examined.  
 b. \*The patients not all may have been being examined.  
 c. The patients may not all have been being examined.  
 d. The patients may have not all been being examined.  
 e. The patients may have been not all being examined.  
 f. \*/?The patients may have been being not all examined.  
 g. \*The patients may have been being examined not all.

In (a) no stranding has taken place. Example (b) poses the same issue as its counterpart in (37). In (c) the negated quantifier could be in [SPEC, PerfP] or in [SPEC, ModalP]. In examples (d) and (e) the negated quantifier has been stranded in [SPEC, ProgP] and [SPEC, PassP], respectively. In (f) we see the same problem that we saw in example (7f) in Chapter 2. Passive participles are adjectival, and if *all* appears before an adjective there is a strong tendency in English to interpret it as an adverbial meaning *completely*. This may interfere with the floating quantifier interpretation. This claim is supported by the fact that (39f), like (7f) in Chapter 2, improves if an adverb appears between the quantifier and the participle, as demonstrated in (40). Example (39g) is impossible because the negated quantifier is below its base-position.

- (40) ?The patients may have been being not all carefully examined.

We will now take a look at whether the Stranding Analysis can account for negated floating quantifiers in German. The following sentences are the same as the examples in (67) in Chapter 2 except that the quantifiers have been negated:

- (41) a. Nicht alle die Studenten mögen das Buch gelesen haben.  
           not all the students may the book read have  
 b. \*Die Studenten nicht alle mögen das Buch gelesen haben.  
           the students not all may the book read have  
 c. Die Studenten mögen nicht alle das Buch gelesen haben.  
           the students may not all the book read have  
 d. Die Studenten mögen das Buch nicht alle gelesen haben.  
           the students may the book not all read have

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<sup>7</sup> There are three exceptions to the rule for *do*-insertion in English and they are concerned with contrast, topicalisation, and sentence-initial negated subjects. See the appendix to this chapter for examples.

- e. ?/\*Die Studenten mögen ein Buch nicht alle gelesen haben.  
 the students may a book not all read have
- f. \*Die Studenten mögen das Buch gelesen nicht alle haben.  
 the students may the book read not all have

These sentences elicit exactly the same grammaticality judgements as their non-negated equivalents in the examples in (67) in Chapter 2. In the (a) sentence no stranding has taken place. The subject QP *nicht alle die Studenten* (*not all the students*) has moved intact to [SPEC, CP]. Example (b) is ungrammatical because the quantifier *nicht alle* and the subject DP *die Studenten* are both in [SPEC, CP]. It is thus not stranding that has occurred here, but simple inversion of the quantifier and the DP. In (c), as was explained in Chapter 2, the negated quantifier could be in the SPEC position of vP, PerfP or ModalP. Example (d) is the same as (c) except that the definite direct object has been scrambled to a position just below TP. I include the example in (e) only to show that indefinite direct objects, unlike definite direct objects, are generally not scrambled. It is therefore not the stranding position of *nicht alle* that is problematic in (e) but the scrambling of an indefinite direct object. The ungrammaticality of (f) is due to the fact that the quantifier is located to the right of the main verb. As I showed in diagram (68) in Chapter 2, nominal elements move leftward up the tree while verbal elements move rightward. It is therefore impossible for the quantifier to have gotten to the right of the verb.

The sentences in (42) are based on the sentences in (41) except that they are subordinate clauses. In the (a) sentence no stranding has occurred, in (b) the negated quantifier is stranded in [SPEC, vP], and (c) is the same as (b) except that the direct object has been scrambled around the negated quantifier:

- (42) a. ...dass nicht alle die Studenten das Buch gelesen haben mögen.  
 that not all the students the book read have may
- b. ...dass die Studenten nicht alle das Buch gelesen haben mögen.  
 that the students not all the book read have may
- c. ...dass die Studenten das Buch nicht alle gelesen haben mögen.  
 that the students the book not all read have may

We also need to consider the stranding of negated quantifiers in subordinate clauses that involve an *infinitivus pro participio* construction. This construction is explained in detail in Chapter 2. Note the following sentences:

- (43) a. \*...dass die Studenten nicht alle das Buch lesen sollen hätten.  
           that the students not all the book read should had
- b. ...dass die Studenten nicht alle das Buch hätten lesen sollen.  
           that the students not all the book had read should
- c. ...dass die Studenten das Buch nicht alle hätten lesen sollen.  
           that the students the book not all had read should
- d. \*...dass die Studenten das Buch hätten nicht alle lesen sollen.  
           that the students the book had not all read should

The (a) sentence is ungrammatical because the finite verb *hätten* (*had*) has remained in its base-position instead of undergoing inversion with its complement as required in an IPP construction. In (b) the negated quantifier is stranded in [SPEC, ModalP]. The (c) example is the same as (b) except that the direct object has been scrambled around the quantifier. It can be proven that (b) and (c) contain a stranded negated quantifier by inserting a sentential (PerfP) negation marker into the sentences:

- (44) a....dass die Studenten nicht alle das Buch nicht hätten lesen sollen.  
           that the students not all the book not had read should
- b....dass die Studenten das Buch nicht alle nicht hätten lesen sollen.  
           that the students the book not all not had read should

Example (43d) poses an interesting question. As shown in the discussion of example (77c) in Chapter 2, many speakers accept this kind of structure if there is no negation:

- (45)?/\*...dass die Studenten das Buch hätten alle lesen sollen.  
           that the students the book had all read should

In Chapter 2 I offered explanations for why this sentence is accepted by some and rejected by others. The question is why it is universally rejected if the quantifier is negated, as in (43d). I do not have a convincing explanation for this, but I can offer two preliminary suggestions. If (43d) had a sentential (PerfP) negation marker, it would have to precede the auxiliary *hätten* (*had*). It might be that the constituent negation marker in (43d) is construed by the hearer as a misplaced sentential negation marker. Another possibility is that there seems to be a general problem in the Romance and Germanic languages whenever constituent negation appears lower than the position of sentential negation. This is evidenced by the fact that example (43d) can be corrected by moving the negated quantifier to a position above that of sentential negation, as in (44a) and (44b). This subject will come up again in Section 6.3 in connection with English. What I want to emphasise is that the problem with (43d) is not a problem with stranding per se, as shown in (45), but has something to do with negation.

In this sub-section we have seen that the Stranding Analysis can account for floating negated quantifiers in mono-clausal sentences, including sentences with several verbal elements. Before we go to the next section, for completeness' sake there is one difference between German and English that requires comment. It was touched upon in Section 1.2. Note the following two German sentences:

(46) Die Mädchen lieben alle den Jungen.  
       the girls love all the boy

(47) Die Mädchen lieben nicht alle den Jungen.  
       the girls love not all the boy

These sentences involve the stranding of a quantifier and a negated quantifier, either in [SPEC, vP] or in [SPEC, TP]. We would expect to find the same pattern, stranding in [SPEC, vP] or [SPEC, TP], in English as well, but we don't:

(48) The students all read the book.  
 (49) \*The students not all read the book.

The question is why (49) is ungrammatical while its German counterpart in (47) is not. Opening a detailed discussion of this issue now would cause a major diversion from the subject at hand, but basically, the reason for this discrepancy between German and English is caused by the interaction of two phenomena—the fact that main verbs move to AgrS (and C) in German but remain in v in English, and the fact that English sometimes requires *do*-insertion even in cases of constituent negation, as mentioned in Section 1.2. The interested reader is referred to the appendix to this chapter for a more detailed explanation.

We will now look at negated floating quantifiers in raising constructions.

## 2.2 Negated Quantifiers in Raising Constructions

Given that the Romance languages do not allow the stranding of negated quantifiers, if one assumes that raising involves the movement of a subject from a lower clause to the main clause, the Stranding Analysis predicts that one will find stranded negated quantifiers in raising constructions in the Germanic languages but not in the Romance languages. The following sentences from English, German and Italian show that this prediction is borne out:

(50) a. The students seem [not all to have enjoyed the film].  
       b. The students seem [to not all have enjoyed the film].  
       c. The students seem [to have not all enjoyed the film].

- (51) a. ...dass die Studenten [nicht alle den Film genossen zu haben] scheinen.  
           that the students   not all the film enjoyed to have   seem
- b. ...dass die Studenten [den Film nicht alle genossen zu haben] scheinen.  
           that the students   the film not all enjoyed to have   seem
- (52) a. \*Gli studenti sembrano [aver non tutti apprezzato la pellicola].  
           the students seem   to have not all enjoyed   the film.
- b. \*Gli studenti sembrano [aver apprezzato non tutti la pellicola].  
           the students seem to have enjoyed   not all the film.

Regarding the English examples, in the (a) sentence we see a negated quantifier stranded in [SPEC, IP] of the lower clause. In (b) and (c) a negated quantifier is again stranded in the lower clause in [SPEC, PerfP] and [SPEC, vP], respectively. In both German sentences a negated quantifier has clearly been stranded in [SPEC, vP] of the lower clause. The Italian examples become grammatical if the negation marker is simply deleted. The examples also become grammatical if constituent negation is changed to sentential (PerfP) negation:

- (53) Gli studenti sembrano [non aver tutti apprezzato la pellicola].  
       the students seem   not to have all enjoyed   the film.

We can conclude that the Stranding Analysis is compatible with raising constructions. As already mentioned, reasons for the lack of stranded negated quantifiers in the Romance languages will be explored in Section 6 of this chapter. We will now look at the more complicated subject of control verbs.

### 2.3 Negated Quantifiers and Control Verbs

The reader may remember from Chapter 2 that the topic of control verbs and floating quantifiers is complicated enough without negation. Nonetheless, let's take a look at some examples from English, German and Italian:

- (54) a. ?The students promised [not all to fail the examination].  
       b. The students promised [to not all fail the examination].
- (55) a. Die Studenten versprachen, [nicht alle bei der Prüfung durchzufallen].  
           the students   promised   not all at the test   to fail
- b. Die Studenten versprachen, [bei der Prüfung nicht alle durchzufallen].  
           the students   promised   at the test   not all   to fail
- (56) \*Gli studenti hanno promesso [di essere non tutti bocciati all'esame].  
       the students have promised to be   not all failed at the exam

As I discussed in Chapter 2, there are two general ways to approach control verbs. One is to follow Boeckx et alii (2003 and 2007) and say that control verbs involve movement in the same way that raising verbs do. If this approach is correct, examples (54) to (56) can be explained by saying that a negated quantifier has been stranded in the English and German examples and that the Italian example is ungrammatical because, as will be explained in section 6, the Romance languages disallow the stranding of negated quantifiers.

Another way to approach control verbs is to follow the traditional approach whereby there is no movement of the subject. In order to explain how quantifiers come to appear in the lower clause one can either follow Sportiche (1988) and say that a universal quantifier can select PRO or one can follow the suggestion that I made in the last chapter, namely, that a universal quantifier can substitute for PRO. Under these approaches, one would say that in (54a) the negated quantifier *not all* is in [SPEC, IP] and in (54b) it is in [SPEC, vP]. The fact that (54a) is somewhat downgraded with respect to (54b) can be explained by arguing that the quantifier has moved from one non-case position to another and this unnecessary movement causes downgrading. In the German sentences in (55) the negated quantifier *nicht alle* has remained in its base-position in [SPEC, vP].

The reason for the ungrammaticality of the Italian sentence in (56) will become clear in Section 6. It has to do with the fact that negation markers in the Romance languages, unlike in the Germanic languages, are not specifiers and cannot be found in [SPEC, QP], which is where the negation marker *non* would have to be in (56).

We can conclude that the Stranding Analysis is not incompatible with the data on control verbs. We now look at negated quantifiers and A-bar movement.

#### 2.4 Negated Quantifier Stranding and A-bar Movement

Since in the Romance languages universal quantifiers do not select wh-words and there is no stranding of negated quantifiers in general, in this sub-section I will be concerned with questions and relative clauses in the Germanic languages. The reader is reminded that when a wh-word and a quantifier co-occur, there is a QP in which Q has selected a wh-word or phrase that must move to [SPEC, QP] before beginning its journey to [SPEC, CP]. The reader is referred to Chapter 2, Section 7.3 for details. We begin with the following German sentences from example (105) in Chapter 2:

- (57) a. ?Welche Studenten alle sind gekommen?  
 which students all are come?
- b. Welche Studenten sind alle gekommen?  
 which students are all come
- c. ?Welche Studenten alle hast du gesehen?  
 which students all have you seen
- d. Welche Studenten hast du alle gesehen?  
 which students have you all seen

If a sentential (PerfP) negation marker is inserted into these sentences, they retain their grammaticality:

- (58) a. ?Welche Studenten alle sind nicht gekommen?  
 which students all are not come?
- b. Welche Studenten sind alle nicht gekommen?  
 which students are all not come
- c. ?Welche Studenten alle hast du nicht gesehen?  
 which students all have you not seen
- d. Welche Studenten hast du alle nicht gesehen?  
 which students have you all not seen

However, if the quantifier is negated, the sentences become unacceptable:

- (59) a. \*Welche Studenten nicht alle sind gekommen?  
 which students not all are come?
- b. \*Welche Studenten sind nicht alle gekommen?  
 which students are not all come
- c. \*Welche Studenten nicht alle hast du gesehen?  
 which students not all have you seen
- d. \*Welche Studenten hast du nicht alle gesehen?  
 which students have you not all seen

A syntactic model based on the Stranding Analysis generates the interrogative sentences in (59). I believe that the sentences are in fact syntactically well formed, but if one analyses them semantically, it is difficult to imagine what they might actually mean and how one would even answer the questions that they are stating. This can be seen by comparing, for example, (57a), (58a) and (59a). Imagine that there are six students named Peter, Paul, Mary, David, Stephen and Robert, and

imagine that Peter, Paul and Mary came to a party but David, Stephen and Robert did not. Based on this information, it is easy to answer the questions in (57a) and (58a). The answer to (57a) is “Peter, Paul and Mary” and the answer to (58a) is “David, Stephen and Robert.” It is difficult to imagine what a possible answer to (59a) might be. I conclude that one cannot necessarily attribute the unacceptability of the sentences in (59) to syntactic ill-formedness, and that there is no evidence here that the Stranding Analysis makes incorrect syntactic predictions, especially since the sentences in (59) without negation are grammatical. I will move now to a brief discussion of relative clauses.

It was shown in Chapter 2 that universal quantifiers do not combine well with restrictive relative clauses for semantic reasons but that non-restrictive relative clauses and universal quantifiers can combine felicitously. Based on this, one would expect that German and English would allow the stranding of negated quantifiers in a non-restrictive relative clause. One would not expect this of Italian, given that the Romance languages do not allow the stranding of negated quantifiers. The following data from English, German and Italian confirm this:

- (60) a. I spoke to the students, who had not all seen the film
- b. Ich sprach mit den Studenten, die den Film nicht alle gesehen hatten.  
I spoke with the students who the film not all seen had
- c. \*Ho parlato con gli studenti, che avevano veduto non tutti il film.  
I have spoken with the students who had seen not all the film

In this sub-section we have seen that the Stranding Analysis is not incompatible with negated floating quantifiers in cases of A-bar movement. We will now take a look at negated quantifier stranding in Small Clauses.

### 2.5 Negated Quantifier Stranding and Small Clauses

It was shown in Chapter 2 that quantifier stranding in Small Clauses is possible, as predicted by the Stranding Analysis. The following data from English and German show that the same holds true for negated quantifiers in Small Clauses:

- (61) a. I consider [not all the students intelligent].  
b. I consider [the students not all intelligent].
- (62) a. Ich finde [nicht alle die Studenten intelligent].  
I find not all the students intelligent
- b. Ich finde [die Studenten nicht alle intelligent].  
I find the students not all intelligent

If one assumes that these sentences contain Small Clauses, the English examples tell us something very interesting. As will be discussed later in this chapter, English does not allow negated object quantifiers, stranded or not:

- (63) a. \*The student read not all the books.  
 b. \*The student read the books not all.

The sentences in (61) show that Small Clause subjects are truly the subjects of a Small Clause rather than objects of the matrix verb. If they were objects, they would not be able to appear in negated form. The sentences in (61) also show us that Small Clause subjects move into the higher clause, perhaps for Case, and in so doing can strand a negated quantifier. We can conclude that the Stranding Analysis accounts very well for Small Clauses. Note that if one tried to account for the lower clause in the sentences in (61) as a complex predicate rather than a Small Clause, it would be very difficult to explain the negated direct object. These sentences thus provide, I believe, evidence in favour of the claim that Small Clauses are indeed separate clauses and not complex predicates. Nonetheless, even if one prefers to analyse the sentences in (61) as containing complex predicates, the data can be accounted for under the Stranding Analysis. The object DP *the students* could be moving from its base-position in [SPEC, VP] to [SPEC, AgrOP] and stranding the negated quantifier.

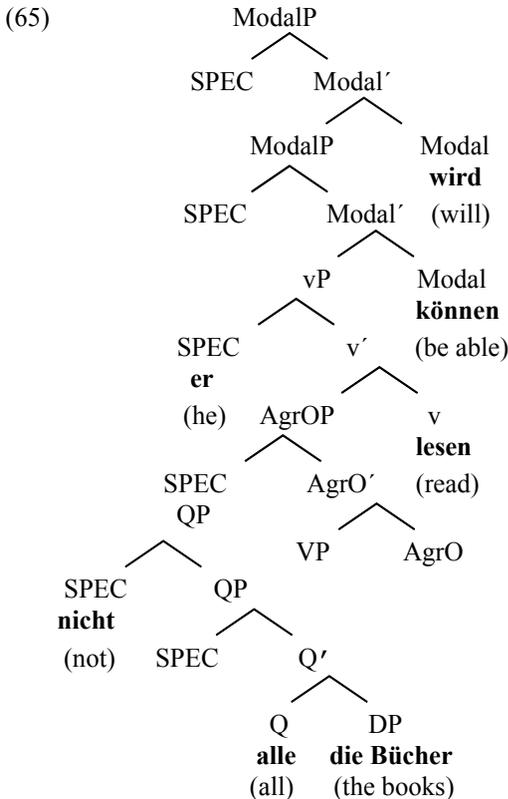
## 2.6 Negated Quantifier Stranding and Remnant Movement

In Chapter 2 we saw that the Stranding Analysis makes the right predictions regarding floating quantifiers and remnant movement in German. The question is whether the same holds true if those quantifiers are negated. Note the following sentences:

- (64) a. ?/\*Nicht alle die Bücher lesen können wird er.  
           not all the books to read to be able will he  
 b. \*Nicht alle die Bücher lesen wird er können.  
           not all the books to read will he to be able  
 c. Lesen können wird er nicht alle die Bücher.  
           to read to be able will he not all the books  
 d. \*Die Bücher lesen können wird er nicht alle.  
           the books to read to be able will he not all

The non-negated versions of these sentences can be found in Chapter 2, example (124). Without negation, (64a), (64b) and (64c) are deemed grammatical while (64d) is not. Example (64b) is thus the only one that really differs from its non-negated counterpart. We will analyse each individual sentence. The diagram in (65), which is the base-structure of the examples in (64), will help the reader follow the discussion.

In (64a) the entire ModalP headed by *können* (*to be able*) has been topicalised and moved to [SPEC, CP]. The subject pronoun *er* (*he*) has moved to subject position and is no longer in vP or ModalP. The diagram in (65) will help the reader visualise this. The sentence should theoretically be grammatical. If one thinks about the semantics of this sentence, one comes to the realisation that it is nonsensical. This might be what causes it to be downgraded with respect to its non-negated counterpart. The focus is on the future modal verb *wird* (*will*) and the rest of the sentence, the ModalP headed by *können* (*to be able*), is topicalised. The sentence answers the question “What will the student do?” by stating, “What he will do is be able to read less than all of the books.” This is an absurd reply because the ability not to read an entire set of books is a property of all human beings *a priori*. Example (64b), which should theoretically also be grammatical, seems to be semantically at least as nonsensical as (64a). In (64b) the entire vP headed by *lesen* (*to read*) has been topicalised. Again, the subject pronoun *er* (*he*) has moved to subject position and is no longer in vP. This sentence answers the question “What will the student be able to do?” by stating, “What he will be able to do is to read less than all of the books.”



Examples (64a) and (64b) are nonsensical in that it is difficult to imagine a context or a question that would spawn such sentences. Two facts are relevant. First of all,

since the versions of these sentences without negation are grammatical, we know that the problem is not caused by the topicalisation of the ModalP in (64a) and the vP in (64b). Secondly, as we saw in Section 1.1, there is in principle nothing wrong with topicalising a negated constituent. It would therefore seem that semantics rather than syntax is at the root of the judgements of (64a) and (64b). The problem with this line of reasoning is that it is well known that nonsensical semantics does not necessarily cause syntactic unacceptability. Note that (64a) and (64b) do not actually involve the topicalisation of a negated constituent, but rather the topicalisation of a phrase that *contains* a negated constituent. It may be that a phrase that contains a negated constituent simply does not lend itself to topicalisation. I will have to leave this for future research.

In (64c), the definite direct object QP *nicht alle die Bücher* (*not all the books*) has been scrambled and the entire remnant ModalP headed by *können* (*to be able*) has been topicalised. This sentence is not semantically absurd because it topicalises the verbal elements without the object negated QP. It therefore makes the statement, “It is not true for all the books that the student will be able to read them.”

The ungrammatical (64d) is the most important sentence in this group because it is not semantically absurd but is nonetheless very downgraded by nearly all speakers. This sentence makes the statement, “As far as the student’s ability to read books is concerned, it does not apply to all of the books.” The question is whether (64d) is evidence against the Stranding Analysis of floating quantifiers. In other words, does the Stranding Analysis predict that a quantifier can appear in the position that it occupies in (64d)? Note that the topicalised segment in this sentence is *die Bücher lesen können* (*the books, to read, to be able*). By looking at (65) the reader can see that it is impossible to topicalise *die Bücher lesen können* without moving the negated quantifier as well. It is therefore impossible for the negated quantifier in (64d) to have gotten into its position within the framework of the model that I am working with. In order for the negated quantifier to be stranded, the DP *die Bücher* (*the books*) would have to be scrambled out of QP first. This would mean moving the DP out of vP and up to a position above ModalP. This is not what is happening in (64d), where the DP *die Bücher* is adjacent to the main verb and has therefore not been scrambled out of vP. The Stranding Analysis thus again makes the right predictions about how remnant movement affects floating quantifiers.

## 2.7 Section Summary

In this section we have looked at negated floating quantifiers in a variety of different sentential and phrasal structures. The data presented have been shown to be compatible with the Stranding Analysis. The rest of this chapter will be devoted to interesting issues in the study of negated floating quantifiers, including inverse scope readings in the Germanic languages and the fact that negated quantifiers cannot be stranded in the Romance languages.

### 3. Accounting for Ambiguity in West Germanic—the Neg Stranding Hypothesis

#### 3.0 Introduction

We come now to one of the central issues of this chapter, and that is the question of how the inverse scope reading of the following sentence is made possible:

(66) All the students have not read the book.

The ambiguity of this sentence becomes clear if the reader imagines the following two situations:

Mr. Mayer teaches a literature class of twenty students. He assigns the novel *Das Glasperlenspiel* to his class and says that it must be read by the end of the month. At the end of the month he is sad to discover that no one in the class has read the novel. He sees the school principal, Sister Mary Elephant, at lunchtime, and the following conversation takes place:

“Mr. Mayer, you look rather down today. Is something the matter?”

“As a matter of fact, Sister Mary Elephant, I am very disappointed because my students have not read the book that I assigned to them.”

“Oh, really? Which students have not read the book?”

“*All* the students have not read the book.”

In this version of (66) the quantifier *all* takes scope over the negation marker, producing a [ $\forall > \neg$ ] reading. This scopal relationship reflects Surface Structure word order and its derivation is straightforward. Now, imagine the following situation:

Mr. Mayer assigns the novel *Letters from the Earth* to his literature class and is certain that all twenty students have read it. In reality, however, two of the students, Rocky and Joseph, have not. The school principal, Sister Mary Elephant, happens to know this. Mr. Mayer sees the principal at lunchtime, and the following conversation takes place:

“Mr. Mayer, you look rather happy today. Has something pleasant happened?”

“As a matter of fact, Sister Mary Elephant, I am very happy because all my students have read the book that I assigned to them.”

“Mr. Mayer, I really hate to ruin your good mood, but there is something that I must tell you. All the students have *not* read the book.”

In this version of (66) the negation marker takes scope over the quantifier *all*, producing a  $[\neg > \forall]$  or constituent negation reading. Since the scopal relationship in this reading contradicts the Surface Structure word order, it is referred to as an inverse scope reading. The inverse scope reading of (66) has the same meaning as the following unambiguous sentence, in which I have argued that *not all* is a constituent, that is, a negated quantifier:

(67) Not all the students have read the book.

The fact that (66) can mean the same as (67) strongly suggests that under the inverse scope or  $[\neg > \forall]$  reading of (66) the words *not* and *all* must have formed some kind of constituent at some point in the derivation, as in (67). The question of how this constituent has become split is the subject of the next two sections of this chapter. I will argue that just as a quantifier and a negated quantifier can be stranded by a DP, so can a negation marker be stranded by a QP or any other maximal projection. This hypothesis, which I refer to as the Neg Stranding Hypothesis, is the main subject of this section. I have divided the section into two sub-sections. In Section 3.1 I present the Neg Stranding Hypothesis and show why it is needed and how it works. In Section 3.2 I present some issues with Neg Stranding but argue that they do not undermine the hypothesis.

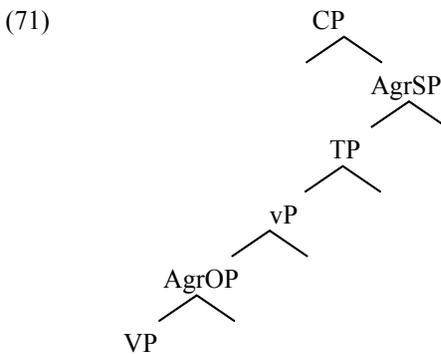
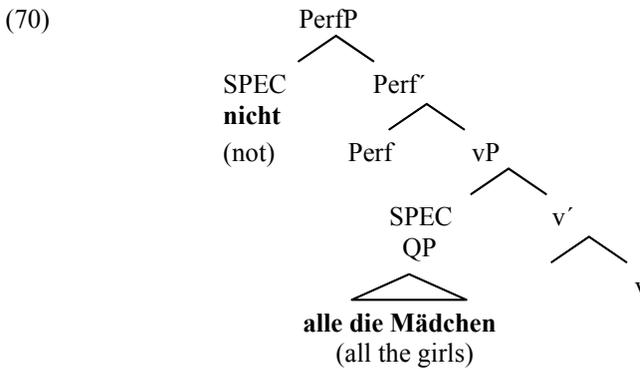
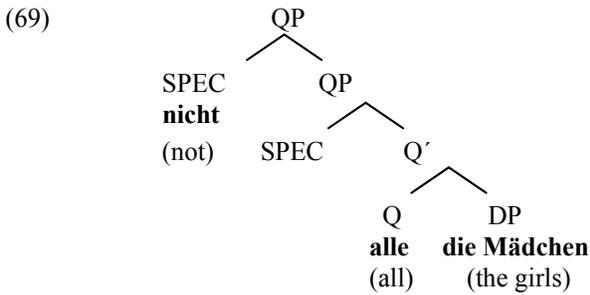
### 3.1 The Neg Stranding Hypothesis

We will begin by immediately looking at some data. The following German sentence allows an inverse scope reading:

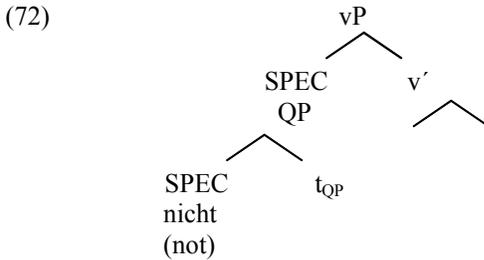
(68) Alle die Mädchen lieben den Jungen nicht.  
 all the girls love the boy not

This sentence can have a  $[\forall > \neg]$  or a  $[\neg > \forall]$  reading. Normally, a  $[\forall > \neg]$  reading is associated with primary stress on the quantifier while a  $[\neg > \forall]$  reading is associated with primary stress on the negation marker. Obviously, with different combinations and permutations of primary, secondary and tertiary stress, not only on the quantifier and the negation marker but also on the subject DP, the object DP and the verb, many different readings and nuances are possible in a sentence like this. My assumption is that phonological stress *follows* from but does not *determine* syntactic scope. The point of this exercise is therefore to provide a *syntactic* explanation for why inverse scope is possible in sentences such as (68). The reading  $[\forall > \neg]$  reflects the Surface Structure and its derivation is straightforward. I assume, following Zeijlstra (2004), that it is derived from a base-structure in which the negation marker is in the SPEC position of a finite vP, creating sentential negation, as shown in (70). I will be concerned here with the  $[\neg > \forall]$  or inverse scope reading, which I assume stems from the fact that the negation marker and the quantifier form a constituent, a negated quantifier, at some point in the derivation. As mentioned in Section 3 of Chapter 1 and in the introduction to this chapter, and as I will explain in Section 6 of this chapter, I extend the theory of sentential negation in Zeijlstra

(2004) to constituent negation and assume the base-structure in (69) for negated quantifiers. The reader is also reminded that I assume the phrasal hierarchy in (71).



Let's now consider how to derive the inverse scope reading of (68). The lower QP node in (69) simply moves up to subject position, stranding the negation marker in QP. This produces the following structure:



The direct object *den Jungen (the boy)* is then scrambled to a position below TP, leaving the negation marker in sentence-final position. After the negation marker has been stranded, the question arises as to how the pre-stranding scopal relations are preserved. In other words, after Neg Stranding takes place, how is a  $[\forall > \neg]$  reading avoided and a  $[\neg > \forall]$  reading maintained? The lack of a sentential negation reading is not difficult to explain. The stranded negation marker in (72) does not c-command vP and should not be able to take scope over it. In fact, negation does not c-command the verb at any point in the derivation. Sentential negation should therefore be ruled out in this case. The more difficult question is the  $[\neg > \forall]$  reading, because the subject QP, including the quantifier, has moved above the stranded negation marker.

I would like to suggest that the stranded negation marker in (72) retains scope over the quantifier because of a unique relationship that it has with that quantifier. Note that in (69) and (72) the stranded negation marker has a symmetric c-command (sister) relationship with the lowest trace of the moved subject QP. This seems to make the negation marker a part of the entire A-chain of the moved constituent. I would like to propose that by virtue of this relationship the stranded negation marker retains scope over the entire chain of that moved QP and that this is what preserves the negated constituent interpretation. One could say that this proposal is purely intuitive and based only on a simple observation, but note that it can be applied to other stranded element as well. For example, a stranded quantifier also symmetrically c-commands the lowest trace of the DP that strands it and retains scope over the entire chain of that DP. A stranded preposition also has this structural relationship to the nominal element that strands it. There is another reason why I think that the symmetric c-command relationship between the negation marker and the subject QP is significant, which I will now explain.

The reader will note that in a structure like (70) a subject QP will move across negation to subject position. The reading is  $[\forall > \neg]$ . Even though the QP is above negation at this point, the negation marker still c-commands the trace of the moved subject QP just as it does in (69). Why, then, is no  $[\neg > \forall]$  reading available in (70) although it is in (69)? What is the difference between the two structures? I propose that the difference is that the negation marker in (70) has no sister relationship with

the lowest trace of the moved subject QP and could not be said to be a part of the entire A-chain of that QP. It can therefore not be expected to have the same scopal effects as the negation marker in (69). Thus, when the QP in (70) moves to subject position, it will outscope negation. There will be more on this mutual c-command relationship in Section 3.2.1, but I take it to be the most plausible explanation for the inverse scope reading in a structure like (72).

For further evidence of the stranding of the negation marker, I would like to return to sentence (19), repeated here:

- (73) Nicht den Hund hat er gefüttert, sondern die Katze.  
 not the dog has he fed but the cat

It was demonstrated in the above discussion that this sentence is an instance of constituent negation. The DP *den Hund* (*the dog*) is negated in order to contrast it with the other DP, *die Katze* (*the cat*). Neg Stranding can also take place in (73):

- (74) Den Hund hat er nicht gefüttert, sondern die Katze.  
 the dog has he not fed but the cat

The interesting thing about this sentence is that it does not contain a negated quantifier phrase, but a negated DP. What this shows is that in German the negation marker can be stranded not only in cases of quantifier movement but also in the case of the topicalisation of a normal DP. QP and DP are not the only phrases that can strand a negation marker. PP and vP can also be involved in Neg Stranding:

- (75) a. Nicht auf dem Sofa hat er geschlafen, sondern auf dem Boden.  
 not on the sofa has he slept but on the floor  
 b. Auf dem Sofa hat er nicht geschlafen, sondern auf dem Boden.  
 on the sofa has he not slept but on the floor  
 c. Auf dem Sofa hat er nicht geschlafen.  
 on the sofa has he not slept

In the (a) sentence, a negated PP has been topicalised and contrasted with another PP. This is clearly a negated constituent rather than sentential negation. Example (b) is the same as (a) except that the negation marker has been stranded. The (c) example is a truncated version of (b), still with a negated constituent reading. In the following three sentences we see exactly the same phenomenon with a vP instead of a PP:<sup>8</sup>

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<sup>8</sup> There are two ways to tell that (76a) and consequently (76b) and (76c) as well are instances of constituent rather than sentential negation. First of all, if (76a) were a case of sentential negation, the negation marker would follow the finite auxiliary verb *hat* (*has*). Secondly, the *not...but* contrastive construction co-ordinates only past participles, not whole sentences.

- (76) a. Nicht gefüttert hat er den Hund, sondern getreten.  
           not    fed   has he the dog   but    kicked
- b. Gefüttert hat er den Hund nicht, sondern getreten.  
           fed    has he the dog not    but    kicked
- c. Gefüttert hat er den Hund nicht.  
           fed    has he the dog not

If the Neg Stranding Hypothesis is correct and true stranding is taking place, the prediction is that a stranded negation marker should be able to be found in positions between the base position and final landing site of a negated QP. This prediction is borne out. In the examples in (77), a negated quantifier is stranded. In the examples in (78), a  $[\neg > \forall]$  reading is available, meaning that Neg Stranding has occurred:

- (77) a. The doctors might have been *not all* examining the patient.  
       b. The doctors might have *not all* been examining the patient.  
       c. The doctors might *not all* have been examining the patient.
- (78) a. All the doctors might have been not examining the patient.  
       b. All the doctors might have not been examining the patient.  
       c. All the doctors might not have been examining the patient.

The Neg Stranding Hypothesis has the advantage of explaining ambiguity by positing two different base-structures for two different meanings and it is supported by empirical evidence such as the data in examples (73) to (78). I would like now to discuss some special challenges to Neg Stranding.<sup>9</sup>

### 3.2 Issues with Neg Stranding

#### 3.2.0 Introduction

This sub-section will deal with five special issues that emerge from the Neg Stranding Hypothesis. A numbered sub-section, 3.2.1 to 3.2.5, is devoted to each issue, followed by a brief recapitulation in Section 3.2.6. I will attempt to show that none of the issues poses a real threat to Neg Stranding.

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<sup>9</sup> I first developed the Neg Stranding Hypothesis in 2005. Three years later I heard about an article by Tilman Höhle, written in 1991, in which it is suggested that inverse scope can arise when a negation marker c-commands the trace of a moved quantifier. This is not exactly the same as Neg Stranding, but the similarity between Höhle's approach and mine is striking and has to be mentioned. Christopher Columbus had never heard of Leif Ericson, but Ericson found America first.

### 3.2.1 The Reconstruction Issue

The purpose of the Neg Stranding Hypothesis is to explain ambiguity, and it does this by positing two different structures, as seen in (69) and (70), for the two readings of sentences like (68), repeated here:

(68) Alle die Mädchen lieben den Jungen nicht.  
 all the girls love the boy not

It is not the intention of Neg Stranding to rely on other forms of disambiguation such as reconstruction. However, if one follows the copy theory of movement in Chomsky (1995) one might argue that Neg Stranding implicitly involves reconstruction. In a sentence like (68), the subject QP moves out of its base-position in vP and leaves a trace. Under the copy theory of movement, this trace is actually a lower copy of the moved subject. The  $[\neg > \forall]$  reading of (68) could therefore be said to come from interpreting this lower copy, which is under the scope of the negation marker inside QP, as illustrated in (69) and (72). Under the copy theory of movement one could just as easily interpret the higher copy of the subject-QP in (68), thereby obtaining a reading of  $[\forall > \neg]$ . This implies that reconstruction is optional and that it offers a way of resolving ambiguity. It even implies that the Neg Stranding Hypothesis is not needed to explain ambiguity. It is important to point out that sentences like (68) involve A-movement. There is widespread agreement in the literature on the need for reconstruction under A-bar movement, but reconstruction under A-movement is controversial. Many, such as Lasnik (1998), doubt that it occurs at all. The majority of the references to reconstruction under A-movement in the literature are made in connection with anaphora that precede their binding antecedents in the Surface Structure. The following is a quote from Barss (2001):<sup>10</sup>

“In general, we will observe reconstruction effects under A-movement only in cases where there is an argument NP (the potential antecedent) which c-commands the deep position but not the surface position of the raised NP which contains an anaphor.”

It would seem, then, that reconstruction under A-movement has two possible functions. One would be to explain anaphor binding issues as claimed by Barss and the other would be to resolve ambiguity within the framework of the copy theory of movement as discussed in the preceding paragraphs. In this sub-section I will share with the reader my reasons for being skeptical about the usefulness of reconstruction under A-movement, both in explaining anaphor binding and in disambiguation, and I will claim that in fact Neg Stranding need not be analysed as involving A-movement reconstruction. In the next sub-section I will demonstrate that the Neg Stranding Hypothesis is needed whether one believes in A-movement reconstruction

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<sup>10</sup> Barss (2001) p. 686.

or not. I begin by showing the problems with using A-movement reconstruction to resolve anaphor binding issues.

Belletti and Rizzi (1988) claim that A-movement reconstruction can in some instances explain why an anaphor can precede its antecedent in the Surface Structure. Consider the following Italian and English sentences:

- (79) a. Questi pettegolezzi su di sé<sub>1</sub> preoccupano Gianni<sub>1</sub>  
           these gossipings about himself worry Johnny  
           più di ogni altra cosa.  
           more than every other thing

b. These stories about himself worry John more than anything else.

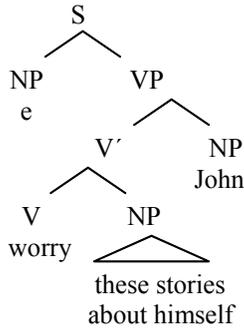
In these sentences, an anaphor precedes its antecedent without rendering the sentences ungrammatical. Reconstruction supposedly saves the sentences. The reader will notice, however, that under normal circumstances reconstruction would not help (79a) and (79b), because even after the anaphora return to their base-positions, given that they are embedded in a subject, they will still precede their supposed antecedents, which are objects. Belletti and Rizzi attempt to get around this problem by treating verbs like *worry* as a special kind of unaccusative and positing a special base-structure for sentences that contain them. They support treating verbs like *worry* as unaccusatives by arguing that normal transitive verbs do not show the same results as (79a) and (79b):

- (80) a. \*Questi pettegolezzi su di sé<sub>1</sub> descrivono Gianni<sub>1</sub> meglio  
           these gossipings about himself describe Johnny better  
           di ogni biografia ufficiale.  
           than every biography official

b. \*These stories about himself describe John better than any official biography.

Based on this discrepancy between verbs like *worry* and verbs like *describe*, Belletti and Rizzi posit the following base-structure for sentences like those in (79):

(81)



Under this scenario, the antecedent *John* c-commands the base-position of the anaphor and reconstruction restores the proper binding relationship. There are, I believe, issues with this analysis. First of all, I question the judgements in (79) and (80). I do not believe that the sentences in (79) sound that much worse than those in (80), which suggests that *worry* verbs are not necessarily a special form of unaccusative but are normal transitive verbs. Secondly, if one assumes that adjacency (a specifier or complement relationship) is required for  $\theta$ -role assignment, the structure in (81) cannot explain how the experiencer *John* receives a  $\theta$ -role. Thirdly, why would *John* not be able to move into the empty subject-position just as easily as *these stories about himself*? Belletti and Rizzi say it is because of the “lexical case” assigned by the idiosyncratic unaccusative *worry*. But this claim has two problems. It does not explain why the position of *John* in (81) is a case position at all, and it does not explain why *John* can be passivised in English and Italian:

(82) John is worried by those stories.

(83) Gianni è preoccupato dai pettegolezzi.  
Johnny is worried by the gossip

The fact that passivisation takes place here strongly suggests that there is no lexical case involved at all in (79) but the normal accusative case that one would expect from a normal transitive verb. Given the questions surrounding the analysis in (81), one must question its validity, and if it is invalid, reconstruction is shown to be unreliable in resolving anaphor binding issues. There must be another explanation for the grammaticality of the sentences in (79), which I find to be marginal anyway. We will now look at how reliable (or unreliable) A-movement reconstruction is in resolving ambiguity.

Consider the analysis of Fox (1999), who treats A-movement reconstruction (referred to as *scope reconstruction* or *quantifier lowering*) as a means of resolving ambiguity. Consider the following example:<sup>11</sup>

(84) [Someone from New York]<sub>1</sub> is very likely t<sub>1</sub> to win the lottery.

<sup>11</sup> Fox (1999) p. 178.

According to Fox's analysis, if no reconstruction takes place in this sentence, the quantifier *someone* takes scope over the raising verb *to be likely* and the meaning is that a specific person in New York who has presumably bought a lot of lottery tickets is probably going to win the lottery. If reconstruction does take place, the raising verb *to be likely* takes scope over *someone* and the meaning is that it is probable that a non-specific person from New York will win the lottery, perhaps because more lottery tickets were sold in New York than in any other city. The question is whether this analysis could be used to explain the type of ambiguity that I am trying to explain, exemplified in (66), repeated here:

(85) All the students have not read the book.

There are a number of reasons why I question the appropriateness of applying Fox's analysis of (84) to a sentence such as (85). I will ignore the fact that nearly all of Fox's examples involve raising verbs and that none of them involve negation or the quantifier *all*, which already casts doubt on the applicability of Fox's analysis to (85). There are other reasons for not adopting Fox's analysis for sentences like (85). First of all, under an approach like Fox's, reconstruction is basically an optional LF operation that undoes the effects of raising. But raising is also optional at the Surface Structure. Both of the following sentences are possible:

- (86) a. Someone from New York is very likely to win the lottery.  
 b. It is very likely that someone from New York will win the lottery.

If an operation is not obligatory, it does not seem very economical to optionally raise an element at the Surface Structure and then optionally lower it again at LF. This is one problem with Fox's analysis. An even bigger problem is the fact that quantifier lowering or reconstruction in (84) does not disambiguate at the Surface Structure. The two sentences in (86), which are based on (84) with and without raising, are both ambiguous. If reconstruction does not disambiguate at the Surface Structure it is not clear how it would be any more effective at LF. This should cast considerable doubt on whether reconstruction at LF is really the way to disambiguate a sentence, whether it be one of the sentences in (86) or example (85). The cause of the ambiguity of the sentences in (86) has nothing to do with syntactic structure but with the specificity or non-specificity of the quantifier *someone*.

Moving away from Fox's analysis, I would like to present some additional evidence that A-movement reconstruction is of questionable use in matters of ambiguity. Consider the following ambiguous sentence:

(87) Everybody loves someone.

Under the reading in which *everybody* takes scope over *someone*, quantifier raising is unnecessary, since *everybody* outscopes *someone* by virtue of its higher position. If the quantifier *everybody* is raised at LF even though raising is unnecessary, reconstruction is also unnecessary and is therefore irrelevant with or without

quantifier raising. Consider now the reading of (87) in which *someone* takes scope over *everybody*. In order to get this reading, *someone* has to undergo quantifier raising at LF. Reconstruction in this instance would undo the effect of quantifier raising and produce an undesired reading. In other words, regardless of how one interprets (87), reconstruction is inappropriate and not a suitable way to resolve ambiguity.

The following example from Sportiche (2005) illustrates that there are situations in which reconstructing creates ambiguity rather than resolving it:<sup>12</sup>

(88) Everyone seems not to be listening.

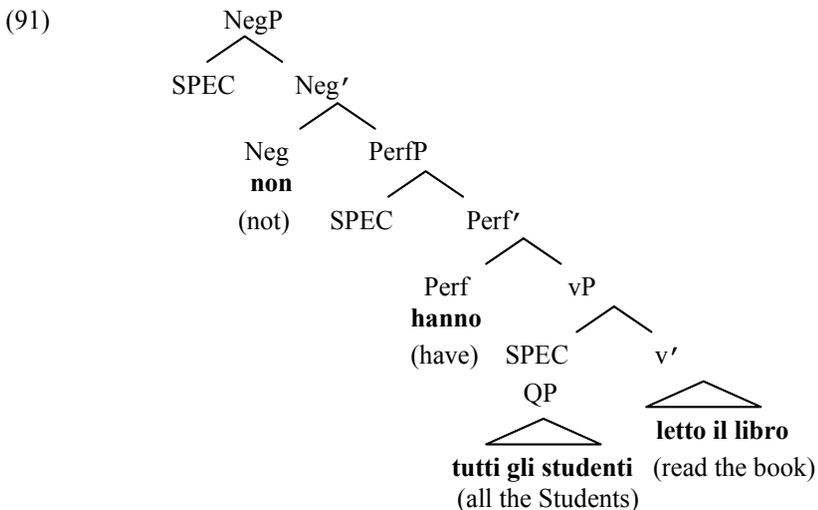
This sentence has only a  $[\forall > \neg]$  reading. A reconstructed version of this sentence, without raising, is ambiguous for a  $[\neg > \forall]$  and a  $[\forall > \neg]$  reading:

(89) It seems that everyone is not listening.

One last problem that I must point out with A-movement reconstruction is that it is not permitted in the Romance languages when negation is involved. The following Italian sentence allows only a  $[\forall > \neg]$  reading:

(90) Tutti gli studenti non hanno letto il libro.  
all the students not have read the book

Following Zeijlstra (2004), I assume the following base-structure for this sentence:



<sup>12</sup> Sportiche (2005) p. 34.

If reconstruction (interpretation of the lower copy of the subject QP) were possible in this sentence, a  $[\neg > \forall]$  reading would be possible, but such a reading is unavailable. One could argue that the intervening NegP has something to do with the inability to reconstruct in this sentence, but it is not at all clear why this should be so, especially since reconstruction in a sentence like (85) (*All the students have not read the book*) also involves an intervening negation marker. Could the difference be that in the Romance languages the intervening negation marker is a head, as seen in (91), while the negation marker in (85) is a specifier in QP? Perhaps, but once again we would have to ask ourselves why this should be the case. If a QP in a sentence like (91) can move above negation into subject position, why can it not move back to its base-position again under reconstruction?

To summarise, not only is A-movement reconstruction a doubtful means of explaining anaphor binding issues, but it is not a convincing means of disambiguating. It poses economy issues, it sometimes fails to resolve ambiguity, it sometimes creates ambiguity, and it is sometimes not permitted at all. It is no surprise that it is not universally accepted. Nonetheless, something like reconstruction seems to be needed in order to produce an inverse scope reading in a sentence like (85). This puts me in a dilemma and leaves me with two options, both of which have a weakness:

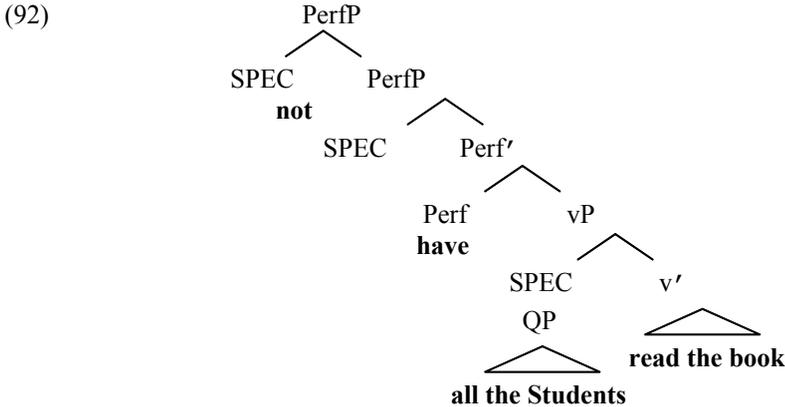
Option 1: Whether reconstruction (the interpretation of a lower copy of a syntactic element) is *consistently* effective or not, the option is available under the copy theory of movement, and one could therefore assume that reconstruction is what allows the inverse scope reading in a sentence like (85). Regarding the Romance languages and the inability to reconstruct and obtain an inverse scope reading in a sentence like (90), one would have to assume, for a reason that is not yet understood, that reconstruction under A-movement is not possible across NegP. The need for an assumption that is not understood is a flaw and makes this option unattractive.

Option 2: The second option would be to say that the inverse scope reading in (85) is made possible not by reconstruction but by the fact that a negation marker stranded in a structure such as (72) is part of the A-chain of a moved QP and c-commands the lowest trace of that moved QP, which allows it to take scope over all the elements in the chain of the moved constituent without reconstruction. In spite of the issues that this option creates for the copy theory of movement it appears to make the most sense intuitively and it avoids having to depend on something as questionable as reconstruction under A-movement and on stipulations such as the one that disallows reconstruction over NegP in the Romance languages. I will therefore assume that in Neg Stranding there is no reconstruction per se but that a negation marker which is located inside an A-chain and which c-commands the lowest trace in that chain retains its scope over the elements in that chain without reconstruction.

Besides reconstruction, there are other issues with Neg Stranding to discuss.

### 3.2.2 Superfluosity of Neg Stranding under A-Movement Reconstruction

This issue is actually a continuation of the reconstruction issue posed in Section 3.2.1, where I presented two options for dealing with reconstruction under A-movement. Those who prefer Option 1, whereby A-movement reconstruction may be used to resolve ambiguity, may argue that if we can derive an inverse scope reading by simply interpreting a lower copy of a constituent, we may not need the Neg Stranding Hypothesis at all. Even though I am assuming Option 2 rather than Option 1, just for the sake of argument I will pursue this challenge. Consider the following to be the base-structure of both readings of (85):



This base-structure has only a sentential negation marker. When the subject QP moves to canonical subject position in [SPEC, AgrSP] and the auxiliary verb moves to AgrS, the following word order is produced:

(93) All the students have not read the book.

In order to obtain the  $[\forall > \neg]$  reading, one could interpret the higher copy of the subject QP. For the  $[\neg > \forall]$  reading the lower copy would be interpreted. The ambiguity of the sentence could in this way be accounted for without Neg Stranding, since the lower copy of the subject QP is c-commanded by the negation marker. Despite this possibility, even if one accepts Option 1 there are three reasons why the Neg Stranding hypothesis is still necessary, which I will now present.

#### First Argument for Neg Stranding: Sentential Negation and Stranded Constituent Negation Co-occur

There are sentences in which Neg Stranding (the stranding of a negation marker inside QP) co-occurs with a sentential negation marker. Consider the following pairs of Dutch, German and English sentences:

- (94) a. De studenten zijn niet allen niet gekomen.  
the students are not all not come
- b. De studenten komen niet allen niet.  
the students come not all not
- (95) a. Die Studenten sind nicht alle nicht gekommen.  
the students are not all not come
- b. Die Studenten kommen nicht alle nicht.  
the students come not all not
- (96) a. The students have not all not come.  
b. The students didn't all not come.

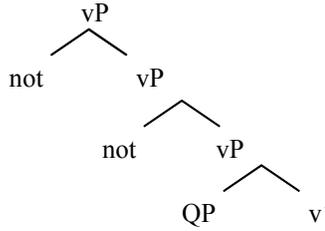
These sentences contain both a stranded negated quantifier and sentential negation. Let's see what happens in these sentences when the negation marker is stranded, without the quantifier:

- (97) a. Al de studenten zijn niet niet gekomen.  
all the students are not not come
- b. Al de studenten komen niet niet.  
all the students come not not
- (98) a. Alle die Studenten sind nicht nicht gekommen.  
all the students are not not come
- b. Alle die Studenten kommen nicht nicht.  
all the students come not not
- (99) a. All the students have not not come.  
b. All the students are not not coming.

Those speakers who bother to try to parse these sentences have a strong tendency to get only a reading in which both negation markers are sentential and thus cancel each other out and produce the meaning that all students have come or are coming. The translation of this reading into predicate logic would be  $\forall x (Sx \rightarrow \neg\neg Cx)$ . Nonetheless, some speakers of all three languages report that a second reading is also possible, with the meanings of (94) to (96). This reading would be translated into predicate logic as  $\neg\forall x (Sx \rightarrow \neg Cx)$ .

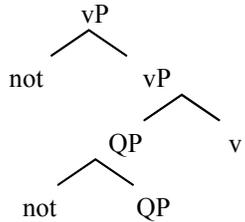
Given that under the first reading of (97) to (99) the two negation markers cancel each other out, it is indeed logical to assume that they are both sentential negation markers and that this reading has the following base-structure:

(100)



It is clear that one could not get an inverse scope reading in this sentence by interpreting the lower copy of the subject QP, because the two sentential negation markers would continue to cancel each other out. The way to get the inverse scope reading would be to assume both quantifier negation and sentential negation, as illustrated in the following diagram:

(101)



Since the structure in (100) cannot produce an inverse scope reading for (97) to (99), the structure in (101) and hence the Neg Stranding Hypothesis are necessary.

### Second Argument for Neg Stranding: Inverse Scope in the Absence of Sentential Negation

The second reason that I will present for claiming that Neg Stranding is not superfluous is the fact that there are instances of inverse scope in which there is constituent negation but no sentential negation. Consider again the following German sentences from Section 1.2:

- (102) a. Nicht den Hund hat er gefüttert, sondern die Katze.  
           not the dog has he fed but the cat
- b. Den Hund hat er nicht gefüttert, sondern die Katze.  
           the dog has he not fed but the cat

In the (a) sentence we know that the negation marker is not sentential because it has been fronted with its associated DP in a topicalisation process and does not follow the finite auxiliary verb *hat* (*has*). In the (b) sentence we also know that the negation marker is not sentential. We know this not only because the (b) sentence means the same as the (a) sentence, but because in both sentences we have a *not...but* construction and, as I demonstrated in Section 1.2, only like categories can be contrasted in this way. The negation marker must therefore be base-generated inside

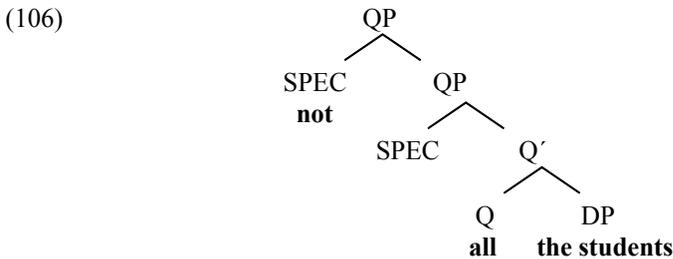
DP in both sentences. For scopal purposes, a lower copy of the DP *den Hund* (*the dog*) in (102b) will be interpreted, but it will not be a sentential negation marker that negates the DP but a stranded constituent negation marker. Hence, the Neg Stranding Hypothesis is not superfluous by any means.

### Third Argument for Neg Stranding: Capturing Generalisations

My third reason for arguing that Neg Stranding is not superfluous has to do with a generalisation. Consider the following three sentences, which contain exactly the same words and mean exactly the same thing:

- (103) Not all the students have read the book.  
 (104) The students have not all read the book.  
 (105) All the students have not read the book. (I.e., the  $[\neg > \forall]$  reading.)

The first two of these sentences cannot be produced without the following structure:



Example (103) could not be produced without (106) because we would otherwise not get the negation marker into sentence-initial position. Example (104) could also not be produced without the constituent negation marker in (106) because a sentential negation marker would be in the wrong place. This becomes evident if a sentential negation marker is inserted into (104):

- (107) The students have not all not read the book.

If (103) and (104) are derived from the structure in (106), a major generalisation would be missed if (105) were not also derived from the same structure. The Neg Stranding Hypothesis allows us to capture this generalisation.

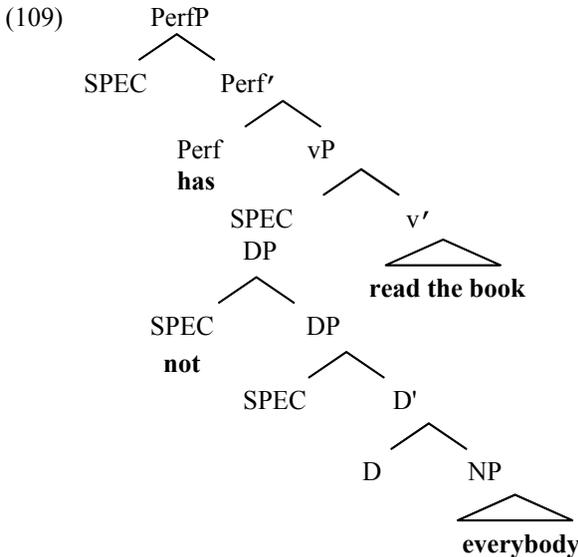
In Section 3.2.2 I have presented three reasons why the Neg Stranding Hypothesis, whereby a negation marker is stranded inside a QP or other phrase, is not superfluous even if one accepts A-movement reconstruction as a means of disambiguating. A sentential negation marker cannot always accomplish the same things that a stranded constituent negation marker accomplishes. And, if Neg Stranding is necessary anyway, in my opinion it does not make sense to rely on something as questionable as A-movement reconstruction to resolve ambiguity. We can now continue to look at other issues posed by the Neg Stranding Hypothesis.

### 3.2.3 Neg Stranding without QP and with Contraction of *Not*

Yet another potential issue with Neg Stranding is the ambiguity of a sentence such as the following:

(108) Everybody hasn't read the book.

One might question the appropriateness of Neg Stranding in this instance because Neg Stranding involves constituent negation and the negation marker in this sentence has been contracted and adjoined to a verb, making it look very much like sentential negation. In point of fact, however, the universal quantifier *everybody* is co-occurring with a negation marker and consequently two readings are possible. The  $[\forall > \neg]$  reading will be of no concern to us here because it reflects Surface Structure word order and is straightforward. What needs to be discussed is the inverse scope reading with the meaning *Not everybody has read the book*. Following the Neg Stranding Hypothesis, the base-structure of this reading would be as follows:



In this sentence the lower DP, which contains *everybody*, moves to subject position via [SPEC, PerfP] and in so doing it strands the negation marker. The Perfect auxiliary moves to T and AgrS. This produces the following word order:

(110) Everybody has not read the book.

At this point, an optional phonological rule converts *has + not* to *hasn't*. The negation marker is embedded in DP and does not c-command  $v'$ . A sentential negation reading is ruled out. The negation marker has scope over the chain of the

trace of the moved DP. Or, if you prefer, under the copy theory of movement the lower copy of the DP *everybody* will be interpreted under the scope of the constituent negation marker. Either way, a  $[\neg > \forall]$  reading is thus preserved and the sentence poses no problem for the Neg Stranding Hypothesis.

### 3.2.4 Neg Stranding when no Negation Marker is Present

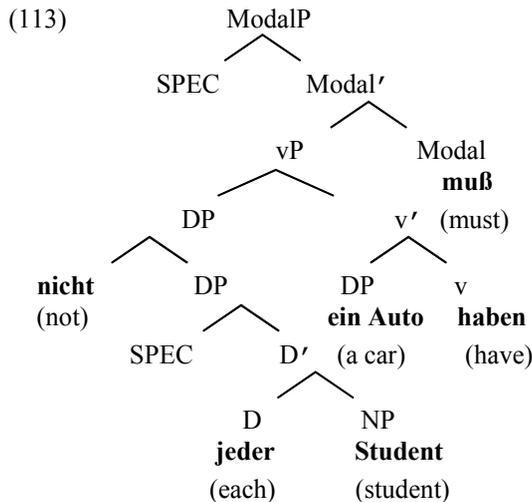
There is one other type of sentence that provides a special challenge to the Neg Stranding Hypothesis, and that is one in which the negation marker has been absorbed morphologically. Consider the following German sentence:<sup>13</sup>

- (111) Jeder Student muß kein Auto haben.  
 each student must no car have

For some speakers, this sentence is ambiguous for the following two readings:

- (112) a. Not every student has to have a car.  $[\neg > \forall]$   
 b. No student has to have a car.  $[\forall > \neg]$

My approach to deriving the  $[\neg > \forall]$  reading of (111), if I am consistent with my own theory, would have to involve a negated constituent and Neg Stranding. After all, this is a case where negation is lower than the quantifier but there is a  $[\neg > \forall]$  reading. My base structure for this sentence would therefore have to be as follows:



A few preliminary comments on this tree diagram are in order:

<sup>13</sup> My thanks to Arnim von Stechow and Doris Penka for challenging me with this sentence during my presentation at the Workshop on Negation and Polarity at the Universität Tübingen in March 2007.

I place the quantifier *jeder* (*each*) in D rather than in the head position of a QP, even though it is a universal quantifier. I take this approach because *jeder* cannot be stranded and cannot co-occur with a determiner. I treat the subject as a negated DP, with the negation marker in SPEC of DP. Finally, the Surface Structure negative quantifier *kein* (*no*) is replaced in the base-structure with the (unnegated) indefinite article *ein*.

To derive (111) from (113), the subject DP *jeder Student* (*each student*) moves to subject position, stranding the negation marker in DP, and the modal *muß* (*must*) moves to its V-2 position. At this point in the derivation, we have the following:

- (114) Jeder Student muß nicht ein Auto haben.  
 each student must not a car have

The final step in the derivation is the application of a rule that changes *nicht + ein* to *kein* and produces (111). Such rules are not unheard of. A similar thing occurs in English, as can be seen in the following two sentences:

- (115) a. John has not a friend in the world.  
 b. John has no friend in the world.

Sentences such as (111) are thus no problem for the Neg Stranding Hypothesis.<sup>14</sup>

### 3.2.5 Neg Stranding and Raising Verbs: Locality Constraints

Before concluding this sub-section, it is important to point out an interesting phenomenon related to Neg Stranding in the context of raising verbs. Observe the following sentences:

- (116) a. Not all the students seem to have read the book.  
 b. The students do not all seem to have read the book.  
 c. All the students do not seem to have read the book.

The sentences in (116) mean the same thing and are unambiguous for a reading of constituent/quantifier negation rather than for sentential negation. In (116b) the negated quantifier *not all* has been stranded in the upper clause. In (116c) Neg Stranding has occurred, that is, the negation marker has been stranded without the quantifier, again in the upper clause. (Regarding (116b) and (116c), see the appendix to this chapter for a discussion of how constituent negation interacts with *do-*

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<sup>14</sup> The rule that converts *nicht + ein* to *kein* is problematic because it is difficult to classify. It is certainly not a phonological rule. It does not seem to be morphological either, because morphological rules, especially those pertaining to word formation, presumably apply at the lexical level. The unusual nature of this rule may be related to the fact that the inverse scope reading of (111) is unavailable to many speakers. In any case, the analysis of *kein* as negation plus the indefinite article is nothing new. Krifka (1998) also argues that in order to explain ambiguity one must have the option of analysing *kein* as *nicht* plus *ein*. Krifka cites other sources where the same claim has been made, such as Kratzer (1995) and Jacobs (1980). See Krifka (1998) p. 104-105.

insertion.) But what about Neg Stranding in the lower clause? We have already seen that the stranding of a negated quantifier in the lower clause in a raising construction is possible, as predicted by the Stranding Analysis:

- (117) a. The students seem to have not all read the book.  
 b. The students seem to not all have read the book.  
 c. The students seem not all to have read the book.

However, whereas a negated quantifier can be stranded in a lower clause and produce an unambiguous reading of constituent negation, if a negation marker is stranded alone in a lower clause it loses its ability to retain its scope over the subject QP. This can be demonstrated by simply taking the sentences in (117) and moving the quantifier up and away from the negation marker:

- (118) a. All the students seem to have not read the book.  
 b. All the students seem to not have read the book.  
 c. All the students seem not to have read the book.

These sentences are all grammatical, but they do not allow a  $[\neg > \forall]$  reading, which shows that the scope of negation is limited to the clause that it is contained in. This could very well be due to the principle of in situ interpretation of negation, which I will present in Section 4.

The observation that there is a locality restriction on the interpretation of negation raises an interesting question: Why should there be such a constraint and what higher principle can it be deduced from? After all, we saw in (117) that the stranding of a negated quantifier in a lower clause is permissible in a raising situation. In these sentences the negated quantifier has scope over an A-chain that ends in a higher clause, but ungrammaticality does not ensue. Neither does ambiguity. I would like to suggest that if there is a higher principle from which this locality constraint on negation can be derived, it might well be based on the criterion of *strength of quantification*. Negation is a powerful quantifier. (What more can happen to one than being negated?) Negation is also very fundamental to the semantics and truth value of a sentence or clause. Intuitively, because of its relative quantificational strength, one would probably want to restrict its scope to its local domain.<sup>15</sup> More will be said about the relative quantificational strength of negation in Section 6.1. In any case, the locality constraint that we have been discussing enables us to explain why a stranded negation marker in sentences like those in (118) can only be construed as negating the local infinitival phrase.<sup>16</sup>

<sup>15</sup> This locality constraint on negation needs to be more clearly defined. Negation can, for example, license a NPI in a lower clause, as in *I didn't want you to buy anything for me*. On the other hand, NPI licensing is not quite the same as taking scope in the semantic sense.

<sup>16</sup> There is one other issue related to raising. The English sentence *All the students do not seem to have read the book* allows only a  $[\neg > \forall]$  reading while its equivalents in German and Dutch are ambiguous. These are *All die Studenten scheinen nicht das Buch gelesen zu haben* and *Al de studenten lijken niet het boek gelezen te hebben*, respectively. I surmise that this is the effect of *do*-insertion.

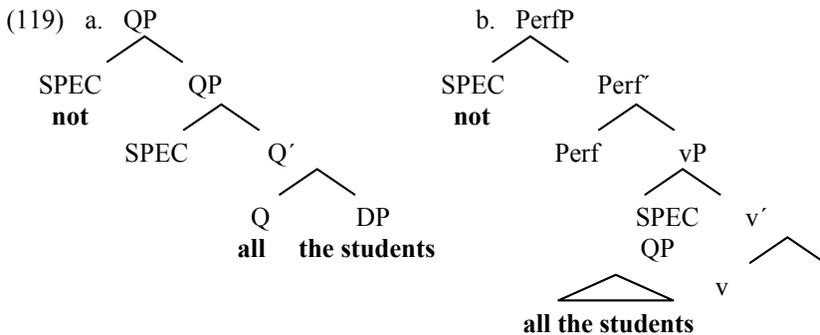
### 3.2.6 Recapitulation of Sub-Section 3.2

In Section 3.2 I have presented five issues with the Neg Stranding Hypothesis. The first issue is that although Neg Stranding purports to be independent of other disambiguation methods such as reconstruction, under the copy theory of movement it does seem to involve reconstruction. I argued that A-movement reconstruction is an unreliable way to account for ambiguity and suggested that under Neg Stranding reconstruction is not necessary because of the structural (mutual c-command) relationship that the stranded negation marker has with the lowest trace of the moved (stranding) constituent. This is admittedly a weakness in the analysis, but if one relies on A-movement reconstruction to resolve ambiguity one must make the ad hoc stipulation that A-movement reconstruction is not possible in the Romance languages, perhaps because of NegP. Regardless of whether or not one believes in A-movement reconstruction, I demonstrated that Neg Stranding occurs. Since Neg Stranding occurs and can account for inverse scope, it makes sense to rely on it to resolve ambiguity rather than relying on something as problematic as A-movement reconstruction, which is not even possible in the Romance languages.

Besides reconstruction, other issues with Neg Stranding that I have presented have to do with phonological or morphosyntactic rules and with an apparent locality constraint that affects Neg Stranding in raising constructions. These were argued to be unproblematic for Neg Stranding. The conclusion is that the Neg Stranding Hypothesis is necessary and there is no compelling reason to reject it.

### 3.3 Review of Section 3

In Section 3.1, in order to explain inverse scope in the West Germanic Languages I presented the Neg Stranding Hypothesis, whereby the negative component of a negated quantifier, the negation marker, can be stranded alone, without the quantifier. This approach accounts for the two readings of a sentence such as *All the students have not read the book* by positing two different base-structures. The base-structure in (119a) sets the stage for Neg Stranding and a  $[\neg > \forall]$  reading while (119b) produces sentential negation and a  $[\forall > \neg]$  reading:



I treat Neg Stranding as a phenomenon that is related to the stranding of other syntactic entities such as quantifiers and prepositions. A stranded element has a symmetric c-command (sister) relationship with the lowest trace of the element that strands it. This seems to enable it to retain scope over the entire chain of that moved element. In (119a), for example, the negation marker is a sister to the QP that will strand it and will thus retain scope over the entire A-chain of that moved QP. Under this approach the structure in (119b) only results in a  $[\forall > \neg]$  reading even though the negation marker c-commands a trace of the moved subject QP just as it does in (119a). I have attributed this to the fact that the negation marker in (119b) does not have the same relationship to the moved QP as it does in (119a), in which it has a sister relationship with the lowest trace of the moved QP.

In Section 3.2 some challenges to the Neg Stranding Hypothesis were presented, the most difficult of which was the question of whether Neg Stranding involves reconstruction under A-movement. I demonstrated that A-movement reconstruction is not a reliable method of resolving ambiguity and that it is not even permitted in sentences involving negation in the Romance Languages. I therefore concluded that Neg Stranding does not rely on reconstruction per se but on the fact that a stranded negation marker has a symmetric c-command (sister) relationship with the lowest trace of the stranding QP and in this way retains its scope over the entire A-chain of that QP. In any case, I showed that whether one believes in A-movement reconstruction or not, the Neg Stranding Hypothesis is necessary.

One might say that the Neg Stranding Hypothesis is a bit unorthodox. I would argue that it is not unorthodox and that it is related to other stranding phenomena. Nonetheless, in the next section I will present some alternative approaches.

#### 4. Alternatives to the Neg Stranding Hypothesis: Movement at LF, Partial Deletion

The reader is reminded that the whole point of the Neg Stranding Hypothesis is to explain inverse scope readings, that is, the availability of a  $[\neg > \forall]$  reading in spite of  $[\forall > \neg]$  word order, as in the following sentence:

(120) All the students have not read the book.

Neg Stranding involves base-generating the negation marker as a SPEC of (adjunct to) QP. Since in this sub-section we will be looking for an alternative to Neg Stranding, we will look at structures in which the negation marker is base-generated in a position appropriate for sentential negation rather than inside QP. I will follow Zeijlstra (2004) and assume that negation markers in the Germanic languages are specifiers of a verbal phrase. More details of Zeijlstra's theory are presented in Section 6 of this chapter.

When faced with the problem of explaining inverse scope, covert movement is probably the first solution that comes to mind. Under this approach, in order to obtain the  $[\neg > \forall]$  reading of a sentence like (120) the negation marker could simply

be moved and adjoined to the quantifier *all* at LF. On the other hand, it has been argued in Kayne (1998) and elsewhere that scope is determined hierarchically, not through covert movement. I will argue that this claim is certainly valid for negation. I begin with an example from Italian:

- (121) a. Tutti gli studenti non l'hanno letto. [ $\forall > \neg$ ]  
 all the students not it have read
- b. Non tutti gli studenti l'hanno letto. [ $\neg > \forall$ ]  
 not all the students it have read

If covert movement of negation were possible, it would be possible to move the negation marker in (121a) to a position in front of the subject QP at LF, producing the reading of (121b). However, there is only one reading of (121a). This shows that negation cannot be covertly moved, but is interpreted *in situ*, as argued in Section 3.2.5. The Neg Stranding Hypothesis accounts for the scope of negation based on structure and does not rely on covert movement.

Consider now the following sentences from English:

- (122) a. Many species of furry animal are not mammalian.  
 b. Not many species of furry animal are mammalian.

These two sentences are neither synonymous nor ambiguous. The normal interpretation of the quantifier *many* is cardinal in the (a) sentence and proportional in (b). This is based on the observation that cardinal quantifiers such as numerals cannot appear as subjects if they are negated:

- (123) \*Not three species of furry animal are mammalian.

Covertly moving the negation marker in (122a) to produce (122b) would therefore do more than just change the scope of negation. It would produce a proportional interpretation of *many*. This suggests that covert movement does more than we want it to do. Consider now the following German sentence from Höhle (1991):

- (124) Alle Politiker hat so mancher nicht verstanden.  
 all politicians has many a person not understood

In this sentence the direct object *Alle Politiker* (*all politicians*) has been topicalised. The word *Alle* (*all*) has rising intonation and *nicht* (*not*) has falling intonation and primary stress. The meaning of the sentence is that there are several people who did not understand all the politicians. Scopal relations are thus  $[\exists > \neg > \forall]$ . The question is whether the  $[\neg > \forall]$  reading could have been obtained by moving negation at LF. Höhle argues against this option by pointing out that moving the negation marker to the position in front of the universal quantifier does more than just create a  $[\neg > \forall]$  reading. It changes a  $[\exists > \neg > \forall]$  reading to a  $[\neg > \forall > \exists]$

reading. Thus, we see again that covert movement of negation does much more than it is supposed to do, and is probably not the right solution. The Neg Stranding Hypothesis handles the issues in (122) and (124) and the ambiguity in (120) in a much more elegant way by placing the negation marker in [SPEC, QP] if there is a  $[\neg > \forall]$  reading and in the specifier position of a verbal phrase if there is a  $[\forall > \neg]$  reading. Scope is determined hierarchically and not via covert movement.

There is one other alternative to Neg Stranding that I will consider here, namely, the idea of partial deletion in the manner of Nunes (2004). Nunes' approach is based on the copy theory of movement. Theoretically, as an alternative to Neg Stranding, in a sentence like (120) optional partial deletion could have taken place as follows:

(125) [[IP[QP ~~Not all the students~~] [PerfP have [vP [QP not all the students] read the book]]]]

Nunes points out that this type of deletion (called *chain reduction*) is needed for two reasons. First of all, normally only one copy in a chain can be pronounced:

(126) \*[[IP[QP Not all the students] [PerfP have [vP[QP not all the students] read the book]]]]

Secondly, in keeping with the Linearization Correspondence Axiom (LCA) from Kayne (1994), copies are non-distinct. Consequently, if there is more than one copy of an item, it is unclear which copy should be linearised with the other elements in a clause. Linearisation will thus not take place and the derivation will crash. The following sentence illustrates this. It is a passive sentence, in which there are two copies of the grammatical subject, since it originates as the object of the verb:

(127) John was kissed John.

Nunes points out that partial deletion needs to be constrained in order to prevent it from generating absurd sentences. Consider the following sentence from Nunes:

(128) The tall man appears to have been kissed.

In the derivation of (128) there are three copies of the subject forming a chain:

(129) [The tall man] appears [the tall man] to have been kissed [the tall man].

In order to derive the desired version of this sentence, two deletion operations are needed, as follows:

(130) [The tall man] appears [~~the tall man~~] to have been kissed [~~the tall man~~].

Using partial deletion, one could easily generate the following absurd sentence:

(131) \*The appears tall to have been kissed man.

This sentence would be derived by deleting as follows:

(132) [The ~~tall man~~] appears [~~the tall man~~] to have been kissed [~~the tall man~~].

Nunes refers to this as “scattered deletion.” He blocks this type of output by appealing to principles of Economy. In the correct version of this sentence, as I just mentioned, there are only two deletion operations. In this nonsensical product of scattered deletion, there are at least four deletion operations. Thus, only the correct version will be generated by the system because Economy will block other outputs.

Nunes’ approach has the advantage of handling the issue of optionality very well, assuming that quantifier stranding and Neg Stranding are optional. However, upon closer inspection, a partial deletion approach is unable to generate the  $[\neg > \forall]$  reading of a sentence like (120). Remember that in the base structure of this sentence the subject is the negated QP *not all the students*. If we do not strand the negation marker, we have just one deletion operation in the derivation, as follows:

(133) [Not all the students] have [~~not all the students~~] read the book.

If we want to produce (120) with a  $[\neg > \forall]$  reading, not one but two deletion operations are needed, as follows:

(134) [~~Not all the students~~] have [~~not all the students~~] read the book.

Nunes’ prediction is therefore that this version of the sentence will never be generated because it involves more deletion operations than (133). This false prediction of the partial deletion approach affects not only Neg Stranding. It affects all kinds of stranding, including quantifier stranding or even preposition stranding. For this reason, Nunes’ partial deletion approach is not a viable alternative to Neg Stranding (or any other type of stranding analysis.)

To summarise this section, it seems that there are no particularly attractive alternatives to the Neg Stranding Hypothesis. Analyses involving movement of negation at LF and partial deletion prove to be inadequate. (There is actually one more alternative to the Neg Stranding Hypothesis that I will consider in Sections 6.1 and 6.3 when I discuss Zeijlstra (2004). I will argue that Neg Stranding is also preferable to this approach.)

Having now looked at negated quantifiers in the Germanic languages, in Section 5 we will look at the Romance languages in order to investigate the cross-linguistic applicability of the conclusions reached so far.

### 5. Negated Quantifier Stranding in the Romance Languages

It is well documented that universal quantifiers in the Romance languages can float, as is illustrated in the following examples:<sup>17</sup>

French:

- (135) Les étudiants ont tous lu le livre.  
the students have all read the book

Italian:

- (136) Gli studenti hanno letto tutti il libro.  
the students have read all the book

Romanian:

- (137) Studenții au citit toți cartea.  
students the have read all book the

Portuguese:

- (138) Os alunos têm lido todos o livro.  
the students have read all the book

Spanish:

- (139) Los alumnos han leído todos el libro  
the students have read all the book

Catalán:

- (140) Els estudiants han llegit tots el llibre.  
the students have read all the book

Negated quantifiers also seem to exist in the Romance languages:

French:

- (141) Pas tous les étudiants ont lu le livre.  
not all the students have read the book

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<sup>17</sup> My thanks to the following informants: Enoch Aboh, Elisabetta Materassi, Mara Radulescu van Schaik, Ana Paula Quadros Gomes, Jorge Gomez Rendón and Jordi Fortuny.

Italian:

- (142) Non tutti gli studenti hanno letto il libro.  
not all the students have read the book

Romanian:

- (143) Nu toți studenții au citit cartea.  
not all students the have read book the

Portuguese:

- (144) Nem todos os alunos têm lido o livro.  
not all the students have read the book

Spanish:

- (145) No todos los alumnos han leído el libro  
not all the students have read the book

Catalán:

- (146) No tots els estudiants han llegit el llibre.  
not all the students have read the book

These sentences are all unambiguous. They all mean that there is at least one student who has not read the book. The negation marker takes scope only over the quantifier, not the vP, and we have in each case a negated quantifier and not sentential negation. What is interesting is that while it is relatively easy to float negated quantifiers in West Germanic, it is impossible to do so in Romance:

French:

- (147) \*Les étudiants ont pas tous lu le livre.  
the students have not all read the book

Italian:

- (148) \*Gli studenti hanno letto non tutti il libro.  
the students have read not all the book

Romanian:

- (149) \*Studenții au citit nu toți cartea.  
students the have read not all book the

Portuguese:

- (150) \*Os alunos têm lido nem todos o livro.  
the students have read not all the book

Spanish:

- (151) \*Los alumnos han leído no todos el libro  
the students have read not all the book

Catalán:

- (152) \*Els estudiants han llegit no tots el llibre.  
the students have read not all the book

However, whereas a negated quantifier cannot be floated, a non-negated quantifier can nonetheless be floated in the case of syntactic sentential negation, which is further evidence that sentential negation and constituent negation are different. This is demonstrated in the following sentences:

French:

- (153) Les étudiants n'ont pas tous lu le livre.  
the students not have not all read the book

Italian:

- (154) Gli studenti non hanno letto tutti il libro.  
the students not have read all the book

Romanian:

- (155) Studenții nu au citit toți cartea.  
students the not have read all book the

Portuguese:

- (156) ?Os alunos não têm lido todos o livro.  
the students not have read all the book

Spanish:

- (157) Los alumnos no han leído todos el libro  
the students not have read all the book

Catalán:

- (158) Els estudiants no han llegit tots el llibre.  
 the students not have read all the book

It is very important to point out that although these sentences are examples of syntactic sentential negation, semantically speaking they are instances of quantifier negation, since their only possible reading is  $[\neg > \forall]$ . It is also very interesting and relevant that if the quantifiers in these sentences had not been floated, the sentences would have been downgraded:

French:

- (159) Tous les étudiants n'ont pas lu le livre.  
 all the students not have not read the book

Italian:

- (160) ?Tutti gli studenti non hanno letto il libro.  
 all the students not have read the book

Romanian:

- (161) \*/?Toți studenții nu au citit cartea.  
 all students the not have read book the

Portuguese:

- (162) \*/?Todos os alunos não têm lido o livro.  
 all the students not have read the book

Spanish:

- (163) ?Todos los alumnos no han leído el libro  
 all the students not have read the book

Catalán:

- (164) ?Tots els estudiants no han llegit el llibre.  
 all the students not have read the book

As the reader can see, most speakers of a Romance language find the structure in the last set of examples to be marked. Speakers who find (159) to (164) grammatical or marginal report a  $[\forall > \neg]$  (sentential negation) reading. The exception is French, which allows only a  $[\neg > \forall]$  reading. French is of course special because of its use of two negation markers, *ne* and *pas*.

The data presented so far in this section lead to four observations that are crucial to the remainder of this chapter. The first observation is that, as shown in (147) to (152), negated quantifiers cannot be stranded in the Romance languages the way they can in the Germanic languages. The second, third and fourth observations all have to do with issues that arise when a quantifier outscopes negation in the Romance languages:

The second observation is that the sentences in (153) to (158) seem to be cases of sentential negation *syntactically*, but they have only a  $[\neg > \forall]$  reading and are therefore *semantically* cases of negated quantifiers. This is not what we found in the Germanic languages, in which syntactic sentential negation implied a  $[\forall > \neg]$  reading.

The third observation is that if in (153) to (158) the quantifier is not stranded, markedness or ungrammaticality can arise, as is demonstrated in (159) to (164). This does not occur in the Germanic languages, where a quantifier can outscope negation without causing downgrading.

The fourth and final observation is that if the sentences in (160) to (164) are accepted at all, they have only a  $[\forall > \neg]$  reading, while their counterparts in the West Germanic languages allow a  $[\neg > \forall]$  and a  $[\forall > \neg]$  reading.

These four observations pose four questions about differences between the Germanic and the Romance languages in their handling of negated quantifiers. It is my aim in the following section to answer these four questions. It would seem that the best way to begin looking for an answer to these questions would be to examine differences between how negation is structured in the West Germanic and Romance language families, and Zeijlstra (2004) deals with precisely this topic. We will look at how Zeijlstra's theory can be applied to my findings in the next section.

## 6. Explaining the Differences between Germanic and Romance Negated Quantifiers

### 6.0 Introduction

In this relatively long section I offer an explanation for the differences between the Romance and Germanic languages introduced in the preceding section. My theory will draw on the theory of negation put forth in Zeijlstra (2004). Zeijlstra's theory is mainly concerned with sentential negation and does not deal with negated constituents per se, however it does refer specifically to sentential negation and universal quantifiers, which is closely related to the subject matter of the present work. The most relevant parts of Zeijlstra's thesis are Chapters 3, 5, 6 and 8.

This section is organized as follows: Section 6.1 is a presentation of the relevant aspects of Zeijlstra (2004). Section 6.2 deals with my approach to explaining the behaviour of negated quantifiers in the Romance languages and addresses the four

questions raised at the end of Section 5. Section 6.3 addresses negated quantifiers in the Germanic languages. Section 6.4 presents an unresolved issue with the Germanic VO languages. Section 6.5 is a synopsis of Section 6.

### 6.1. Sentential Negation according to Zeijlstra (2004)

The foundation of Zeijlstra's theory is the claim that negation is not a functional category in all languages. Languages in which negation is a functional category, such as the Slavic and the Romance languages, make use of a NegP that is headed by a negation marker and is located between vP and TP.<sup>18</sup> Languages that have no functional category for negation, such as the West Germanic languages, have no NegP. In these languages, the negation marker is not a head but a maximal projection located in the specifier position of a verbal phrase. This distinction between languages with and without NegP enables Zeijlstra to predict with high accuracy whether a language will have preverbal or post-verbal negation markers and whether it will have negative concord and true negative imperatives. It also enables him to predict to some extent how a language will allow negation to interact with universal quantifiers, although there are issues in this area, as I will point out.

Another important feature of Zeijlstra's theory is the claim that negation markers in the Romance languages such as the Italian *non* and the Spanish *no* are base-generated in Neg (as heads of NegP). They carry an interpretable negative feature [iNeg] and are referred to as strong negation markers. The French negation marker *ne* is also the head of NegP, but it carries an uninterpretable negative feature [uNeg] and is referred to as weak. The French negation marker *pas* is base-generated as an adjunct to vP and carries the feature [iNeg]. It moves to [SPEC, NegP], where it checks the [uNeg] feature on *ne*. The [uNeg] feature on *ne* is then eliminated by the interpretable feature on *pas* by means of SPEC-Head agreement.<sup>19</sup>

There is one more aspect of Zeijlstra's theory of NegP languages that should be mentioned, and that is that there is a phonologically empty negation operator, referred to as Op  $\neg$ , that bears an [iNeg] feature and occupies SPEC of NegP. In strict negative concord languages, in which the negation marker bears the feature [uNeg], this operator provides the negative semantics to a phrase. In non-strict negative concord languages like Spanish and Italian, the negation marker bears the feature [iNeg] and can be the "realisation" of Op  $\neg$ , although it is in a head position rather than a specifier position.<sup>20</sup>

We proceed now to Zeijlstra's treatment of languages without NegP. In the Germanic languages, for example, negation markers like *not*, (English ) *nicht*

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<sup>18</sup> In Zeijlstra (2004) the location of NegP is parameterised. It is below TP in the Romance and Slavic languages, but it is above TP, in, for example, Hindi.

<sup>19</sup> For a discussion of negation markers in NegP languages see Zeijlstra (2004) 252-259.

<sup>20</sup> Zeijlstra (2004) p. 258.

(German) and *niet* (Dutch) are base-generated as adjuncts to vP and carry the feature [iNeg]. It is for this reason that they do not move.

Zeijlstra also refers to a general (cross-linguistically valid) constraint against raising a universal quantifier above a negation marker.<sup>21</sup> This refers mainly to Quantifier Raising at LF. I believe in the validity of this constraint because there is indeed cross-linguistic evidence that sentences are problematic when a universal quantifier outscopes negation, as shown in (159) to (164). I will come back to this constraint several times in the remainder of this chapter. I will refer to it as [ $*\forall$ QR/Neg], to be read, “No universal quantifier raising over a negation marker.” Later in this section I will discuss the relevance of this constraint to the four open questions listed at the end of Section 5.

Based on the constraint [ $*\forall$ QR/Neg] and the fact that in NegP languages negation dominates vP, Zeijlstra makes two predictions or claims. The first is that sentences in which a universal quantifier precedes negation will tend to be marked. This prediction is correct, as shown in (160) to (164). The second prediction is that because NegP is highly positioned and dominates all the verbal phrases, even if a universal quantifier precedes negation in the Surface Structure there will be a reverse scope or [ $\neg > \forall$ ] reading. This prediction is false. In languages with preverbal negation markers, if a quantifier precedes negation in spite of [ $*\forall$ QR/Neg], there is a very strong tendency for speakers to allow only a [ $\forall > \neg$ ] reading. Consider the following examples, all of which mean *No student has read the book*:

Russian:

- (165)  $?/*\forall$ sje studjenty nje pračitaly knigu.<sup>22</sup>  
 all students not read book

Bulgarian:

- (166)  $?V$ sički studenti ne sa čeli knjigata.<sup>23</sup>  
 all students not have read book the

Italian:

- (167)  $?T$ utti gli studenti non hanno letto il libro.  
 all the students not have read the book

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<sup>21</sup> Zeijlstra (2004) p. 76, 185.

<sup>22</sup> My thanks to Ekatarina Bobyleva for this judgement.

<sup>23</sup> My thanks to Margarita Gulian for this judgement.

Hungarian:

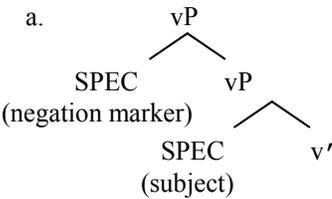
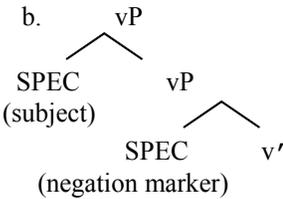
- (168) ?/\*Minden diák nem olvasta a könyvet.<sup>24</sup>  
 every student not read the book

Mandarin:

- (169) Swǒ-yǒu xué-shēng dōu méi-yǒu kàn shū.<sup>25</sup>  
 every student all not read book

The failure of this second prediction helps rather than hurts Zeijlstra's theory. As I argued in Section 3.2.5 and Section 4, negation should be interpreted in situ. In (165) to (169) the quantifier is in [SPEC, AgrSP] and c-commands the negation marker. We would therefore not expect negation to outscope the quantifier in these sentences.

Another important claim in Zeijlstra (2004) is that both subjects and negation markers in non-NegP languages are base-generated in [SPEC, vP], so that there is nothing preventing the subject and the negation marker from being base-generated in opposite positions, allowing either one to take scope over the other:

- (170) a.  b. 

In this way Zeijlstra attempts to account for the difference between sentential negation and constituent negation. He says that in sentential negation, Neg takes scope over the entire proposition, including the subject, as in (170a), while in constituent negation, negation has scope only over the lower vP constituent, as in (170b). It is very important to point out that Zeijlstra uses the difference in scope shown in the above two tree diagrams to explain the type of inverse scope that I explain using the Neg Stranding Hypothesis. Consider, for example, the two possible readings of sentences like the following, taken from Dutch:<sup>26</sup>

- (171) Iedereen loopt niet.  
 everyone walks not

Zeijlstra says that the standard interpretation of this sentence, which is based on (170b), is the  $[\forall > \neg]$  reading, with the meaning *Nobody walks*. A  $[\neg > \forall]$  reading,

<sup>24</sup> My thanks to Tamás Bíró for this judgement.

<sup>25</sup> My thanks to Ellen Xu for this judgement.

<sup>26</sup> See Zeijlstra 2004, Section 6.5, pages 185-189.

which is based on (170a) and has the meaning *Not everyone walks*, is also possible, although this is a sub-standard reading not accepted by everyone. The fact that this reading is downgraded can very possibly be attributed to a violation of [ $*\forall$ QR/Neg]. Zeijlstra must still explain how the [ $\neg > \forall$ ] is possible given the [ $\forall > \neg$ ] word order. He does this by claiming that when the subject quantifier *iedereen* (*everyone*) moves in (170a), only its syntactic and phonological features move, while its semantic features remain behind, thereby maintaining the desired scopal relations. I will explain in Section 6.3 why I prefer the Neg Stranding Hypothesis as a means of accounting for the second reading of (171).

Before concluding this sub-section, I would like to address the question of why a principle such as [ $*\forall$ QR/Neg] would exist at all. I would propose the admittedly subjective hypothesis that it follows from my claim in Section 3.2.5 that negation is simply a stronger form of quantification than a universal quantifier. One could say that there is a hierarchy of quantificational strength and that negation simply outranks universal quantification in that hierarchy. If this is true, it is no surprise that the negational functional category is typically located higher than other types of quantification, especially in NegP languages. This could explain why it is almost universally unnatural for universal quantification to outscope negation. The word order [ $\forall > \neg$ ] creates a kind of potential ambiguity or conflict because the order of the two elements (and their scope, given that Neg is interpreted in situ) is not consistent with the relative strength of negation vs. universal quantification. This is why sentences with [ $\forall > \neg$ ] word order are avoided. It is very easy to avoid such sentences, because there are simple, unambiguous alternatives. I offer examples from English to illustrate this. Consider first the following ambiguous sentence:

(172) All the students did not come.

The two possible interpretations of this sentence can easily be unambiguously formulated in the following ways:

(173) Not all the students came.

(174) No student came.

Similar alternative strategies exist cross-linguistically. To summarise, then, I am suggesting that there are perhaps hierarchies of strength in quantification, and negation would be the strongest.<sup>27</sup>

I have presented the applicable aspects of the theory of sentential negation in Zeijlstra (2004). I am now ready to draw on this theory in order to present my own theory of constituent or quantifier negation. In Section 6.2 I discuss NegP languages and address the four questions presented at the end of Section 5. In Section 6.3 I discuss non-NegP languages.

## 6.2. NegP Languages

### 6.2.0. Introduction

This sub-section will have five parts, one for each of the four questions raised at the end of Section 5 plus a review of Section 6.2.

#### 6.2.1. Sentential Negation with Negated Constituent Reading

The first question is as follows: Why is it that in the Romance languages grammatical sentences which contain a universal quantifier and look like cases of sentential negation only allow a negated quantifier reading if the quantifier follows negation?

This question relates to sentences (153) to (158). One of these, sentence (155) from Romanian, is repeated here for convenience:

(175) Studenții nu au citit toți cartea.  
students the not have read all book the

The forced  $[\neg > \forall]$  reading of this sentence is a direct result of the positioning of negation in the Romance languages. Because the negation marker in a sentence such as (175) is in the head position of NegP, it c-commands everything that comes after it. Thus, even though it is a sentential negation marker it takes scope over the quantifier and a  $[\neg > \forall]$  reading is the result. I should point out that the same thing can happen in the Germanic languages if a quantifier is stranded below a sentential

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<sup>27</sup> This idea of the relative strength of different types of quantification is not the same as the scopal hierarchy that one finds in Beghelli and Stowell (1997) or Brody and Szabolcsi (2003). Nor is it the same as the scales of implicature in, for example, Büring (1997), which refer to the relative implicature or entailment of quantifiers with respect to each other, such as *always* > *often* > *sometimes* > *once*. Nonetheless, it would be surprising if strength of quantification were not related in some way to scopal hierarchy and scales of implicature. An investigation of this would be beyond the scope of this thesis, but the topic deserves investigation. Büring (1997) also notes that if two “extreme quantifiers” like *not* and *all* co-occur and one has rising and the other falling intonation, the positive extreme cannot take scope over the negative extreme. He does not go so far as to propose a hierarchy of strength, but this is indirectly implied in his observation.

negation marker (a negation marker that negates the finite verb in the clause). Observe the following example from English:

(176) The children may not have been all watching the movie.

This cannot be a case of Neg Stranding, given that the negation marker is higher than the quantifier. Negation immediately follows the finite modal verb *may*, so it is a sentential negation marker. A quantifier has been stranded well below the negation marker and is c-commanded by it. The only reading available for this sentence is that it may be the case that not all the children have been watching the movie. Note that we are not talking about traces here. In both the Romance and Germanic languages, if a quantifier is stranded within the c-command domain of negation, it is reasonable to expect that it will fall under the scope of negation.

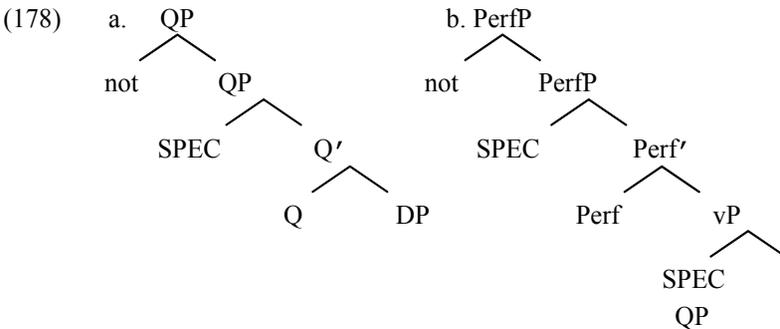
### 6.2.2. Difficulty of $[\neg > \forall]$ Inverse Scope in the Romance Languages

Why can the negation marker be outscoped by the universal quantifier in West Germanic while this is difficult or impossible in the Romance languages, as indicated in (159) to (164)?

This question refers to sentences like the following Italian one, which only allows a  $[\forall > \neg]$  reading, and its English equivalent, which allows a  $[\forall > \neg]$  or a  $[\neg > \forall]$  reading:

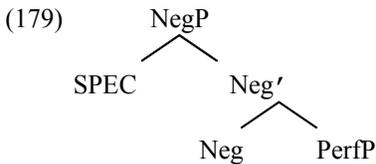
- (177) a. Tutti gli studenti non hanno letto il libro.  
 all the students not have read the book
- b. All the students have not read the book.

I have argued that the ambiguity of a sentence like (177b) can be explained by positing two different base-structures, as follows:



The structure in (178b) generates sentential negation and a  $[\forall > \neg]$  reading. The structure in (178a) combined with Neg Stranding produces the  $[\neg > \forall]$  reading. Thus, the Germanic languages have two options. One might ask why an inverse

scope reading is not possible under (178b), since the negation marker in both (178a) and (178b) c-commands a trace of the moved subject. As I mentioned in Section 3.1, in a structure like (178a) the negation marker is embedded in the phrase where the moved subject QP originated and has a sister relationship with the lowest trace of that QP. Negation thus takes scope over the entire A-chain of the moved constituent. The same cannot be said of the negation marker in (178b). Regarding (177a), I would argue that it is not ambiguous because the Romance languages have only one option, namely, the following one:



The point is that the Germanic languages have the option of sentential or constituent negation while the Romance languages have only the sentential negation option. The constituent negation option is not available in the Romance languages because the negation marker in the Romance languages is a syntactic head and cannot simply be adjoined to a maximal projection the way Germanic negation markers can. The concept of a Germanic-style negated QP is thus not possible in the Romance languages.

#### 6.2.3. Markedness of [ $\forall > \neg$ ] Word Order in the Romance Languages

The question is why [ $\forall > \neg$ ] word order in the Romance Languages seems to cause markedness or downgrading, as shown in (160) to (164) or (177). This question has for all practical purposes already been answered. The raising of a quantifier across negation seems to violate a general principle, which I have abbreviated [ $*\forall$ QR/Neg]. I would venture to say that even languages in which the [ $\forall > \neg$ ] word order is grammatical it is less natural, as I discussed in Section 6.1. In other words, there are unambiguous alternatives to sentences like (177b).

#### 6.2.4. No Stranded Negated Quantifiers in the Romance Languages

The fourth and final question from Section 5 is as follows: Why can negated quantifiers be stranded in the Germanic languages but not in the Romance languages? This question refers to the contrast seen in the following pair of Spanish sentences:

(180) No todos los alumnos han leído el libro.  
not all the students have read the book

(181) \*Los alumnos han leído no todos el libro.  
the students have read not all the book

This phenomenon cannot be explained by appealing to the [ $*\forall R/Neg$ ] constraint, because in (181) the universal quantifier does not have scope over the negation marker. There must be another explanation for why a negated quantifier cannot be stranded in the Romance languages. Could it be that there simply are no negated quantifiers in NegP languages, and that what looks like a negated quantifier in (180) is really something else? Upon closer inspection, this might actually follow from Zeijlstra's NegP theory. In the Germanic languages, since the negation marker is a maximal projection that occupies a SPEC position, it can be embedded in the SPEC position of any phrase, including QP, and help to form a true negated quantifier. In the Romance languages, negation markers are syntactic heads. One would therefore not expect them to occupy SPEC of QP, and this prevents the formation of negated QPs like those in the Germanic languages. There is in fact much less evidence in Romance than in West Germanic that the negation marker and the universal quantifier form any kind of constituent. The best evidence of this is that negated quantifiers can be stranded in West Germanic but not in Romance, even though non-negated quantifiers can be stranded in both language families. In addition to this evidence, I offer the following Italian sentences as evidence that true negated quantifiers do not exist in the Romance languages:

- (182) a. Non tutti gli studenti hanno letto il libro.  
not all the students have read the book
- b. Non hanno letto tutti gli studenti il libro.  
not have read all the students the book
- c. \*Hanno letto non tutti gli studenti il libro.  
have read not all the students the book
- d. \*Gli studenti hanno letto non tutti<sub>i</sub> i libri<sub>i</sub>.  
the students have read not all the books

Let's take a look at the implications of these sentences one by one. Sentence (182a) could be interpreted as a negated quantifier construction, which I am questioning the existence of, or it could be that the subject QP has combined with the negation marker (or the negation operator) on its way to subject position. This is in fact what I will propose below. Example (182b) is an instance of sentential negation in which the subject QP has not been raised out of SPEC of vP, resulting in VSO word order. The crucial sentence is (182c). If the negated quantifier *non tutti* (*not all*) existed, (182c) should be just as acceptable as (182b). That is, the negated quantifier and its complement DP in (182c) should have been able to remain in vP just as the subject QP remained in vP in (182b).

Sentence (182d) shows basically the same phenomenon, except with a direct object instead of a subject. If there were really such a thing as a negated quantifier in the Romance languages, there should be no problem with (182d). Examples (182c) and (182d) are different, given that one contains a negated subject and the other a negated object, but they have something in common, and that is the fact that they

both contain a negated element that has not passed through NegP to a higher position. This reinforces the idea that Germanic-style negated quantifiers do not exist in the Romance languages and that a negated quantifier can only be formed in the Romance languages if the QP containing it moves through NegP and combines with negation. The model that I will propose below addresses this.<sup>28</sup>

I will now address the issue of how negated quantifiers are formed in the Romance languages. Since I will be basing my analysis and model on an adaptation of Zeijlstra (2004) to constituent negation, it is appropriate to begin by working through some derivations to show how Zeijlstra's model and my model work. Consider the following two Italian sentences:

(183) I ragazzi non hanno tutti una bicicletta.  
the children not have all a bicycle

(184) Non tutti i ragazzi hanno una bicicletta.  
not all the children have a bicycle

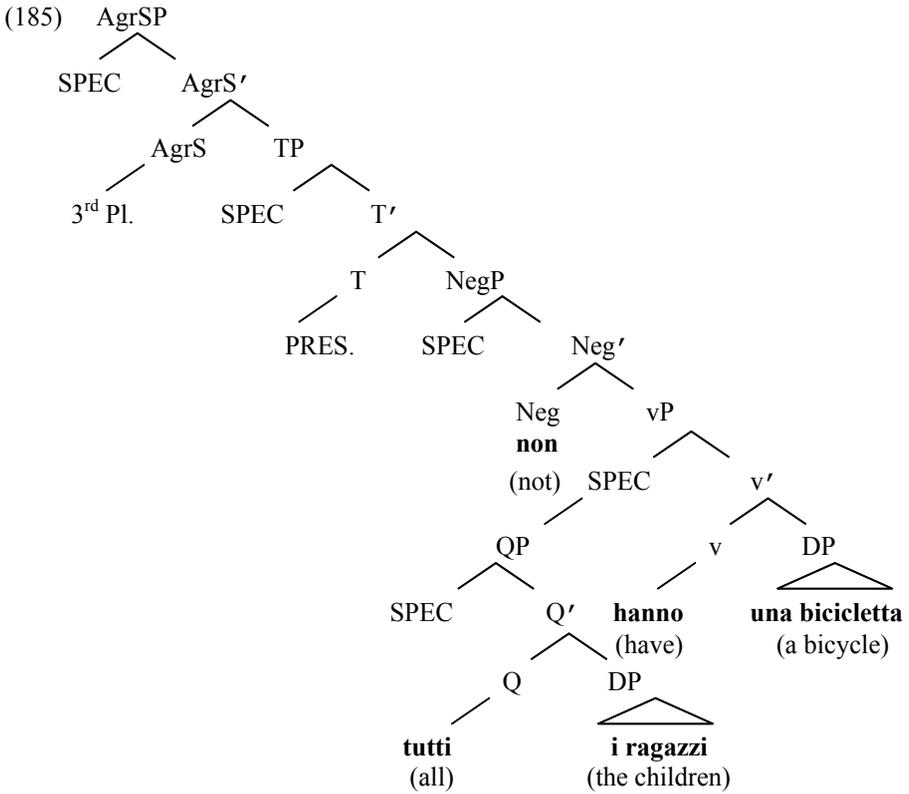
Sentence (183) is an instance of sentential negation with a stranded (unnegated) quantifier and can be derived in a straightforward manner using Zeijlstra's model. Using Zeijlstra's approach, a simplified derivation would begin with the pre-movement structure in (185).<sup>29</sup> In this diagram, the DP *i ragazzi* (*the children*) will move out of the QP and end up in subject position, in [SPEC, AgrSP]. The quantifier *tutti* (*all*) is stranded in its base-position. The verb *hanno* (*have*), which will start as an uninflected root, moves to Neg, where it picks up the negation marker *non*. It then moves to T, where it picks up present tense, and to AgrS, where it picks up third person plural inflection. A potential problem with this derivation is that the negation marker *non* is not a clitic, which raises the question of whether it should move with the verb as though it were inflection. Zeijlstra says that *non* cannot be subject to incorporation, since it is not a clitic, but it is capable of compounding.<sup>30</sup> I take this as a plausible assumption.

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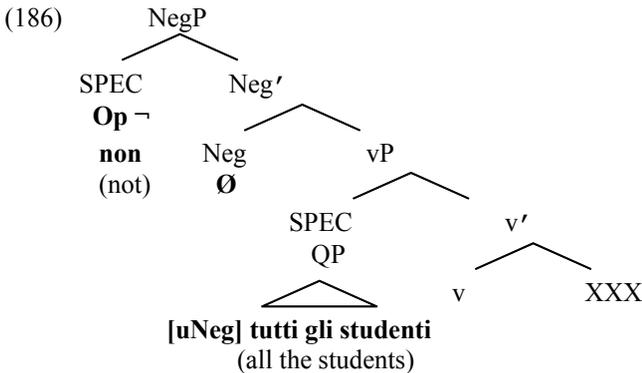
<sup>28</sup> I should point out that sentence (182d) can actually be grammatical if the negated quantifier phrase appears in a contrastive *not...but* construction, for example, "The student read not all the books but some of them." This would presumably involve some kind of Conjunction Phrase or ConjP that would be outside the scope of this study. In any case, it does seem to be the nature of negated non-subject constituents in general that they are grammatical only if they have a contrastive meaning. Why there should be less pressure on negated subjects to have a sharply contrastive meaning is not immediately clear.

<sup>29</sup> For ease of presentation I combine vP and VP and omit AgrOP.

<sup>30</sup> Zeijlstra (2004) p. 184.



If (185) is the derivation of (183), how would I derive (184), given that I do not want to posit a negated quantifier like the ones found in the Germanic languages? As I mentioned, since negated subjects can only appear above NegP, it appears that they must pass through NegP in order to combine with negation. Although this is a rather simple concept, the reader will see that it is difficult to implement it. We begin with the following structure, which is based on (but not identical to) the structure used in Zeijlstra (2004) for sentential negation in the Romance languages:



In this model, I claim that there is an uninterpretable negative feature on the quantifier if the speaker intends to negate it. The feature is thus optional and not lexical. The QP moves to SPEC of NegP to eliminate its uninterpretable feature and combines with Op  $\neg$ . Because there is at this stage no phonetic realisation of negation, Op  $\neg$  is realised as the negation marker *non* and the combination *non tutti gli studenti* (*not all the students*) moves to subject position. This model correctly predicts that there will be no negated quantifiers below NegP, stranded or otherwise.

My model follows Zeijlstra (2004) in two important ways. First of all, it makes use of the distinction between languages that have NegP and those that do not. Secondly, it applies to the nominal (constituent) domain the same derivational methodology that Zeijlstra applies to the verbal (sentential) domain. In Zeijlstra's model for sentential negation in Italian, for example, a verb moves from v to Neg, head-to-head, and combines with the negation marker. My model runs parallel to Zeijlstra's except that it deals with the nominal domain and involves SPEC-to-SPEC movement. Note that Zeijlstra's model and mine both involve right-adjunction to the negation marker or operator, not necessarily what one would expect in head-first languages like the Romance languages.

While my model shows important similarities to Zeijlstra (2004), it also shows two significant departures from it. The optional [uNeg] feature on the QP is one such departure. One would normally expect such a feature to be inherent or lexical in nature and to be borne by negative words such as the Italian *nessuno* (*nobody*) and *niente* (*nothing*). I am proposing that such a feature can be optional, depending on whether a speaker intends to negate the QP or not. There will be more on this shortly.

Another significant departure of the model in (186) from Zeijlstra (2004) is the way in which the negation operator Op  $\neg$  is phonetically realised as the negation marker. Zeijlstra does say that the negation marker in a non-strict negative concord language like Italian can be the "realisation" of the operator and accomplish what the operator accomplishes,<sup>31</sup> but in saying this he is not claiming that a negation marker, a syntactic head, is jumping from Neg into [SPEC, NegP]. He is simply saying that because the negation marker in a non-strict negative concord language bears an [iNeg] feature and can provide the negative semantics to a phrase and "check" the [uNeg] features of other negative elements, it is the realisation of the negation operator. Therefore, there is a difference between my model and Zeijlstra's. I should point out that Zeijlstra does claim that there are instances in which a negation operator is phonologically realised in its SPEC position.<sup>32</sup> The problem is that in Zeijlstra's examples it is not the normal sentential negation marker that serves as the phonological realisation of the operator, but another negative word such as *pas* (*not*) in French and (*mai*) (*ever/never*) in Italian. This does not, in my opinion, rule out that the normal sentential negation marker might under some circumstances be the phonological realisation of the negation operator.

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<sup>31</sup> Zeijlstra (2004) p. 258.

<sup>32</sup> Zeijlstra (2004) p. 246-247.

There are two other major issues with the model in (186). The first issue is that it does not explain why the negation operator is not *always* phonologically realised when it combines with another element. For example, in the following Italian sentence the negative word *nessuno* (*nobody*) has passed through [SPEC, NegP] and checked its [uNeg] feature by forming a sort of compound with the operator, but there is no phonological realisation of the operator:

- (187) a. Nessuno ha fatto niente.  
           no one has done nothing  
           (No one has done anything.)
- b. \*Non nessuno ha chiamato.  
           not no one has called

To get around this inconsistency, I would have to say that a QP bearing [uNeg] is somehow different from an n-word like *nessuno*. It does not seem unreasonable to say that there is a difference between an indefinite n-word such as *nessuno*, which always bears the feature [uNeg], and a definite QP, which does not inherently bear [uNeg]. Nonetheless, this is difficult to capture formally in a model. The position that I will take on the phonological realisation of the negation operator in the model in (186) is that it is an issue but not a convincing reason to abandon (186).

Another issue with the model in (186) is that it makes a false prediction. Consider again (184), repeated here:

- (188) Non tutti i ragazzi hanno una bicicletta.  
           not all the children have a bicycle

According to the model in (186), the negation marker in (188) originated as  $Op \neg$  in [SPEC, NegP] and is the phonological representation of the operator. A similar thing occurs in (187a), in which the n-word *nessuno* (*nobody*) combines with  $Op \neg$  before moving to subject position. The difference between (188) and (187a) is that  $Op \neg$  is phonologically realised in (188) but not in (187a). Here is the problem: In (187a) the operator, which has combined with an n-word, licenses a second n-word in the sentence, namely, *niente* (*nothing*). One would therefore expect the negation marker in (184)/(188) to also license another n-word, but it does not:

- (189) \*Non tutti i ragazzi hanno fatto niente.  
           not all the children have done nothing

In order to make this sentence grammatical, a second negation marker is needed:

- (190) Non tutti i ragazzi non hanno fatto niente.  
           not all the children not have done nothing  
           (Not all the children haven't done anything.)

What is apparently happening is that in (189) the negation marker, which is the phonological realisation of  $\text{Op } \neg$ , because it is embedded in a QP can no longer bind event variables lower in the sentence. In (187a), a phonological realisation of  $\text{Op } \neg$  is not necessary because the n-word *nessuno* (*nobody*), which is inherently negative, takes over the function of  $\text{Op } \neg$ . It is not embedded in another phrase and can therefore bind an event variable (and license another n-word) lower in the sentence. The ungrammaticality of (189) is surely an issue with the model proposed in (186) but it would also be an issue for Zeijlstra (2004) and probably for any theory of negation.

I now need to return to the issue of the optionality of the [uNeg] feature that I posit on the quantifier in (186). Normally, such a feature is considered to be lexical, borne by n-words, and not optional. Nonetheless, if the feature cannot be optionally borne by a QP that is not inherently negative, there is no way to force the QP to move through NegP and to subject position. Remember that in languages like Italian, Portuguese, Romanian and Spanish a subject may remain in vP, but not if it is negated.

There are various tricks that one might try in order to avoid positing an optional [uNeg] feature in order to get a negated QP into sentence-initial position, but it seems that they all lead us right back to the need for an optional [uNeg] feature after all. One might, for example, claim that there is a second NegP located above IP and that subjects move into the SPEC position of this higher NegP and this produces sentence-initial negated subjects such as those in (188) and (190). The problem with this approach is that in most Romance languages the subject is not forced to move to canonical subject position. Therefore, placing a NegP above IP only solves half the problem. It gives us the potential for a sentence-initial negation marker, but it does not provide a motive for a subject to move up to it.

Another trick that one might try would be to say that there is a NegP embedded in the SPEC position of the subject QP and that it is this NegP that makes it obligatory for a negated subject QP to move through the NegP that dominates vP. Under this approach, however, one would have to say that there is an [uNeg] feature somewhere in the NegP located in [SPEC, QP]. This is an implausible solution, because in languages like Italian and Spanish neither the specifier nor the head of a NegP bears the feature [uNeg].

We have looked at some serious issues with the model in (186). Those issues notwithstanding, the model has a lot of advantages, which I will now summarise. Because it is based on Zeijlstra (2004) it allows a unified approach to sentential and constituent negation. Also, by claiming that in the Romance languages the negation marker is a head, not a specifier, and that this head is located in NegP, above vP, the model in (186) explains why there can be no stranded negated quantifiers in the Romance languages and no  $[\neg > \forall]$  or inverse scope readings with  $[\forall > \neg]$  word order. It also correctly predicts that negated quantifiers can only be found in canonical subject position in the Romance languages. Subjects with the feature [uNeg] will move up to SPEC of AgrSP and on the way they can pass through

NegP, check their uninterpretable feature and combine with Op  $\neg$ . If they do not do this, the derivation will crash, as the following Italian sentences illustrate:

- (191) a. Sono venuti tutti i ragazzi.  
           are come all the children  
       b. \*Sono venuti non tutti i ragazzi.  
           are come not all the children

Object quantifiers bearing the feature [uNeg] would normally not have the occasion to move high enough to check their uninterpretable feature. This is why one does not find negated object quantifiers, stranded or otherwise, in the Romance languages, as shown in the following sentence from Spanish:

- (192) \*He visto a no todas las muchachas.  
       (I) have seen to not all the girls

What is interesting here is that a negated object *is* possible in the Romance languages if it is topicalised, in other words, if it has passed through NegP on its way to the topicalisation position. The following Romanian sentence clearly demonstrates this:

- (193) Nu pe toate fetele le- am văzut.  
           not on all girls the them (I) have seen

This sentence provides even more evidence that a negated constituent in the Romance languages must pass through NegP.

The model in (186) also makes the correct predictions on Small Clauses in the Romance languages. In Section 2.5 evidence was presented from English that a Small Clause is truly like a full sentence because it can have a negated constituent in subject position. In the Romance languages, which differ from the Germanic languages because they contain NegP, we find the same evidence. That is, what looks like a direct object is actually a Small Clause subject that has been raised out of the Small Clause and into [SPEC, AgrOP] of the main clause. Consider the following Italian sentence:

- (194) Considero non tutti gli studenti intelligenti.  
       (I) consider not all the students intelligent

As already shown, negated direct objects do not appear in post-verbal position in the Romance languages. The grammaticality of (194) can be explained if one assumes that the direct object of the matrix verb is actually the subject of a Small Clause and that a Small Clause, like a full sentence, can contain a NegP. Just like a main clause subject, the subject of a Small Clause can move through NegP on its way to subject position and combine with Op  $\neg$  to form a negated quantifier. Furthermore, if the

Small Clause subject moves to [SPEC, AgrOP] of the main clause, the model in (186), in combination with the Stranding Analysis, predicts that the negated quantifier can be stranded in the Small Clause. This prediction is borne out:

- (195) Considero gli studenti non tutti intelligenti.  
 (I) consider the students not all intelligent

Finally, my model explains why in the Romance languages only a  $[\neg > \forall]$  reading is possible in a sentence such as the following Italian one:

- (196) I ragazzi non hanno tutti una bicicletta.  
 the children not have all a bicycle

The negation marker is not embedded in SPEC of vP or QP. It heads NegP and therefore takes scope over everything under it, including the quantifier.

### 6.2.5 Review of Section 6.2

In Section 6.2 I have attempted to answer four questions about differences between the Romance and Germanic languages in their handling of negated quantifiers. There were three theoretical foundations in my approach to these questions. First there were the arguments in Zeijlstra (2004) whereby negation is a functional category in the Romance languages but not the Germanic languages, meaning that the Romance languages have a highly situated NegP and that negation markers in these languages are syntactic heads rather than maximal projections. Secondly, we relied on a general constraint, also from Zeijlstra (2004), against moving universal quantification above negation, abbreviated [ $*\forall R/Neg$ ]. Finally, we applied a model that I proposed in (186) based partially on Zeijlstra (2004) but also based on the claim that a feature like [uNeg] can be optional or non-lexical. While there are some issues with the model that I have proposed, it has a lot of explanatory power.

Having looked at the NegP languages, we can now take a look at how my model, again building on Zeijlstra (2004), might apply to non-NegP languages at the constituent level.

## 6.3. Non-NegP Languages

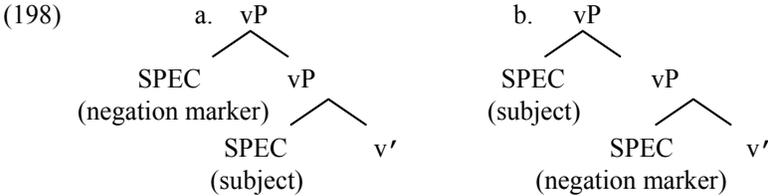
### 6.3.0 Introduction

Most of what I have to say about negated quantifiers in the Germanic languages has already been said in Sections 2 and 3. In those sections I offered an explanation for negated quantifier stranding in the Germanic languages by treating negation in those languages as a maximal projection located in a specifier position, following Zeijlstra (2004). I also explained inverse scope in the Germanic languages by proposing the Neg Stranding Hypothesis. There is still a residual matter to be discussed. It was

brought up in Section 6.1 and has to do with the following Dutch sentence, which is ambiguous for some speakers:

- (197) Iedereen loopt niet.  
 everyone walks not

Zeijlstra explains the ambiguity of this sentence by appealing to his claim that in the Germanic languages negation markers and subjects are both specifiers and that their order can be reversed:



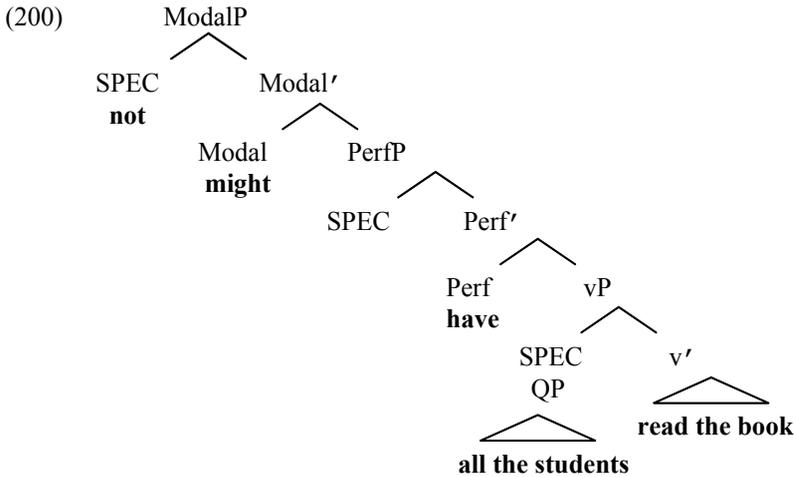
Zeijlstra says that the standard interpretation of (197), which is based on (198b), is the  $[\forall > \neg]$  reading, with the meaning *Nobody walks*. A  $[\neg > \forall]$  reading, which is based on (198a) and has the meaning *Not everyone walks*, is also possible, although this is a sub-standard reading. The fact that this reading is downgraded can very possibly be attributed to a violation of  $[\ast\forall\text{QR}/\text{Neg}]$ . Zeijlstra must still explain how the  $[\neg > \forall]$  reading is possible given the  $[\forall > \neg]$  word order. He does this by claiming that when the subject quantifier *iedereen* (*everyone*) moves over negation to subject position, only its syntactic and phonological features move, while its semantic features remain behind, thereby maintaining the desired scopal relations. There are four reasons why I do not believe that this is the correct analysis, which I will now elaborate on in the following sub-sections. I will show that rejecting (198b) and adopting my theory of constituent negation with Neg Stranding strengthens Zeijlstra's theory.

### 6.3.1 Zeijlstra's Structure in Sentences with Multiple Verbal Elements

My first argument against (198b) is that it works only in simplex sentences with just one verbal element. Imagine a sentence with three verbal elements, such as the following:

- (199) All the students might not have read the book.

If this sentence is an instance of sentential negation, the negation marker must be located in [SPEC, ModalP]:



Example (199) has two readings. In order to obtain the  $[\forall > \neg]$  reading within the framework of Zeijlstra (2004) one would have to start with a structure in which the subject is base-generated above negation, as it is in (198b). This would necessitate base-generating the subject in a second (higher) SPEC position in ModalP. However, this position is not a suitable base-position for subjects because a modal verb cannot assign a  $\theta$ -role. The subject must be base-generated in [SPEC, vP]. Zeijlstra would therefore have to derive both the  $[\forall > \neg]$  and the  $[\neg > \forall]$  reading of (199) from (200), which corresponds to (198a). This is feasible within Zeijlstra's model, but not ideal. In order to get the  $[\forall > \neg]$  within Zeijlstra's framework the subject QP would simply move across negation into subject position. This would constitute a violation of  $[\ast\forall\text{QR}/\text{Neg}]$ , but a violation does not have to lead to ungrammaticality. It may only lead to markedness. In order to get the  $[\neg > \forall]$  reading, the subject QP would move across negation but only its syntactic and phonological features would move. Its semantic features would remain behind, and the  $[\neg > \forall]$  reading would be obtained. There will be more on this shortly. The point of this sub-section is that (198b) is of no use if there is more than one verbal element in a clause, assuming that auxiliaries and modals do not assign a  $\theta$ -role.

### 6.3.2 Co-occurrence of Sentential and Quantifier Negation

My second argument against (198b) is that there are sentences in which a  $[\neg > \forall]$  reading and a  $[\forall > \neg]$  reading occur at the same time:

(201) The students have not all not read the book.

This sentence shows that a theory of sentential negation must be supplemented with a theory of constituent negation. Otherwise, in order to account for the co-occurrence of a  $[\forall > \neg]$  and a  $[\neg > \forall]$  reading, one would have to apply (198a) and (198b) at the same time, which is impossible. Only one of the structures can be

correct, and this cannot be (198b), for reasons already mentioned. The best solution to this problem is to dispense with (198b) and to obtain a  $[\neg > \forall]$  reading by base-generating the negation marker in QP.

### 6.3.3 Missed Generalisation

My third argument against (198b) is that it misses a generalisation. Remember that the distinction between (198a) and (198b) is used to explain the ambiguity of the following Dutch sentence:

- (202) Iedereen loopt niet.  
 everyone walks not

One of the readings of this sentence is the same as that of the following sentence:

- (203) Niet iedereen loopt.  
 not everyone walks

This sentence is an instance of constituent negation and is outside the scope of Zeijlstra (2004), but it is lexically and semantically the same as the  $[\neg > \forall]$  reading of (202). In other words, both sentences are instances of constituent negation. The distinction between the structures in (198a) and (198b) does not account for this. The Neg Stranding Hypothesis does.

### 6.3.4 Partial Movement

My fourth and final reason for not following Zeijlstra's manner of explaining the inverse scope seen in (199) and (202) was referred to in Section 6.3.1. It has been shown that the structure in (198b) is of no use. The point I want to make now is that even (198a) is only optimal for a sentential negation or  $[\forall > \neg]$  reading because in order to obtain the  $[\neg > \forall]$  reading in (199) and (202) from (198a) a partial movement solution is needed, that is, movement of syntactic and phonological features without semantic features. This kind of partial movement is totally unnecessary in the model that I have proposed. For example, for the  $[\forall > \neg]$  reading of (199) I begin with (200), which is not incompatible with Zeijlstra's (198a). For the  $[\neg > \forall]$  reading I start with a structure in which the negation marker originates in [SPEC, QP] and is stranded there. This approach allows one to dispense with the problematic structure in (198b) and with partial movement, and it can account for structures with more than one verbal element.

To summarise Section 6.3, dispensing with the structure in (198b) and adding a theory of constituent negation in which the negation marker is base-generated in the SPEC position of a nominal phrase and can be stranded there is not incompatible with Zeijlstra's overall theory and would in fact only strengthen it.

#### 6.4 Open Question: Negated Objects in Germanic VO Languages

I end this section with an unsolved problem. I have hypothesised that in negated nominal constituents in the Germanic languages the negation marker is in the SPEC position of that constituent. I can think of no reason why there should be any constraints on which kinds of constituents can contain a negation marker in their SPEC position. In Sections 1.1 and 3.1 I showed that in the Germanic languages a negation marker can appear in the SPEC position not only of QP but of DP, PP and VP. Furthermore, I can think of no reason why subject constituents should be able to carry a negation marker in their specifier positions while object constituents should not. The following examples from German, which contain stranded and non-stranded negated object quantifiers, confirm my expectations:

- (204) a. Der Student hat nicht alle die Bücher gelesen.  
           the student has not all the books read
- b. Der Student hat die Bücher nicht alle gelesen.  
           the student has the books not all read

Unlike German, English poses a problem. In the stranding of negated subject quantifiers it behaves like German, not like the Romance languages:

- (205) a. Die Studenten haben nicht alle das Buch gelesen.  
           the students have not all the book read
- b. The students have not all read the book.

However, it does not allow the equivalents of the examples in (204), in which there are negated object quantifiers:

- (206) a. \*The student has read not all the books.  
           b. \*The student has read the books not all.

Example (206b) can be blocked by arguing, as I did in Section 6 of Chapter 2, that object quantifiers can only be stranded in scrambling languages. For (206a) there is no explanation. I mentioned in Section 2.1 of this chapter under example (43d) that there seems to be a problem in the Romance and Germanic languages when constituent negation appears lower than the position of sentential negation. This is easy to explain in the Romance languages. It is explained by the model that I proposed in Section 6.2. In the Germanic VO language English it remains an unexplained fact.<sup>33</sup> That constituent negation must appear higher than sentential negation in the Germanic languages is evident from the following English and German examples:

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<sup>33</sup> According to my informants, the same problem occurs in other VO Germanic languages such as Swedish, in which the structure in (206) is also impossible.

- (207) a. The students have not all not read the book.  
 b. \*The students have not not all read the book.
- (208) a. Die Studenten haben das Buch nicht alle nicht gelesen.  
 the students have the book not all not read  
 b. \*Die Studenten haben das Buch nicht nicht alle gelesen.  
 the students have the book not not all read

The idea that constituent negation markers cannot appear to the right of where sentential markers appear is mildly interesting but it is first of all purely descriptive and secondly un-tested cross-linguistically. There seems to be something about negated constituents in general, especially negated objects, that makes them require a contrastive setting. In fact, (206a) sounds much better if it is rephrased as follows:

- (209) The student has read not all the books but some of them.

It is not clear why objects are under more pressure than subjects to appear in a contrastive context. It is also not clear why German, an OV language, does not require that a negated object appear in a contrastive setting.

The main subject of this chapter has been the stranding of negated quantifiers. The English sentence in (206a) raises a question that is even more basic than the issue of stranded negated quantifiers. It raises the question of how a negated quantifier is generated in the first place. More specifically, it raises the question of why English generates negated subject quantifiers but not negated object quantifiers. Suppose that one argued that in the Germanic languages the position occupied by sentential negation, even if no sentential marker is present, licenses constituent negation in some way that requires constituent negation to be raised to the sentential negation level for licensing. If no raising takes place, as in (206a), a derivation crashes. In the German examples in (204), the direct object, which is a negated QP, is scrambled above the sentential negation position and this licenses the negated objects. This approach is untenable for two reasons. First of all, it is tantamount to saying that Germanic negation markers sometimes bear a [uNeg] feature that needs checking. This would completely go against all the arguments presented in this chapter and in Zeijlstra (2004). Or, one would have to say that sentential negation markers in Germanic are different from constituent negation markers, the former bearing an [iNeg] feature and the latter bearing the feature [uNeg]. This is highly unlikely. However, I must point out that it is very interesting that an English sentence with a negated object improves if that object is fronted and thereby moved above the position of sentential negation:

- (210) a. \*Fate has blessed not all of your children.  
 b. Not all of your children has fate blessed.

The (b) sentence sounds poetic. Thus, there does seem to be something to the idea that constituent negation must appear above the position of sentential negation.

Still one other possibility is that Focus plays a role. It has been argued, for example by Krifka (1998), that the preverbal position in German is a Focus position. Perhaps negation is in and of itself focalised. In an OV language, a negated object can appear preverbally. In a VO language like English a negated object in normal object position cannot be focalised. In (210b) the fronted object immediately precedes the verb and could be considered to be focalised or topicalised. The problem with this analysis is that it is not at all clear that an item must be in a preverbal position to be focalised in English. Krifka points out that English is free in assigning Focus, and that post-verbal positions are also available for focalisation. For the time being I am forced to leave this question for future research.

### 6.5 Synopsis of Section 6

In Section 6 I have proposed a model for negated quantifiers in the Romance languages with the goal of explaining certain differences between the Germanic and Romance languages in their handling of negated quantifiers pointed out in Section 5. My model has four theoretical foundations. The first of these is the assumption that the basic concepts in the theory of sentential negation in Zeijlstra (2004) regarding NegP and non-NegP languages are also applicable at the constituent negation level. The second foundation, also taken from Zeijlstra (2004), is that there is a principle whereby the movement of a universal quantifier across negation is marked. I suggested that this might have to do with the relative strength of negation with respect to universal quantification. The third foundation is the Neg Stranding Hypothesis, my idea that a negation marker can be stranded by itself in QP, and the fourth is the idea that in the Romance languages the feature [uNeg] is not necessarily inherent or lexical and that Op  $\neg$  can be realised as the negation marker when it combines with a QP bearing the [uNeg] feature.

Although there are a lot of issues with the model that I have proposed for the Romance languages, it has a lot of advantages, such as offering a unified approach to sentential and constituent negation. It also makes a lot of correct predictions. By postulating that negated constituents in the Romance languages are formed when a constituent bearing a [uNeg] feature passes through NegP and combines with Op  $\neg$ , it correctly predicts that no negated constituents will be found below NegP, stranded or otherwise. Also, it correctly predicts that sentences in which a universal quantifier precedes a negation marker can be ambiguous in the Germanic languages but not the Romance languages because the Germanic languages can have a negation marker in the SPEC position of a nominal phrase or a verbal phrase while the Romance languages only have the option of placing negation in the head position of a highly positioned NegP.

The model that I proposed is unable to explain why negated direct objects cannot be generated in VO Germanic languages like English. There seems to be a requirement that constituent negation appear higher than the position of sentential negation, but this is merely an observation that is neither explanatory nor cross-linguistically tested.

## 7. Chapter Summary

This chapter has dealt with negated quantifiers within the framework of the Stranding Analysis that originated in Sportiche (1988) and has also presented several interesting issues in the study of negated quantifiers. In Section 1 we explored the concept of negated constituents in general and negated quantifiers in particular and demonstrated that quantifier negation is different from and independent of sentential negation and that a stranded negated quantifier is not simply a non-negated stranded quantifier that happens to fall under the scope of a sentential negation marker. In Section 2, the stranding of negated quantifiers was analysed in different languages and in a variety of different syntactic structures, including mono-clausal sentences, raising constructions, control structures, sentences involving A-bar movement, Small Clauses and sentences involving remnant movement and IPP constructions. The data could be accounted for within the framework of the Stranding Analysis.

In Section 3 we looked at the phenomenon in the West Germanic languages whereby  $[\forall > \neg]$  word order can result in a  $[\neg > \forall]$  reading. In order to explain this type of inverse scope I presented the Neg Stranding Hypothesis, according to which the negation marker in a negated constituent can be stranded inside that constituent. I pointed out that under the copy theory of movement one could claim that Neg Stranding involves reconstruction under A-movement. However, I argued that reconstruction under A-movement is a very unreliable means of resolving ambiguity and suggested that under Neg Stranding a stranded negation marker retains scope over the constituent that has stranded it without the need for reconstruction by virtue of its symmetric c-command relationship with the lowest trace of the stranding element. I proposed that this configuration enables a stranded negation marker to take scope over the entire A-chain of the moved element, and pointed out that a stranded quantifier or a stranded preposition have the same relationship to the constituent that has stranded them. I also provided evidence that even if one relies on A-movement reconstruction to explain inverse scope, the Neg Stranding Hypothesis is indispensable because constituent negation markers can in fact be stranded.

In section 4 I presented various alternatives to the Neg Stranding Hypothesis, all of which turned out to be problematic. In Section 5 I introduced negated quantifiers in the Romance languages and pointed out several differences between the Romance languages and the Germanic languages in their handling of negated quantifiers. In Section 6 I presented my own model for quantifier negation in the Romance languages, which draws heavily on the theory of sentential negation in Zeijlstra (2004). There are some issues with this model, but by drawing on Zeijlstra (2004) it enables one to take a unified approach to constituent and sentential negation, it explains the differences between the Germanic and Romance languages noted in Section 5, and it makes a lot of correct predictions about the Romance languages, including the non-existence of negated constituents below NegP and the unavailability of inverse scope readings.

### Chapter 3, Appendix: Constituent Negation and *Do*-Insertion

In Sections 1.2, 2.1 and 3.1 of Chapter 3 two interesting facts about English were revealed. First of all, *do*-insertion is necessary not only in sentential negation but also in certain cases of constituent negation. For example, the following sentence requires *do*-insertion regardless of whether it has a sentential or constituent negation reading:

- (1) All boys do not like football.

Secondly, while both English and German allow the stranding of a quantifier in [SPEC, vP] when no auxiliary or modal is present, only German allows the stranding of a *negated* quantifier in this position. The following examples demonstrate this asymmetry between German and English:

- (2) a. The students all read the book.  
b. \*The students not all read the book.
- (3) a. Die Studenten lasen alle das Buch.  
the students read all the book.  
b. Die Studenten lasen nicht alle das Buch.  
the students read not all the book.

The purpose of this appendix is to show that these two phenomena follow from the same rule, namely, the rule of *do*-insertion in English. I will begin with some observations and data.

There seems to be a general problem in English with forming any kind of negative constituent in the position occupied by *not all* in (2b):

- (4) \*The students not recently saw John.  
(5) The students have not recently seen John.  
(6) \*The students not always come to class.  
(7) The students have not always come to class.

Note that when the sentences are in the perfect tense, as in (5) and (7), they are grammatical. This is a strong indication that the problem with (4) and (6) is syntactic, not semantic. However, it is not immediately clear what the syntactic cause of this problem might be, because negation in (4) and (6) is in the same syntactic position as it is in (5) and (7). It is in a position adjoined to vP.

The reader may not yet be aware of it, but (4) and (5) are instances of sentential negation while (6) and (7) are cases of constituent negation. I will demonstrate this shortly. Assuming that (4) and (5) represent sentential negation and (6) and (7)

represent constituent negation, the reason for the ungrammaticality of (4) and (6) can easily be stated in unified terms:

- (8) In instances of both sentential and constituent negation, a negation marker requires some kind of verbal support to its left, and if no auxiliary or modal is present to provide that support, *do*-insertion is required. This follows from the fact that English main verbs do not move around negation to T and AgrS the way they do in German. The three exceptions to this rule are topicalisation (*Not always does Mary sleep late*), contrastive phrases (*John gave a book not to Mary but to Jane*), and negated subject QPs (*Not all the students have read the book*). Note that all three of these exceptions are related to some kind of focus or topicalisation.

It follows that examples (4) and (6) can be corrected by inserting *do*:

- (9) The students did not recently see John.  
 (10) The students do not always come to class.

Sentences (5) and (7) do not require *do*-insertion because there is an auxiliary to the left of *v* that can support negation. The rule in (8) also explains why *do* must be inserted in both readings of (1).

I will now explain why I claim that (4) and (5) represent sentential negation while (6) and (7) are instances of constituent negation.

Adverbs like *recently* do not invite negation unless there is a contrast. This is illustrated in the following sentences:

- (11) The students saw John recently.  
 (12)\*The students saw John not recently.  
 (13) The students saw John not recently but two years ago.

Sentence (12) is ungrammatical because it contains constituent negation with no contrast. This indicates that (5), which does not have a contrastive meaning but is nonetheless grammatical, involves sentential negation, not negation of the adverb. This, in turn, indicates that (4) must also be an example of sentential negation, since the only difference between (4) and (5) is tense.

Unlike *recently*, the adverb *always*, perhaps by virtue of its universality, is compatible with negation without contrast. This allows it to be negated as a constituent and topicalised:

- (14) Not always has Mary loved John.  
 (15)\*Not recently has Mary visited John.

What this shows is that (6) is ungrammatical not because of a lack of contrast but because *not* is in vP without support to its left, and *do*-insertion is required, as shown in (10).

Incidentally, note that (7) and (10) are definitely cases of constituent (adverb) negation, since they can be paraphrased as follows:

- (16) Not always have the students come to class.  
 (17) Not always do the students come to class.

One complication, which was pointed out in Section 2.1 of Chapter 3 under example (37b), is the fact that there are cases when modals do not move to T and AgrS in English. This allows quantifier stranding in [SPEC, TP] or [SPEC, ModalP]:

- (18) The children all may have been watching the movie.

This sentence becomes ungrammatical if the quantifier is negated, because the negation marker has no support to its left:

- (19) \*The children not all may have been watching the movie.

*Do*-insertion cannot save this sentence because it cannot occur in the presence of a modal or auxiliary.

The phenomenon of *do*-insertion has always been attributed to the fact that main verbs do not move to T and AgrS in English. The dummy verb *do* is thus necessary in cases of subject-auxiliary inversion. It is also necessary in cases of negation because the negation marker needs something to its left. But, one might ask, why should a negation marker in English need support to its left? After all, such support is not necessary in subordinate clauses in the other West Germanic languages Dutch and German:

- (20) ...dat de studenten niet zijn gekomen.  
           that the students not are come  
 (21) ...dass die Studenten nicht gekommen sind.  
           that the students not come are

I would like to suggest that *do*-insertion is needed in the case of negation in English because English speakers have the option of cliticising the negation marker and a clitic needs support. A dummy verb is inserted because the clitic negation marker *n't* cannot be attached to a nominal:

- (22) a. She loves me, she loves me not.  
       b. \*She loves me, she loves men't.

To summarise, the two phenomena introduced at the beginning of this appendix can both be attributed to the fact that a negation marker in English needs verbal support to its left, whether it is a constituent or a sentential negation marker. This ends the discussion of *do*-insertion.

## Chapter 4: Issues in the Study of Floating Universal Numeric Quantifiers, or

Quantifiers, determiners and numerals are *all three* interesting

### 0. Introduction

This chapter is motivated by the fact that in the Germanic and Romance languages a universal quantifier can combine with a numeral and form a different kind of floating quantifier that provides further evidence in support of the Stranding Analysis. The following examples from Dutch and Romanian demonstrate this:

- (1) a. *Alle drie* de studenten hebben het boek gelezen. (Dutch)  
all three the students have the book read
- b. De studenten hebben *alle drie* het boek gelezen.  
the students have all three the book read
- (2) a. *Niet alle drie* de studenten hebben het boek gelezen. (Dutch)  
not all three the students have the book read
- b. De studenten hebben *niet alle drie* het boek gelezen.  
the students have not all three the book read
- (3) a. *Toți trei* studenții au citit cartea. (Romanian)  
all three students-the have read book-the
- b. Studenții au citit *toți trei* cartea.  
students-the have read all three book-the
- (4) a. *Nu toți trei* studenții au citit cartea. (Romanian)  
not all three students-the have read book-the
- b. \*Studenții au citit *nu toți trei* cartea.  
students-the have read not all three book-the

Based on these data, one can observe several similarities between a bare universal quantifier, which I will call  $\forall Q$ , and a universal quantifier in combination with a numeral, which I will call a *universal numeric quantifier* or simply  $\forall \text{Num}Q$ . First of all, like a  $\forall Q$ , a  $\forall \text{Num}Q$  selects a definite DP. Secondly, both  $\forall Q$  and  $\forall \text{Num}Q$  can be stranded. Thirdly, both  $\forall Q$  and a  $\forall \text{Num}Q$  can be stranded in negated form in the Germanic languages, but not in the Romance languages. This very strongly suggests that  $\forall Q$  and  $\forall \text{Num}Q$  occupy the same position, which would be Q. Note, however, that not all co-occurrences of a  $\forall Q$  and a numeral constitute a  $\forall \text{Num}Q$ , particularly

a determiner comes between the quantifier and the numeral. If a determiner appears between the quantifier and the numeral, a bare  $\forall$ Q has selected a DP that is headed by a D that has selected a CardP (a phrase headed by a cardinal numeral). In the following pairs of sentences from two languages, one can see the contrast between DPs that contain a CardP and are selected by a bare  $\forall$ Q and DPs selected by a  $\forall$ NumQ:

- (5) a. Al de drie studenten hebben het boek gelezen. (Dutch)  
 all the three students have the book read
- b. Alle drie de studenten hebben het boek gelezen.  
 all three the students have the book read
- (6) a. Tutti i tre studenti hanno letto il libro. (Italian)  
 all the three students have read the book
- b. Tutti e tre gli studenti hanno letto il libro.<sup>1</sup>  
 all and three the students have read the book

I will argue in this chapter that the (a) sentences in (5) and (6) have the base-structure in (7) and the (b) sentences the base-structure in (8):

- (7) [<sub>QP</sub> all [<sub>DP</sub> the [<sub>CardP</sub> three [<sub>NP</sub> children]]]]
- (8) [<sub>QP</sub> all three [<sub>DP</sub> the [<sub>CardP</sub>  $\emptyset$  [<sub>NP</sub> children]]]]

Note that the (b) sentences in (5) and (6), with their  $Q > \text{Card} > D > N$  word order, contradict the word order in the nominal hierarchy that I proposed in Chapter 1, which was as follows:

- (9)  $Q > D > \text{Card} > N$

Based on this, one might expect them to be ungrammatical. However, if Q and Card in the (b) sentences are considered to form a  $\forall$ NumQ located in Q, there is no divergence from the hierarchy in (9). The claim that a  $\forall$ NumQ is located in its entirety in Q is supported by the fact that in (5) and (6) the element that selects DP, that is, the element that immediately precedes the definite article, can be stranded, whether it be a bare quantifier, as in the (a) sentences, or a  $\forall$ NumQ, as in the (b) sentences. Examples (10) and (11) represent (5) and (6) with stranding:

<sup>1</sup> The insertion of the conjunction *e* (*and*) between the quantifier and the numeral in Italian is a bit of a mystery but it can be traced back several centuries. It is apparently from the Latin *et* (*and*) and seems to have arisen as a generalisation from conjunction insertion in numerals such as *venti e tre* (twenty and three), which has simply become *ventitre* in modern Italian. For a discussion see Menger (1892).

- (10) a. De drie studenten hebben allen/allemaal het boek gelezen.<sup>2</sup> (Dutch)  
 the three students have all the book read
- b. De studenten hebben alle drie het boek gelezen.  
 the students have all three the book read
- (11) a. I tre studenti hanno letto tutti il libro. (Italian)  
 the three students have read all the book
- b. Gli studenti hanno letto tutti e tre il libro.  
 the students have read all and three the book

A  $\forall$ NumQ does indeed seem to occupy Q as though it were a bare universal quantifier. The question is how it comes to occupy that position, given that it consists of two elements, a  $\forall$ Q and a numeral. Universal quantifiers like *all* and its equivalents in other languages are already assumed to be base-generated in Q, but how does the numeral get there? One possibility is that a combination like *all three* is a stored lexical item that can be pulled out of the lexicon and inserted into a head position. Another possibility is that a  $\forall$ NumQ is derived by moving a numeral out of CardP and into Q. Both possibilities seem paradoxical, as we will see in the discussion that follows, but I will argue in Section 3 that the former one is the correct one.

This chapter has three purposes besides that of providing additional support for the Stranding Analysis. The first is to provide evidence that a  $\forall$ NumQ is not derived by movement of the numeral but is base-generated in Q in its entirety. The second is to discuss what kind of syntactic category a  $\forall$ NumQ might be and how it is derived. The third is to discuss an interesting unresolved issue, namely, the fact that in English and German the definite article is suppressed in a DP selected by a  $\forall$ NumQ.

I have organised the remainder of this chapter into five sections. Section 1 is a brief introduction to numerals and the role that they play within the nominal domain. In Section 2 I show that a  $\forall$ NumQ cannot be derived by movement of the numeral but must be base-generated in Q as a “pre-fabricated” unit. In Section 3 I discuss the difficulties involved in trying to categorise a  $\forall$ NumQ syntactically. In Section 4, I discuss the unresolved question of why the definite article is suppressed when a  $\forall$ NumQ selects a DP in English and German. Section 5 provides a summary.

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<sup>2</sup> The Dutch universal quantifier takes on the form *allen* (pronounced *alle*) when stranded. In modern Dutch the adverbial quantifier *allemaal* is normally used instead of *allen* in stranding position.

## 1. The Status, Position(s) and Movement of Numerals

### 1.0. Introduction

Numerals are an essential component of  $\forall$ NumQs, and since I will be arguing that  $\forall$ NumQs are not formed by head movement of numerals to Q, a discussion of  $\forall$ NumQs must be preceded by a discussion of numerals, their status as syntactic heads, and their movement capability within the nominal domain. That is the purpose of this section. In Chapter 1 I already made the assumption that numerals are nominal heads. In this section I will present more explicit reasons for assuming that (cardinal) numerals are syntactic heads and will at the same time talk about their movement. As already mentioned, I will refer to a phrase headed by a cardinal number as a CardP.<sup>3</sup> My reasons for assuming that numerals are syntactic heads are presented individually in the sub-sections that follow.

#### 1.1. Numerals undergo head movement

My first reason for assuming that numerals are heads is that they seem to undergo head movement. It has been claimed by Longobardi (2001) that numerals can move to D. Delsing (1993) also speaks of the “raising” of numerals. If we follow the widely accepted claim of Szabolcsi (1983) and Abney (1987) and assume that all nominal arguments are DPs, then sentences like the following one suggest that numerals move from Card to D as long as there is no other head in the way:<sup>4</sup>

- (12) a. Three students entered the classroom.  
 b. \*Three her students entered the classroom.

One might suggest that numerals are themselves determiners that can be base-generated in D. The problem with this suggestion is that numerals co-occur with determiners:

- (13) a. The teacher spoke with the twenty students in her class.  
 b. The teacher spoke with some twenty students in her class.

Another indication that numerals move to D is that in many languages the numeral *one* and the indefinite article are the same word, as seen in the following examples from German and French:

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<sup>3</sup> I use the term CardP rather than NumP in order to avoid confusion with the NumP in Ritter (1991), which refers to singular vs. plural number. The term CardP is borrowed from Julien (2003), who also uses it for phrases headed by cardinal numbers.

<sup>4</sup> Under the Standing Analysis a QP is also an argument. I consider this to be consistent with Abney (1987) and Szabolcsi (1983) because a QP contains DP. Furthermore, when a quantifier is stranded, it is a DP that does the stranding and moves into subject-position.

(14) Johann hat ein Buch.  
John has a/one book

(15) Jean a un livre.  
John has a/one book

The following Italian phrases<sup>5</sup> provide additional evidence that numerals move to D:

(16) a. \*suoi tre libri      b. i suoi tre libri      c. tre suoi libri  
her three books      the her three books      three her books

The reason for the ungrammaticality of (16a) is that neither the possessive pronoun nor the numeral can occupy D, and if D is empty a true DP cannot be formed. The possessive pronoun cannot occupy D because, as argued in Chapter 1, Section 2, possessive pronouns do not move to D in Italian. The numeral cannot move to D in (16a) because it is blocked by the possessive pronoun. In (16b), the D-position is occupied by the definite article, so we have a true DP. The only possible explanation for the grammaticality of (16c), given (16a) and (16b), is that the numeral has moved from Card to D. I will assume that the D position has a need to be filled and that there is a feature on the numeral that allows it to move to D and satisfy this need. The question that immediately arises here is how the numeral can move to D across the possessive pronoun in (16c). The answer to this question is that in (16c) it is not necessary for the numeral to move across the possessive pronoun. I say this because a possessive pronoun in Italian can occupy the head position of PossP, as in (16b), or an adjectival position below the numeral, as in (16c), in which case it does not prevent a numeral from moving to D. There is clear evidence that a possessive pronoun can appear in an adjectival position in Italian. In the following two sentences, D is occupied by the definite article, meaning that the numeral has not moved, and yet the possessive pronoun is in two different places:

(17) a. i miei due libri      b. i due miei libri  
the my two books      the two my books

The next question is whether there is any independent evidence that possessive pronouns have adjectival qualities that allow them to appear in an adjectival position below Card. There is evidence for this claim if one compares Italian with Spanish. In both of these languages, adjectives typically follow nouns. In Italian, pronominal and post-nominal possessive pronouns have the same form:

(18) a. mio padre      b. padre mio  
my father      father my

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<sup>5</sup> Longobardi (2001) p. 593.

In Spanish, on the other hand, there is a difference between prenominal and post-nominal possessive pronouns. The prenominal possessive is reduced and clitic-like, and not at all adjectival, since it cannot appear in post-nominal position:

- (19) a. mi padre            b. padre mio            c. \*padre mi  
           my father            father my            father my

Not only can a Spanish possessive pronoun not appear in post-nominal position, it cannot even appear in prenominal position if it follows a numeral:

- (20) a. mis dos libros    b. \*dos mis libros  
           my two books        two my books

Thus, if a possessive pronoun is adjectival, as in Italian, it can appear in an adjectival position below Card. Cardinaletti (1998) notes that Italian possessive pronouns can appear in two positions and uses the terms *strong* and *weak* to differentiate between Italian possessive pronouns and possessive pronouns in other Romance languages such as Spanish and Paduan. I maintain that since Italian possessive pronouns like the ones in (16), (17) and (18) have only a strong form, they have the option of heading PossP or appearing in an adjectival position below numerals. If they appear in adjectival position, they will not block movement of a numeral to D. In any case, the point of this sub-section is that numerals can move to D, which means that they must be heads.

## 1.2. $\Phi$ -features and Case

As I pointed out in Chapter 1, it seems to be a characteristic of heads in the nominal domain that they share  $\Phi$ -features and Case with the head noun. Numerals are frequently uninflected, making it more difficult to ascertain whether they show  $\Phi$ -feature and Case agreement. However, there are also many examples of numerals that do show  $\Phi$ -feature and Case agreement with the head noun and other nominal heads, strongly suggesting that they, too, are heads. In Latin, the numerals meaning *two* and *three* are fully declined for gender, number and Case:

- (21) a. Nemo potest        duobus                    hominibus            servire.  
           no one    can    two-Pl.-Masc.-Dat.    men Pl.-Masc.-Dat.    serve
- b. Nemo potest        duabus                    feminis                servire.  
           no one    can    two-Pl.-Fem.-Dat.    women-Pl.-Fem.-Dat.    serve
- c. Tria                                    verba non potest iungere.  
           three-Pl.-Neut.-Acc.    words    not (he) can    join  
                                                   (He can't put three words together.)
- d. Tres                                    homines        vidit.  
           three-Pl.-Masc.-Acc.    men        (he) saw

In Neapolitan, the numeral for *two* agrees in gender with the noun it modifies:

- (22) Ciccio tene dduje frate e ddoje sore.  
Ciccio has two (masc.) brothers and two (fem.) sisters

The numeral *one*, even if it is also the indefinite article in many languages, is nonetheless a numeral, and it agrees with the head noun in gender, number and Case, as the following German examples illustrate:

- (23) a. Er hat nur einen Mann gesehen.  
he has only one-Sing.-Masc.-Acc. man seen
- b. Er hat nur eine Frau gesehen.  
he has only one-Sing.-Fem.-Acc. woman seen
- c. Er hat nur ein Haus gesehen.  
he has only one-Sing.-Neut.-Acc. house seen

Since numerals agree in  $\Phi$ -features and Case with the head noun and other heads in the nominal domain, it seems logical to conclude they are also syntactic heads.

### 1.3. Case Assignment

It is well known that phrasal heads assign case. Verbs and prepositions are the obvious examples. Adjectives can also assign case, as the following examples illustrate:

- (24) a. Ich bin der Sache müde. (German)  
I am the matter (GEN) tired
- b. Iuris periti sunt. (Latin)  
law (GEN) skilled they are

It was shown in Chapter 1 that head nouns can assign genitive case, as seen in the following German example:

- (25) Die Entdeckung Amerikas  
the discovery America (GEN)

Numerals also assign case. It was shown in Cardinaletti and Giusti (1989) that numbers assign Partitive Case, which is realised as the genitive. The proof of this lies in the fact that when the complement of a numeral is pronominalised and fronted in Italian, it must be in the form of the genitive clitic *ne*:

- (26) a. Ho letto tre libri.  
 (I) have read three books
- b. Ne ho letti tre.  
 them (GEN) (I) have read three
- c. \*Li ho letti tre.  
 them (ACC) (I) have read three

A similar phenomenon could be said to exist in Dutch, in which the pronominal *er* functions very much the same as the Italian genitive clitic *ne*:

- (27) a. Ik heb drie boeken gelezen.  
 I have three books read
- b. Ik heb er drie gelezen.  
 I have them (GEN) three read

Russian numerals are also known to assign genitive case:

- (28) tri knigi  
 three book (GEN)

#### 1.4. Summary

Numerals undergo head movement, they show  $\Phi$ -feature and Case agreement with the head noun just like determiners, possessive pronouns and other nominal heads, and they can assign case. Based on this evidence I assume that numerals are syntactic heads. With this background in numerals, we can now proceed to a discussion of  $\forall$ NumQ.

## 2. $\forall$ NumQ must be base-generated in Q in its entirety

### 2.0 Introduction

In a combination such as *all three* the semantics of the two individual elements seems to be preserved, namely, universality and the quantity *three*. For this reason, in the interests of compositionality, one might prefer to derive a  $\forall$ NumQ by starting out with two independent elements, Q and Card, and then moving Card to Q. Nonetheless, in this section I will show that a movement analysis does not work and that Q and Card must be base-generated together in the same position. My arguments are based on structural obstacles to movement, on the lack of motivation for such movement, on the incompatibility of the selectional properties of  $\forall$ NumQ and CardP in Romanian, on the fact that floating adverbial quantifiers in Dutch and Swedish cannot be combined with a numeral, on the non-universality of  $\forall$ NumQ, on the fact that a  $\forall$ NumQ can co-occur with a second numeral, and on the fact  $\forall$ NumQ has been lexicalised to some extent in Romanian.

### 2.1. Obstacles to Movement

In languages like Italian and Romanian, or even in the West Germanic language Dutch, the D-position is *always* occupied when there is a universal numeric quantifier, whether that quantifier is stranded or not. If D is always occupied, then Card cannot be moving from Card to Q, across D, to form a  $\forall$ NumQ. Card must originate in Q in the first place. The following sentences from Dutch, Italian and Romanian demonstrate this:

(29) a. Alle drie de studenten hebben het boek gelezen.  
           all three the students have the book read

          b. De studenten hebben alle drie het boek gelezen.  
               the students have all three the book read

(30) a. Tutti e tre gli studenti hanno letto il libro.  
           all and three the students have read the book

          b. Gli studenti hanno letto tutti e tre il libro.  
               the students have read all and three the book

(31) a. Toți trei studenți-i au citit carte-a.  
           all three students the have read book the

          b. Studenți-i au citit toți trei carte-a.  
               students the have read all three book the

## 2.2. Lack of Motivation for Movement

The purpose of movement is to satisfy features, either of the target or of the goal or of both. The fact that the following phrases are grammatical shows that there is nothing forcing a numeral to move into Q:

- (32) a. All the three students... (English)  
 b. Al de drie studenten... (Dutch)  
 c. Tutti i tre studenti... (Italian)

One could of course say that no movement of the numeral takes place in these phrases because of an intervening head in D. The point is that if numerals or universal quantifiers bore a feature that required movement of the numeral to Q, the phrases in (32) would crash. Furthermore, even if there is no intervening head, a numeral does not move to Q. Being positioned in Q means strandability, and a numeral is not strandable:

- (33) a. All lions are dangerous.  
 b. Lions are all dangerous.
- (34) a. Three lions are dangerous.  
 b. \*Lions are three dangerous.

One might argue that there is evidence that a numeral is drawn to Q by a universal quantifier if there is nothing in D to block such movement, given the phrases *all three students* and its German equivalent *alle drei Studenten*. This is not a plausible claim, however. The movement of Card to Q across an empty D position should produce a strandable  $\forall\text{NumQ}$ , but stranding is not possible in English and German if D is empty:

- (35) a. All three students have read the book.  
 b. \*Students have all three read the book.
- (36) a. Alle drei Studenten haben das Buch gelesen.  
 all three students have the book read
- b. \*Studenten haben alle drei das Buch gelesen.  
 students have all three the book read

In other words, the numeral cannot be moving across an empty D position to form a  $\forall\text{NumQ}$  in (35a) and (36a), and there must be another explanation for the missing definite article. In Section 4 there will be more on  $\forall\text{NumQ}$ s that appear without a determiner in English and German.

To summarise this sub-section, (32) shows that there are no features forcing movement of Card to Q; (33) and (34) show that numerals do not occupy Q on their

own, which indicates that they do not move there; and (35) and (36) show that movement of Card to Q would not in and of itself create a strandable  $\forall$ NumQ.

### 2.3. Selectional Properties of $\forall$ NumQ in Romanian

As already shown in examples (3) and (31), Romanian possesses a strandable  $\forall$ NumQ. Careful analysis of the Romanian  $\forall$ NumQ reveals that it cannot have been derived by movement of the numeral to Q. Before presenting the data, I will point out some important peculiarities of the Romanian language.<sup>6</sup>

Romanian places both the definite article and possessive pronouns after the noun, and the two can co-occur. In fact, possessive pronouns in Romanian require the support of a determiner, just as in Italian. The following sentence illustrates this:

- (37) Copii-i        tăi    au    venit    acasă.  
       children the    yours have come home

Romanian also has the pronominal determiners *cel* (masculine) and *cea* (feminine). The plurals of *cel* and *cea* are *cei* and *cele*, respectively. The universal quantifier *toți* (feminine *toate*) selects a definite DP, as one would expect, however that DP must be headed by the post-nominal definite article. It cannot be headed by the pronominal determiners *cei* and *cele*:

- (38) a. Toate cărți-le sunt interesante.  
       all books the are interesting  
       b. \*Toate cele cărți sunt interesante.  
       all the books are interesting

There are two exceptions to this rule. The universal quantifier can select a DP headed by a pronominal determiner only if that determiner is a demonstrative or if a numeral is present:

- (39) a. Toate acele cărți sunt interesante.  
       all those books are interesting  
       b. Toate cele trei cărți sunt interesante.  
       all the three books are interesting

Whether a universal quantifier selects a DP headed by a post-nominal definite article, as in (38a), or a DP headed by a pronominal determiner, as in (39a) and (39b), it can be stranded. The following sentences are (38a), (39a) and (39b) with stranding:

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<sup>6</sup> My thanks to Mara van Schaik-Radulescu for helping me develop the Romanian data.

- (40) a. Cărți-le sunt toate interesante.  
books the are all interesting
- b. Acele cărți sunt toate interesante.  
those books are all interesting
- c. Cele trei cărți sunt toate interesante.  
the three books are all interesting

When a numeral is used in a definite DP such as the Romanian equivalent of *the three books*, the D-element must be a form of *cel* or some other pronominal determiner, such as a demonstrative. It cannot be the post-nominal definite article:

- (41) a. Cele/Acele trei cărți sunt interesante.  
the/those three books are interesting
- b. \*Trei cărți-le sunt interesante.  
three books the are interesting

In other words, CardP can only be selected by a pronominal determiner.

With that background information we can now look at  $\forall$ NumQ in Romanian.

The Romanian  $\forall$ NumQ can be formed with numerals up to ten. Like a bare universal quantifier, it selects a DP headed by the post-nominal definite article or by a pronominal demonstrative. However, it cannot select a DP headed by a form of the pronominal determiner *cel*:

- (42) a. Toate trei cărți-le sunt interesante.<sup>7</sup>  
all three books the are interesting
- b. Toate trei acele cărți sunt interesante.  
all three those books are interesting
- c. \*Toate trei cele cărți sunt interesante.  
all three the books are interesting

The following examples, derived from the sentences in (42a) and (42b), show that a Romanian  $\forall$ NumQ is strandable:

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<sup>7</sup> The structure in (42a) is slightly downgraded. Stranding of the  $\forall$ NumQ, as in (43a), eliminates the downgrading. This will be further discussed in Section 4.0.

- (43) a. Cărți-le sunt toate trei interesante.  
 books the are all three interesting
- b. Acele cărți sunt toate trei interesante.  
 those books are all three interesting

With that background, I can easily explain why a  $\forall$ NumQ in Romanian cannot be formed by moving the numeral to Q. The derivation of a  $\forall$ NumQ by movement of the numeral would have to go through the following steps:

We would start with a CardP such as *trei cărți* (*three books*). This CardP would have to be selected by a prenominal determiner such as *cele* (*the*), forming the DP *cele trei cărți* (*the three books*). This DP would then be selected by the universal quantifier *toate* (*all*), forming the QP *toate cele trei cărți* (*all the three books*):

- (44) Toate cele trei cărți sunt interesante.  
 all the three books are interesting

At this point the quantifier and the numeral are not contiguous and do not yet form a  $\forall$ NumQ. This can be seen in (45), which is (44) after it has undergone stranding. The fact that the quantifier is stranded without the numeral shows that the quantifier and the numeral in (44) do not form a  $\forall$ NumQ:

- (45) Cele trei cărți sunt toate interesante.  
 the three books are all interesting

Suppose now that we wanted to move the numeral in (44) to Q in order to form a  $\forall$ NumQ. Ignore the problem of the intervening head in D. If we moved the numeral to Q in (44) we would generate the ungrammatical sentence in (42c). The only way to rescue (42c) would be to change the prenominal determiner to a post-nominal one:

- (46) Toate trei cărți-le sunt interesante.  
 all three books the are interesting

In other words, in order to make a movement analysis work we would have to retroactively alter selections already made. Because the selectional requirements of a  $\forall$ NumQ are incompatible with those of a CardP, the only way to get a universal quantifier and a numeral together in Romanian is to base-generate them together in Q.

#### 2.4. Dutch and Swedish Adverbial Quantifiers

As shown in (47), when the Dutch universal quantifier *al* is stranded, it can take on its stranded form *allen* or become the adverbial *allemaal*:

- (47) a. Al de studenten hebben het boek gelezen.  
           all the students have the book read
- b. De studenten hebben allen/allemaal het boek gelezen.  
           the students have all the book read

However, when the  $\forall$ NumQ *alle drie* is stranded, the quantifier *alle* cannot be replaced with *allen* or *allemaal* the way it could if it were by itself:

- (48) a. Alle drie de studenten hebben het boek gelezen.  
           all three the students have the book read
- b. \*De studenten hebben allen drie/allemaal drie het boek gelezen.  
           the students have all three the book read
- c. De studenten hebben alle drie het boek gelezen.  
           the students have all three the book read

This shows that the  $\forall$ NumQ does not consist of the independent elements *alle* and *drie* but is an indivisible unit. If the two elements did not form a unit, one would expect (48b) to be as acceptable as (48c). That is, one would expect *alle* to become *allemaal* when stranded regardless of the presence of the numeral. Something similar occurs in Swedish, where the quantifier *alla* often assumes the adverbial form *allihop* when stranded:

- (49) a. Alla studenterna kan ha läst boken.  
           all students the might have read book the
- b. Studenterna kan allihop ha läst boken.  
           students the might all have read book the

However, when the  $\forall$ NumQ *alla tre*, meaning *all three*, is stranded, the numeral *tre* cannot appear with the adverbial quantifier *allihop*:

- (50) a. Studenterna kan alla tre ha läst boken.  
           students the might all three have read book the
- b. \*Studenterna kan allihop tre ha läst boken.  
           students the might all three have read book the

Once again, if *alla tre* were not an indivisible unit, one would expect it to be able to become *allihop tre* in stranded form.

### 2.5. Lack of Universal Numeric Quantifier in Certain Romance Languages

I will argue in the next section that a  $\forall$ NumQ is formed by a non-universal, language-specific, lexically stored rule and inserted into Q. Assuming for the moment that this is so, not all languages can be expected to have a  $\forall$ NumQ. This expectation is met. The Germanic languages that we have looked at seem to have a  $\forall$ NumQ, as do the Romance languages Romanian and Italian. However, there are also Romance languages that appear not to have a  $\forall$ NumQ, including Spanish, Catalán, Portuguese and French. This will be demonstrated in the Spanish sentences in (51) to (54). I point out that one could take these sentences and replace each Spanish word with its French, Portuguese or Catalán equivalent and obtain exactly the same results. Let's take a look at these sentences now in order to see why I claim that some languages, like Spanish, do not have a true  $\forall$ NumQ:

- (51) a. Todos los tres libros son interesantes.  
           all the three books are interesting
- b. Los tres libros son todos interesantes.  
           the three books are all interesting
- c. \*Todos tres los libros son interesantes.  
           all three the books are interesting
- d. \*Todos tres libros son interesantes.  
           all three books are interesting
- e. \*Los libros son todos tres interesantes.  
           the books are all three interesting

The (a) sentence corresponds to the normal  $Q > D > \text{Card} > N$  hierarchy. It is an instance of a Q that selects a DP that includes a  $\text{CardP}$ . The (b) sentence is simply the (a) sentence with stranding of the universal quantifier. The (c) sentence shows that the combination Q plus Card cannot select a DP as it can in Dutch or Italian. The (d) sentence shows that the combination Q plus Card cannot select a bare NP as it seems to do in English.<sup>8</sup> The (e) sentence shows that a version of (c) and (d) with quantifier stranding also does not exist. Observe now the following sentences, which show that while Spanish does not have a true  $\forall$ NumQ it does have a substitute:

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<sup>8</sup> In Section 4 there will be a more detailed discussion of the English  $\forall$ NumQ followed by a bare NP, for example, *all three children*.

- (52) Los libros son todos los tres interesantes.  
 the books are all the three interesting

This sentence suggests that Spanish might have something like a stranded  $\forall$ NumQ, but there are at least two indications that this is not the case. The presence of the definite article between Q and Card is the first indication that this is not a  $\forall$ NumQ. The second indication is the double-occurrence of the definite article. What I would suggest is that the phrase *todos los tres* is a kind of appositive QP similar to expressions such as the appositive DP *ellos mismos* (*themselves*). This is shown in the following sentence, where the appositive *ellos mismos* appears in exactly the same position as *todos los tres* in (52):

- (53) Los tres libros son ellos mismos interesantes.  
 the three books are themselves interesting

Alternatively, one might be inclined to say that (52) is an instance of a true  $\forall$ NumQ that has been stranded and that the double occurrence of the definite article is simply a case of multiple spell-out. The following sentences show that this analysis is impossible:

- (54) a. Todos tus tres niños han venido a casa.  
 all your three children have come home
- b. Tus tres niños han venido todos a casa.  
 your three children have come all home
- c. Tus niños han venido todos los tres a casa.  
 your children have come all the three home
- d. \*Tus niños han venido todos tus tres a casa.  
 your children have come all your three home

The (a) sentence contains a universal quantifier (*todos*) that has selected a DP in which the possessive pronoun *tus* has moved to D. The (b) sentence is simply the (a) sentence with quantifier stranding. In the (c) sentence, we see that the appositive phrase *todos los tres* appears in what looks like a stranding position. If this were a case of  $\forall$ NumQ stranding with multiple spell-out of the item occupying D, we would not see the definite article *los* in the stranded phrase, but the possessive pronoun *tus*. As the (d) sentence shows, multiple spell-out of the possessive produces ungrammaticality.

One might ask how we can be sure that the stranded  $\forall$ NumQ observed in languages like Italian, Romanian and Dutch is not an appositive QP like the one found in French and Spanish. There is probably nothing to prevent one from analysing stranded  $\forall$ NumQs as appositive QPs, but there are three reasons why I believe that such an analysis would be wrong. First of all, a major generalisation would be

missed because the following two Dutch sentences would have to be accounted for separately while the Stranding Analysis derives both sentences from a common base-structure:

- (55) a. Alle drie de studenten hebben het boek gelezen.  
           all three the students have the book read
- b. De studenten hebben alle drie het boek gelezen.  
           the students have all three the book read

Secondly, there is a clear structural difference between the  $\forall$ NumQ found in Dutch, Italian and Romanian, in which there is no determiner between the quantifier and the numeral, and the appositive QP found in Spanish, French and other languages, in which there is always a determiner between Q and Card.

Thirdly, unlike a true  $\forall$ NumQ, the appositive QP only occurs post-verbally, suggesting that a  $\forall$ NumQ and an appositive QP are not the same:

- (56) a. Los alumnos han leído todos los tres el libro.  
           the students have read all the three the book
- b. \*Todos los tres los alumnos han leído el libro.  
           all the three the students have read the book

For these reasons, I choose to analyse the  $\forall$ NumQ found in languages like Dutch, Italian and Romanian as being different from the appositive QP found in languages like Spanish and French. There will be more on this in Section 4.3.

Let's summarise what we can conclude from this discussion of Spanish, which is also valid for Catalán, Portuguese and French. We have seen that Spanish, unlike Italian and Romanian, does not have a true  $\forall$ NumQ but that it has a type of appositive QP that functions like a stranded  $\forall$ NumQ. The fact that not all the languages in the rather tightly knit Romance language family possess a true  $\forall$ NumQ strongly suggests that a  $\forall$ NumQ is formed by a lexically stored rule and inserted directly into Q. In other words, a  $\forall$ NumQ is not derived by merging a quantifier and a numeral but is base-generated as a unit.

## 2.6. Co-occurrence of $\forall$ NumQ and Numeral

I have been assuming the following hierarchy in the nominal domain:

- (57)  $Q > D > \text{Card} > N$

If a  $\forall$ NumQ is base-generated in Q, the model predicts that a  $\forall$ NumQ will be able to co-occur with a bare numeral in Card. Observe the following Dutch and Italian sentences:

- (58) a. ?Alle drie de drie studenten hebben het boek gelezen.  
 all three the three students have the book read  
 b. De drie studenten hebben alle drie het boek gelezen.  
 the three students have all three the book read
- (59) a. ?Tutti e tre i tre studenti hanno letto il libro.  
 all and three the three students have read the book  
 b. I tre studenti hanno letto tutti e tre il libro.  
 the three students have read all and three the book

The immediate relevance of (58) and (59) is that they contain two numerals. This can only be possible if one of the numerals is in Card and the other in Q with the universal quantifier. This may be the strongest indication yet that the quantifier and numeral in a  $\forall$ NumQ are base-generated together in Q.

### 2.7. Romanian Again: Lexicalised Universal Numeric Quantifiers

Assuming that a  $\forall$ NumQ is base-generated in Q by a lexically stored rule, one might ask whether lexicalisation of the actual  $\forall$ NumQ might also occur. There is evidence in Romanian that it does happen. In certain forms of regional, colloquial, or perhaps antiquated speech, the universal quantifier *toți* has combined with the numerals from three to ten to form a single word with the syntax (strandability) and the semantics of a normal  $\forall$ NumQ. There are three things that tell us that these lexicalised quantifiers are a single word. First of all, the quantifier *toți* appears in the reduced form *tus* and is almost like a prefix with low stress. Secondly, these lexicalised  $\forall$ NumQs, which always begin with *tus*, can be masculine or feminine even though *tus* is actually the reduced form of the masculine form *toți*. Thirdly, this is not a truly productive process, since it only covers numerals from three to ten. The words are as follows:

- (60) a. tustrei (all three)    b. tuspatru (all four)    c. tuscinci (all five)  
 d. tusșase (all six)    e. tusșapte (all seven)    f. tusopt (all eight)  
 g. tusnouă (all nine)    h. tuszece (all ten)

As I have mentioned, I will argue in the next section that a  $\forall$ NumQ is not a lexically stored item per se but is formed by a lexically stored rule that combines two lexical entries. My conjecture is that because a  $\forall$ NumQ is formed by a lexically stored rule and inserted from the lexicon into Q, it lends itself to lexicalisation. The examples in (60) support this.

## 2.8 Summary

In this section I have presented a considerable amount of evidence that a  $\forall$ NumQ is not derived by moving Card to Q but is base-generated in its entirety in Q. First of all, the determiner between Q and Card is an obstacle to movement of the numeral and there is a lack of motivation for such movement anyway. In Romanian, a CardP can only be selected by a prenominal determiner, but a  $\forall$ NumQ can only select a DP headed by a post-nominal determiner. These incompatible selectional properties of CardP and  $\forall$ NumQ mean that the only way to combine Q and Card is to base-generate them together. In Dutch and Swedish the universal quantifier can assume adverbial form when stranded, but not in combination with a numeral. This inalterability of the universal quantifier in a  $\forall$ NumQ is an indication that a  $\forall$ NumQ is not derived by moving two separate items together but is base-generated as a unit in Q. Not all languages have a  $\forall$ NumQ, which also suggests that it is a phenomenon governed by lexical rules that insert it into Q rather than by syntactic movement rules. A  $\forall$ NumQ can also co-occur with a numeral, which shows very clearly that a  $\forall$ NumQ is base-generated in Q. Finally, Romanian has experienced a certain lexicalisation of  $\forall$ NumQ, which also suggests that a  $\forall$ NumQ is formed by lexical rules rather than by movement. The facts are simple. Because a numeral can be stranded with a universal quantifier, it must be located in Q, and if it cannot be moved there, the only way for it to get there is to be base-generated there. In the following section, I will go into more detail about how a  $\forall$ NumQ is actually formed and what kind of syntactic category it is.

## 3. Formation and Categorisation of *All Three*

I have argued that an expression such as *all three* is located in Q, the head position of QP, but this raises two questions: How do the two elements *all* and *three* come together in the first place and what kind of syntactic category does this word combination represent? The purpose of this section is to answer these questions.

Di Sciullo and Williams (1987) refer to anything that can be inserted into an  $X^\circ$  position as a *syntactic atom*. A syntactic atom can consist of more than one word, in which case it is either a *phrase* or a *compound*. I will briefly explain how Di Sciullo and Williams distinguish between these two items.

A *phrasal* syntactic atom is simply a phrase that has been reanalysed as a word. Accordingly, it is referred to by Di Sciullo and Williams as a *syntactic word*. The Romance languages are full of nouns that are actually reanalysed VPs. An example is the French noun *essuie-glace* (*windshield wiper*), which is a VP consisting of the finite verb *essuie* (*wipes*) and the object noun *glace* (*windshield*). The French noun *lève-tôt*, also a VP, is an even better example because it is a noun even though it does not contain a nominal element. It consists of the finite verb *lève* (*gets up*) and the adverb *tôt* (*early*) and means *early riser*. An important characteristic of syntactic words in Di Sciullo and Williams' analysis is their syntactic atomicity or

impenetrability. In an expression such as *essuie-glace*, for example, it is impossible to insert an adverb between the verb and the noun, although this would be completely unproblematic in a normal VP:

- (61) \**essuie-bien-glace*  
wipes well windshield

Di Sciullo and Williams argue that expressions like this cannot be considered to be compounds in the usual sense, because a compound has an easily identifiable head that clearly determines its syntactic category. For example, in the English compound *bartend* the head is the verb *tend*. Furthermore, the head of a compound determines not only its syntactic category but its semantics as well, so that in the compound *dogsled*, for example, the head is *sled* and the meaning is a *sled pulled by dogs* rather than a *dog that pulls a sled*. Note also that compounds are head final, unlike the above-mentioned reanalysed VPs *essuie-glace* and *lève-tôt*. This leads Di Sciullo and Williams to treat compounds as affixed words rather than as phrases. Di Sciullo and Williams claim that both syntactic words and compounds are idiomatic and therefore listed in the lexicon.

Before applying Di Sciullo and Williams' approach to the question of  $\forall$ NumQ, there are two more characteristics of compounds that I would like to point out. First of all, in a compound the individual elements often lose their compositionality. Think of expressions like *babysitter* and *bodyguard*. Secondly, in English, primary stress normally falls on the first element in the compound. With that background, I would like to consider whether a  $\forall$ NumQ could be classified as a compound or a syntactic word.

A  $\forall$ NumQ does not seem to fit the description of a compound at all. For example, a phrase like *all three* could not be said to be a single lexical item consisting of two words, since it is compositional, with both elements retaining their full meaning. Furthermore, it would be difficult to say that *all three* is a lexically stored item. The universal quantifier can combine with an infinite number of numerals. It is just as natural to say "all seventeen million, three hundred thousand, five hundred thirty-six inhabitants" as it is to say "all three inhabitants." Another problem with classifying a  $\forall$ NumQ as a compound is the fact that in *all three* stress is on the numeral. Normally, one would expect the stress to fall on the first element if this were a normal compound. Another relevant point is that if *all three* were a compound, since compounds are head-final, the numeral would have to be the head. However, it would be difficult to argue that a  $\forall$ NumQ is a numeral rather than a universal quantifier. A  $\forall$ NumQ like *all three* behaves like a universal quantifier, not like a numeral. It can be stranded, while a numeral cannot, and it shows the semantic strength of a universal quantifier, not the weakness of a numeral:

- (62) a. There are three rabbits in the garden.  
b. \*There are all three rabbits in the garden.

A  $\forall$ NumQ can also be negated in a non-contrastive context, while a numeral cannot:

- (63) a. Not all three students did their homework.  
 b. \*Not three students did their homework.

It is for these reasons that I refer to phrases like *all three* as a universal numeric quantifier or  $\forall$ NumQ rather than a compound quantifier.

Even if a  $\forall$ NumQ is not a compound, it is nonetheless a combination of two lexical items that together occupy an  $X^{\circ}$  position. The two lexical items also form an impenetrable unit, since nothing can appear between the universal quantifier and the numeral. For these reasons, Di Sciullo and Williams' term *syntactic word* seems more appropriate than the term *compound* if one is speaking about a  $\forall$ NumQ. The problem is that according to Di Sciullo and Williams a syntactic word is an idiomatic, stored lexical item, and because there are an infinite number of combinations of a universal quantifier and a numeral it would be difficult to say that a  $\forall$ NumQ is a stored item.

What is stored in the lexicon, I propose, is a *rule* that allows the universal quantifier to combine with a numeral. Lexical rules for the combination of numerals are known to exist. In Booij (2008), for example, the Dutch numerals from one to nineteen are argued to be stored lexical words, as are the multiples of ten (twenty, thirty, forty etc.) and higher numbers like *hundred* and *thousand*. Other numerals, such as *twenty-three* or *four hundred eight*, are formed by lexical rules that are comparable to the syntactic rules that combine words and phrases. Booij refers to the rules that form numbers as *constructional idioms*. They operate on a finite number of numerals (words) to form an infinite number of numbers, just as syntactic rules can form an infinite number of sentences. Booij is concerned with Dutch numerals but, as he points out, his concept of constructional idiom carries over to other languages.

The fact that number formation rules are lexical idioms creates the expectation that there would be cross-linguistic variation. There are in fact numerous examples of inter- and intra-linguistic variation. In modern English one says "twenty-three" rather than "three and twenty," however "three and twenty" was the norm until fairly recent times, and is still the norm in all other Germanic languages. In older varieties of Italian it was also normal to say "twenty and three" ("venti e tre"). In modern Italian the conjunction is omitted and one says "ventitre." Standard French has no word for "seventy," "eighty" or "ninety." Seventy is expressed by saying "sixty-ten" (*soixante-dix*), "eighty" is "four-twenty" (*quatre-vingt*), and "ninety" is "four-twenty-ten" (*quatre-vingt-dix*). Mandarin has a one-syllable word (*wàn*) which means "ten thousand" but has no word meaning "million." The number "one million" is thus expressed by saying "one hundred ten thousand" (*yībǎiwàn*). This goes to show that number-formation is handled by language-specific lexical rules.

The rule that I propose for the formation of  $\forall$ NumQ follows from Booij's rules for number formation and may very well be one of them, since it also involves

numerals. It is analogous to the rule that allows two numbers such as *twenty* and *three* to appear as the single word *twenty-three* in the Card-position. The  $\forall$ NumQ formation rule must be a lexical rule, for at least two reasons. First of all, the  $\forall$ NumQ that it creates is inserted directly into Q, an  $X^0$  position. Secondly, like the rules for number formation, it is subject to cross-linguistic variation. Dutch and Romanian form a  $\forall$ NumQ by simply combining a universal quantifier and numeral. Italian requires the insertion of a conjunction between the two elements. French and Spanish do not have a rule that creates  $\forall$ NumQ. Incidentally, as argued in Menger (1892), the insertion of a conjunction in an Italian  $\forall$ NumQ is believed to have arisen as a generalisation from the above-mentioned (now defunct) conjunction-insertion rule for number formation. The fact that the rule for  $\forall$ NumQ formation is a generalisation from a number formation rule suggests that the  $\forall$ NumQ formation rule is itself part of the group of number formation rules described by Booij. The fact that in Romanian a  $\forall$ NumQ can only be formed with the numerals from one to ten is also a strong indication that a language-specific lexical rule is involved in  $\forall$ NumQ formation.

In this section I have argued that a  $\forall$ NumQ can be explained as a syntactic word within the framework of Di Sciullo and Williams (1987) that has been created by means of a  $\forall$ NumQ formation rule that is actually one of the constructional idioms that create numbers in the manner described by Booij (2008). My analysis provides an explanation for how the Q-position can be occupied by two elements, and with this explanation the behaviour of a  $\forall$ NumQ follows nicely from the Stranding Analysis of floating quantifiers. As is the case with most theories, there is an issue with the present one. It will be discussed in the following section.

#### 4. Unresolved Question: What happens to the definite article in English and German?

##### 4.0. Introduction

I have posited the following base-structure for phrases involving a  $\forall$ NumQ:

$$(64) \quad \forall\text{NumQ} > D > N$$

Examples (1), (3) and (6b), repeated here in the (a) sentences in (65) to (67), illustrate the cross-linguistic validity of this structure. The (b) sentences correspond to the (a) sentences with stranding of the  $\forall$ NumQ:

- (65) a. Alle drie de studenten hebben het boek gelezen. (Dutch)  
           all three the students have the book read
- b. De studenten hebben alle drie het boek gelezen.  
           the students have all three the book read

- (66) a. *Toți trei* studenții au citit cartea. (Romanian)  
 all three students-the have read book-the  
 b. Studenții au citit *toți trei* cartea.  
 students-the have read all three book-the
- (67) a. Tutti e tre gli studenti hanno letto il libro. (Italian)  
 all and three the students have read the book  
 b. Gli studenti hanno letto tutti e tre il libro.  
 the students have read all and three the book

These sentences show that within the framework of the Stranding Analysis the base-structure in (64) works fine for Dutch, Italian and Romanian. Nonetheless, it raises some serious questions regarding the definite article in English. Consider the following four sentences:

- (68) a. \*All three the students have read the book.  
 b. The students have all three read the book.  
 c. All three students have read the book.  
 d. \*Students have all three read the book.

In (68a) the underlying structure in (64) appears in the Surface Structure and produces infelicitous results that we do not see in the other languages that we have analysed. Note that the word order in (64) is effectively  $Q > \text{Card} > D > N$ . This Surface Structure word order contrasts with the standard hierarchy that I proposed in Chapter 1 for the nominal domain, which was as follows:

$$(69) Q > D > \text{Card} > N.$$

I have demonstrated the cross-linguistic validity of this hierarchy with phrases such as the following:

- (70) a. English: All the three books  
 b. Dutch: Al de drie boeken  
 c. German: Alle die drei Bücher  
 d. Romanian: Toate cele trei cărți  
 e. Italian: Tutti i tre libri

I would like to suggest that the formation of a  $\forall\text{NumQ}$ , which produces  $Q > \text{Card} > D$  word order, conflicts with the standard  $Q > D > \text{Card}$  hierarchy shown in (69) and (70) and may result in a language-specific Surface Structure constraint that blocks word order that deviates from the standard hierarchy. This constraint would stipulate that it is the *contiguous* appearance of the elements Q, Card and D, in that order, that causes a deviation from the standard hierarchy in (69). Stranding the  $\forall\text{NumQ}$  avoids the contiguous appearance of Q, Card and D and “rescues” a

sentence just as the stranding operation in (68b) rescues (68a). English is not the only language affected by this. German is also affected, as the contrast between the following two sentences demonstrates:

- (71) a. \*Alle drei die Studenten haben das Buch gelesen.  
           all three the students have the book read
- b. Die Studenten haben alle drei das Buch gelesen.  
           the students have all three the book read

Also, I mentioned in Section 2.3 that a Romanian sentence like (66a) is slightly downgraded and that stranding, as in (66b), eliminates the downgrading. Thus, there does seem to be a constraint blocking word order that is opposed to the basic hierarchy in (69) and (70). I emphasise that this is a language-specific constraint, since Dutch and Italian, for example, do not have it. Surface Structure constraints that can be evaded by stranding do seem to exist:

- (72) a. David, Stephen and Chan have all arrived.  
       b. \*All David, Stephen and Chan have arrived.

If there is in fact an English-specific Surface Structure constraint against violating the order  $Q > D > \text{Card}$ , perhaps stranding is not the only way to evade the constraint. Example (68c) shows that suppression of the article may be another strategy. If this is so, (68d) shows that both strategies, that is, stranding and suppression of the article, cannot be applied at once. Clearly, this issue of the definite article illustrated in (68) is complicated and requires investigation. In the following sub-sections I will discuss three different approaches that one might take in order to solve this problem.<sup>9</sup>

#### 4.1 Perhaps English has no $\forall \text{NumQ}$

Suppose that English was more like Spanish and French and had no  $\forall \text{NumQ}$ . This would mean that in (68c) a universal quantifier has selected a DP in which the numeral has moved to an empty D-position. This approach would not only properly generate (68c). It would also explain the ungrammaticality of (68d), since in (68d) a numeral that is not located in Q has been stranded. Furthermore, it would correctly fail to produce the ungrammatical (68a). Nonetheless, this approach has at least

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<sup>9</sup> One might try to argue that (72b) is impossible because a universal quantifier cannot select conjoined DPs and that in (72a) the floating quantifier is either a kind of appositive or an adverbial. The problem with this approach is that a universal quantifier can in fact select conjoined DPs, as in *All the doctors and nurses have spoken with the patient*. I believe that the problem with (72b) is the singular number of the first element after the plural quantifier *all*. This combination seems anomalous and results in a Surface Structure constraint that can be avoided by stranding. There will be more on this in Chapter 5. One might also try to argue that the contrast between (68a) and (68b) on the one hand and the contrast between (72a) and (72b) on the other are evidence against the Stranding Analysis and force one to accept the Adverbial Analysis. As I will discuss in Chapter 5, the Adverbial Analysis would have as much difficulty with these contrasts as the Stranding Analysis.

three weaknesses. First of all, in the Germanic languages a bare universal quantifier like *all* normally must select either a DP headed by a definite determiner or a bare NP with a generic meaning:

- (73) a. All the students have read this book.  
 b. All students drink beer.

The phrase *three students* in (68c) is neither a definite DP nor a bare NP with a generic meaning, and therefore should not be able to be selected by a bare universal quantifier.

The second problem with this solution is that it could only generate (68b) by positing an appositive QP such as the one found in Spanish and French. This is perhaps not a problem in and of itself, but keep in mind that in English the universal quantifier and the numeral appear in contiguous positions, with no determiner between them, in both stranding and non-stranding positions, just as in Dutch, Romanian and Italian. It therefore seems that English, too, has a true  $\forall$ NumQ. The situation is different in Spanish, Portuguese, French and Catalán, in which there is always a determiner between the quantifier and the numeral. Thus it would seem very unnatural to say that English has no  $\forall$ NumQ just because of the contrast between (68a) and (68c).

The third problem with this solution is that it wrongly generates the following sentence:

- (74) ?/\*Three students have all read the book.

This sentence seems anomalous because if there is a universal quantifier present one expects a definite or generic DP. This already casts doubt on the idea just suggested that in (68c) a bare universal quantifier has selected a DP in which a numeral, which is not inherently definite, has moved to D. Nonetheless, let's assume for the moment that (74) is not totally bad and that it can be acceptable if one imagines that the numeral *three* refers to three specific students. In order to block (68d) we would then have to claim that the appositive QP *all three* cannot be co-referenced with a DP that is not definite. This is perhaps not implausible, given the definiteness of the quantifier *all*, but it is an additional stipulation that has to be made, and this renders this solution less desirable.

#### 4.2. Perhaps $\forall$ NumQ Selects a Bare NP with no Generic Meaning

We could say that English does possess a  $\forall$ NumQ and that (68a) is blocked by a Surface Structure constraint like the one suggested in Section 4.0. Then, in order to generate (68c), we could say that an English  $\forall$ NumQ differs from a bare universal quantifier in that it can select a bare NP even if the NP has no generic meaning. This approach is undesirable because it has two difficulties in addition to its dependence on the Surface Structure constraint mentioned in Section 4.0. The first

difficulty is that we would be saying that a bare quantifier and a  $\forall$ NumQ, although they are both strandable universal quantifiers in Q, have different selectional properties. The only way around this would be to propose the rather ad hoc hypothesis that a bare universal quantifier and a  $\forall$ NumQ both select bare NPs but that when a  $\forall$ NumQ selects a bare NP, as in (68c), the generic meaning is blocked by the presence of the numeral. The second difficulty that we would be getting into with this solution is that if we claim that a  $\forall$ NumQ can select a bare NP, we predict the grammaticality of (68d). In order to block (68d) we would be forced to propose another ad hoc constraint, namely, that a  $\forall$ NumQ can only be stranded if there is an overt definite article present, as in (68b). This approach seems a bit messy, with too many ad hoc constraints.

### 4.3. Failure to Spell Out the Definite Article

Another explanation for the contrasts in the examples in (68), hinted at in Section 4.0, might be as follows:

As shown in (68a), there is a language-specific constraint against producing word order that violates the standard hierarchical order  $Q > D > \text{Card} > N$ . This constraint can be complied with either by stranding, as in (68b), or by suppression of the definite article, as in (68c). The sentence in (68d) would be blocked because it unnecessarily applies both strategies at once. This approach thus accounts for all the sentences in (68).

The problem with this solution is that deletion is something that one finds in phonology. Nonetheless, syntactic deletion does exist. Examples are ellipsis, the deletion of a lower copy of a moved constituent, and the deletion of the Afrikaans negation marker *nie* in certain instances when it occurs more than once in a clause.<sup>10</sup> Deletion of the definite article following a  $\forall$ NumQ is not unmotivated. The definiteness of the universal quantifier could be said to render the definite article redundant. Since numerals have the ability to function as determiners, the combination of a universal quantifier and a numeral renders the definite article even more redundant. If one simply allows for the deletion of the definite article following a  $\forall$ NumQ, one can easily explain the sentences in (68). I therefore conclude that this explanation for the missing definite article is preferable to the two solutions presented in Sections 4.1 and 4.2.

Some readers may have noticed that if one is going to allow the deletion of a syntactic element, one could claim that the appositive QP that I posited for languages like Spanish in Section 2.5 is not an appositive QP at all but a  $\forall$ NumQ that creates a Surface Structure violation of the  $Q > D > \text{Card}$  order and leads to suppression of the definite article. This argument would proceed as follows:

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<sup>10</sup> See for example den Besten (1986) and Biberauer (2008).

In Spanish there is a lexical constructional idiom à la Booij according to which a  $\forall$ NumQ is formed by combining  $\forall$ , D and Card. This produces a syntactic word à la Di Sciullo and Williams that is inserted into Q and selects a definite DP. This merging with a definite DP creates a Surface Structure violation of the  $Q > D > \text{Card}$  hierarchy in (69):

- (75) \*<sub>[QP Todos los tres <sub>[DP los alumnos]]</sub> han leído el libro.  
           all   the three    the students have read the book</sub>

In this sentence a definite article follows a numeral, producing a violation of the standard hierarchy. The constraint against a Surface Structure violation of this hierarchy could be evaded either by stranding, as in (76a), or by deleting the determiner, as in (76b):

- (76) a. Los alumnos han leído todos los tres el libro.  
           the students have read all the three the book  
       b. Todos los tres ~~los~~ alumnos han leído el libro.  
           all the three the students have read the book

This analysis would not work because it would not be able to account for what is happening when the appositive QP found in Spanish and French co-occurs with a possessive pronoun instead of a definite article. Observe the following sentences, which are the same as in (76) except with a possessive pronoun:

- (77) a. Tus alumnos han leído todos los tres el libro.  
           your students have read all the three the book  
       b. Todos los tres ~~tus~~ alumnos han leído el libro.  
           all the three your students have read the book

The problem here is that the appositive QP always contains the definite article, even if the subject DP contains a possessive pronoun. The (a) and (b) examples are thus impossible to link and deletion is not an option, since it would delete a non-redundant possessive.

#### 4.4 Section Review

In this section we have looked at a problem associated with the suppression of the definite article in combination with a  $\forall$ NumQ in English and to a lesser extent in German. Three possible solutions were examined. The solution whereby there is a Surface Structure constraint that can be circumvented either by stranding or by suppression of the definite article seems to be the most plausible of the three solutions. This issue is a Germanic one, since in the Romance languages universal quantifiers do not select bare NPs. More language phyla would have to be

investigated in order to see what issues there are with  $\forall$ NumQs, definite articles and bare NPs.

## 5. Chapter Summary

In this chapter I have postulated the existence of a  $\forall$ NumQ consisting of a universal quantifier and a numeral. I have presented several different types of evidence that show that a  $\forall$ NumQ cannot be derived by movement of the numeral to Q and is thus base-generated in Q in its entirety. A  $\forall$ NumQ is not exactly a listed item but it is generated by a rule that is stored in the lexicon and consequently has certain characteristics of a stored item. The rule that governs the creation of a  $\forall$ NumQ is comparable to the lexical rules for number formation posited in Booij (2008) and in fact is probably one of them. The fact that a  $\forall$ NumQ is created by a lexical rule makes it very comparable to Di Sciullo and Williams' *syntactic word*, which is inserted into a head position in the syntax just as I am saying that a  $\forall$ NumQ is inserted into Q. Since a  $\forall$ NumQ is formed by a rule stored in the lexicon, one would not expect it to be a universal phenomenon. Dutch, Italian, Romanian and probably English and German have a true  $\forall$ NumQ that selects a definite DP and can be stranded. Spanish, French, Portuguese and Catalán have no such element.

I have claimed that the  $\forall$ NumQ hypothesis in combination with the Stranding Analysis of floating quantifiers can account for the behaviour of universal quantifiers in combination with numerals cross-linguistically. I believe that the data support this claim. There is an issue in the fact that the base-structure of a  $\forall$ NumQ surfaces in Italian, Romanian, Dutch but is only possible in English and German if the  $\forall$ NumQ is stranded or if the definite article is suppressed. I suggested that this might be due to a Surface Structure constraint that blocks deviation from the standard order of constituents in the underlying hierarchy of the nominal domain.

## Chapter 5: The Adverbial Approach to Floating Quantifiers

### 0. Introduction: Syntactic and Semantic Issues with the Stranding Analysis

In the preceding four chapters we have seen evidence in support of the Stranding Analysis of floating quantifiers. However, certain flaws in the theory have also surfaced. For example, in Chapter 4 we saw two instances in which a Surface Structure constraint was needed in order to make the theory work:

- (1) a. \*All David, Stephen and Chan have arrived.  
b. David, Stephen and Chan have all arrived.
  
- (2) a. \*All three the students have read the book.  
b. All three students have read the book.  
c. The students have all three read the book.

In (1a) it appears that a universal quantifier cannot select conjoined DPs if the first DP in the conjunct is singular in number, and if this is so, the floating quantifier in (1b) cannot be a stranded quantifier and must therefore be some kind of appositive or an adverb. The same thing seems to be occurring in (2). In (2a), it appears that a universal numeric quantifier cannot select a DP headed by the definite article in English. If this is so, the  $\forall$ NumQ in (2c) cannot be a stranded quantifier and must therefore be some kind of appositive or adverbial.

I attempted to get around the problem in (1) by claiming that a universal quantifier can in fact select conjoined DPs but if the first conjoined DP is singular the combination of a plural quantifier followed by a singular noun creates an anomalous sequence that cannot be spelled out. Stranding the quantifier avoids the anomalous sequence. I suggested something similar as an explanation for the discrepancies in (2), namely, that the word order in (2a), which is  $Q > \text{Card} > D > N$ , constitutes a departure from the standard word order, which is  $Q > D > \text{Card} > N$  and therefore cannot be spelled out. The problem can be avoided by suppressing the definite article, as in (2b), or by stranding, as in (2c).

Since ad hoc, language-specific constraints are a last resort solution, in light of (1) and (2) one might be tempted to abandon the Stranding Analysis and embrace the Adverbial Analysis, whereby floating quantifiers are adjuncts to verbal phrases. Note, however, that the Adverbial Analysis would have just as much trouble with (1) and (2) as the Stranding Analysis has. The Adverbial Analysis would explain (1b) by saying that the floating quantifier is an adverb, but how would it block (1a)? An explanation for (1a) is required regardless of whether one espouses the Stranding Analysis or the Adverbial Analysis, and in order to explain (1a) proponents of the Adverbial Analysis would need an ad hoc constraint preventing universal quantifiers from selecting conjoined DPs if the first conjunct is singular. This does not seem to be an improvement over the Stranding Analysis.

In like manner, the Adverbial Analysis would explain (2c) by claiming that the  $\forall$ NumQ was an adverbial of some kind, but two problems would remain. First of all, if the  $\forall$ NumQ in (2c) is an adverbial, what is the  $\forall$ NumQ in (2b), and why is the definite article needed in (2c) but impossible in (2a)? Secondly, why is (2c) unacceptable in English (and German) but acceptable in Italian, Romanian and Dutch? Supporters of the Adverbial Analysis cannot simply ignore these two questions, and ultimately they will also have to resort to building constraints into their theory. Furthermore, for all their trouble they will still fail to account for the obvious relationship between the sentences in (2b) and (2c) or the relationship between the following two sentences:

- (3) a. All the children have seen the film.  
b. The children have all seen the film.

Thus, despite the problems that (1) and (2) pose for the Stranding Analysis, it is difficult to see any compelling reason to prefer the Adverbial Analysis.

There are other potential problems with the Stranding Analysis. As mentioned in Chapter 1, it has been claimed in Baltin (1995), Bobaljik (2003) and elsewhere that the Stranding Analysis falsely predicts the grammaticality of the following sentences:

- (4) a. \*The children were seen all.  
b. \*The children have arrived all.

However, as I also mentioned in Chapter 1, authors like Baltin and Bobaljik fail to consider certain innovations in linguistic theory. If one assumes the position that I argued for in Chapter 1, namely, that the subjects of passive and unaccusative verbs originate not as complements of V but in [SPEC, VP], then the ungrammaticality of the sentences in (4) is explained by the fact that the quantifiers are in a position below their base-position.

The purpose of this chapter is to demonstrate that the arguments put forth by proponents of the Adverbial Analysis are either flawed or not compelling. In Section 1 I will discuss some general problems with the Stranding Analysis and point out that the Adverbial Analysis cannot deal with them any better than the Stranding Analysis. In Sections 2 through 6 I will discuss some of the better-known adverbial analyses in order to demonstrate that they do not present compelling reasons for abandoning the Stranding Analysis. Section 7 is a brief summary of the chapter.

## 1. General Problems with the Stranding Analysis

One issue with the Stranding Analysis is that stranding is sometimes restricted even in languages that allow it. Spanish and Romanian are two good examples, as we saw in Chapter 2. These two languages allow stranding rather freely, but the position between a perfect auxiliary and a perfect past participle is for some reason not available for stranding. Some might argue that this is a problem for the Stranding Analysis, however it is also a problem for the Adverbial Analysis. Proponents of the Adverbial Analysis would have to explain why floating quantifiers, if they are adverbials, cannot appear between a perfect auxiliary and a past participle while other adverbials can. Note the following sentences from Spanish (5) and Romanian (6):

- (5) a. Los alumnos han probablemente leído el libro.  
the students have probably read the book
- b. Los alumnos han cuidadosamente leído el libro.  
the students have carefully read the book
- c. \*Los alumnos han todos leído el libro.  
the students have all read the book
- (6) a. Studenții au mai citit cartea.  
students the have again read book the
- b. Studenții n-au prea citit.  
students the not have hardly read
- c. Studenții au cam întârziat la ore.  
students the have really arrived late for class
- d. Studenții au tot citit cartea.  
students the have continuously read book the
- e. Studenții au și început să citească.  
students the have immediately begun that (they) read  
(The students immediately began to read.)
- f. \*Studenții au toți citit cartea.  
students the have all read book the

Whereas Spanish and Romanian disallow stranding in just one position, Swedish, which has not been discussed in this thesis so far, is far more restrictive. The rule in Swedish is that a quantifier can be stranded only between the first and second verbal elements in a clause, and if there is only one verbal element stranding is not possible. In the following sentences, there is only one verbal element, a finite main verb, and stranding is not possible:

- (7) a. Alla doktorerna undersöker patienten.  
 all doctors the examine patient the
- b. \*Doktorerna undersöker alla patienten.  
 doctors the examine all patient the

In Chapter 2 we saw that this construction with stranding after a solitary main verb is perfectly acceptable in languages such as German and Italian but not in English. The reason for this is that in German and Italian the verb moves from *v* to AgrS, around the stranded quantifier, while in English it stays in *v*. In Swedish, a V2 language, verbs also move to AgrS (and C) from *v*, so according to the Stranding Analysis (7b) should be acceptable.

In the following sentence, there are only two verbal elements, and stranding between those elements is grammatical:

- (8) a. Alla doktorerna skulle undersöka patienten.  
 all doctors the shall examine patient the
- b. Doktorerna skulle alla undersöka patienten.  
 doctors the shall all examine patient the

The following sentence has four verbal elements, and stranding is only possible between the first two, which, again, is not what the Stranding Analysis would predict:

- (9) a. Doktorerna skulle alla ha kunnat undersöka patienten.  
 doctors the shall all have been able to examine patient the
- b. \*Doktorerna skulle ha alla kunnat undersöka patienten.  
 doctors the shall have all been able to examine patient the
- c. \*Doktorerna skulle ha kunnat alla undersöka patienten.  
 doctors the shall have been able all to examine patient the

Swedish undeniably poses a challenge for the Stranding Analysis. A possible explanation for (9b) and (9c) is as follows:

Only the finite verb moves. The other verbal elements in a clause remain in their base-positions (apart from transitive verbs, which moves from *V* to *v*). One could try to argue that all the verbal elements below the finite one, that is, the ones that do not move, form a kind of cluster that disallows stranding between them. There are two problems with this approach. First of all, it does not explain the ungrammaticality of (7b). Secondly, it does not explain why items other than floating quantifiers, such as adverbials, can in fact appear between lower verbal elements, albeit with marginal results:

- (10) a. ?/\*Doktorerna skulle ha allihop kunnat undersöka patienten.  
doctors the shall have all been able to examine patient the
- b. ?Doktorerna skulle ha kunnat allihop undersöka patienten.  
doctors the shall have been able all to examine patient the
- c. ??Doktorerna skulle ha kunnat troligtvis undersöka patienten.  
doctors the shall have been able probably to examine patient the

These sentences are perhaps marginal, but they are clearly better than (9b) and (9c), and this brings me to a very important point. A proponent of the Adverbial Analysis would be very hard pressed to explain why a quantifier cannot be floated in the positions indicated in (9b) and (9c) while adverbs can appear there. Examples (10a) and (10b) are especially interesting because they contain the adverbial form of the universal quantifier, *allihop*. This adverbial, which is very comparable to the Dutch *allemaal*, was formed by combining the universal quantifier *alla* and the noun *hop*, a cognate of the English word *heap*. According to the Adverbial Analysis, one would expect to find *alla* and *allihop* in the same positions, but this expectation is not fulfilled. Sentence (7b), which contains only one verbal element, also poses a problem for the Adverbial Analysis because it becomes grammatical if the floating quantifier *alla* is replaced with an adverb:

- (11) Doktorerna undersöker allihop/troligtvis patienten.  
doctors the examine all probably patient the

This evidence from Swedish shows that the Adverbial Analysis is faced with at least as many problems as the Stranding Analysis. We can summarise our findings from Swedish in the following way:

Sentence (8b) shows that stranding takes place in Swedish. However, sentences (7b), (9b) and (9c) show that stranding is severely restricted. The Adverbial Analysis is of no use because it would not be able to explain why sentences (7b), (9b) and (9c) are impossible while the sentences in (10) and (11) are possible. The more plausible explanation, given (8b), is that stranding does take place in Swedish but that there are restrictions that are not yet well understood, just as in Spanish and Romanian. In any case, one can certainly not conclude that the Stranding Analysis is in any way inferior to the Adverbial Analysis on the basis of the restrictions on quantifier floating that one finds in languages like Spanish, Romanian and Swedish.<sup>1</sup>

One might claim that another potential issue with the Stranding Analysis is that quantifier stranding is not universal. All the languages that we have looked at so far in this thesis allow stranding to some extent, but this does not mean that all languages do. Does this pose a problem for the Stranding Analysis? I do not believe that the claim that quantifier stranding is parameterised is incompatible with the Stranding Analysis. Furthermore, proponents of the Adverbial Analysis would also have to deal with the issue of parameterisation, and they would have the same difficulty explaining why certain quantifiers can appear in adverbial positions in some languages but not in others.

One can see that the syntactic arguments against the Stranding Analysis are weak because the Adverbial Analysis runs into the same problems as the Stranding Analysis but misses generalisations that the Stranding Analysis captures. In my opinion the most interesting arguments of the proponents of the Adverbial Analysis are semantic in nature and have to do with the fact that stranding seems to affect meaning. One might argue that if a sentence with a stranded quantifier does not have exactly the same meaning as its counterpart without stranding, then it must have

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<sup>1</sup> The idea that in Swedish the non-finite verbal elements in a clause form a cluster that is impenetrable to a stranded quantifier becomes more plausible when one considers subordinate clauses. It is well known that finite verbs in main clauses in Swedish move to a higher position because they appear above negation while finite verbs in subordinate clauses remain in their base-position, below negation:

(i) Doktorerna skulle inte ha undersökt patienten.  
doctors the shall not have examined patient the

(ii) Jag tror att doktorerna inte skulle ha undersökt patienten.  
I believe that doctors the not shall have examined patient the

If it is the immobility of verbal elements that forms an impenetrable cluster, then one would expect stranding to be possible in a main clause but not in a subordinate clause. This expectation is met:

(iii) Doktorerna skulle alla ha undersökt patienten.  
doctors the shall all have examined patient the

(iv) \*Jag tror att doktorerna skulle alla ha undersökt patienten.  
I believe that doctors the shall all have examined patient the

Nonetheless, the fact that a cluster is closed to a stranded quantifier but not to adverbs, as seen in (10), shows that there is still work to be done in this area.

been derived from a different base-structure and there is no such thing as stranding. Let's take a look at some examples. Consider first the following sentences from Italian:

- (12) a. Tutti gli studenti non sono venuti.  
           all the students not are come
- b. Gli studenti non sono tutti venuti.  
           the students not are all come

In the (a) sentence, only a [ $\forall > \neg$ ] reading is possible. In the (b) sentence, which is the same as (a) except that the universal quantifier has been stranded, only a [ $\neg > \forall$ ] reading is possible. I do not consider this to be a problem for the Stranding Analysis, because it can be explained syntactically. In (12a) the quantifier c-commands the negation marker and in (12b) the negation marker c-commands the quantifier. That positioning can affect scopal relations should not be a hindrance to the Stranding Analysis or any other analysis. The following sentence really drives this point home, because it shows that stranding is not the issue at all:

- (13) Non sono venuti tutti gli studenti.  
        not are come all the students

This sentence is the same as (12a) except that the entire subject QP has remained in its base-position. (The past participle *venuti* (*come*) has moved up in the manner described in Section 2 of Chapter 2.) The entire subject is therefore below negation and, as would be expected, only a [ $\neg > \forall$ ] reading is possible. To summarise, even though the sentences in (12a), (12b) and (13) have the same base-structure, movement affects meaning, whether it involves quantifier stranding or not. These examples therefore do not constitute an argument against the Stranding Analysis.

The examples in (12) and (13) show how positioning can affect meaning when negation is involved. There are instances in which stranding can bring about more subtle differences in meaning. In order to demonstrate this I need to briefly discuss the subject of distributivity. Most universal quantifiers seem to be inherently distributive. The quantifier *both* is a good example. When it selects a NP, any properties predicated of that NP must be applicable to each individual that it designates. The following example from de Swart (1998) illustrates this:<sup>2</sup>

- (14) a. The two students are a happy couple.  
        b. \*Both students are a happy couple.

Being a happy couple can only be predicated of a group of two, not to individuals, and this is why (14b) is ungrammatical. The universal quantifiers *every* and *each* are

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<sup>2</sup> De Swart (1998) p. 185.

also always distributive. In the following two sentences, there must be at least as many pizzas as there are students:

- (15) a. Each student ate a pizza.  
b. Every student ate a pizza.

As argued in Gil (1995), Beghelli (1997), Puskás (2003) and elsewhere, the universal quantifier *all* is not inherently distributive. It can allow either a collective or distributive interpretation, as the following sentence shows:

- (16) All the students ate a pizza.

It can also combine with a predicate that forces a collective interpretation, unlike *every* or *each*. The following example from Gil (1995) illustrates this:<sup>3</sup>

- (17) a. All the men gathered at dawn.  
b. \*Every man gathered at dawn.

Nonetheless, I would maintain that the first or preferred reading of a sentence such as (16) is a distributive one. Put in another way, the quantifier *all* can combine with collective or distributive predicates, but unless pragmatics dictates otherwise, the default reading is a distributive one. The following sentences show the relevance of this observation to the Stranding Analysis:

- (18) a. ?/\*All the peasants have destroyed the castle.  
b. ?The peasants have all destroyed the castle.

Example (18a) is problematic because when a listener hears the universal quantifier followed by a complement DP, the first expectation is that the predicate will be true of each individual under the scope of the quantifier. Since an individual peasant cannot destroy a castle, and since there are not as many destroyed castles as there are peasants, a collective interpretation is required, which is contrary to the more natural distributive interpretation of the quantifier. What is interesting is that the sentence improves, for some speakers at least, if the quantifier is stranded, as seen in (18b). An opponent of the Stranding Analysis might claim that because the quantifier in (18a) tends to require a distributive interpretation while the quantifier in (18b) can more easily allow a collective interpretation, the two sentences must have different base-structures and stranding has not occurred in (18b). My counterclaim would be that the two sentences in (18) are derived from a common base-structure but that the stranding of the quantifier in a position adjacent to the predicate allows it to take direct scope over the collective event expressed in the verb, which allows pragmatics to play a greater role. In this way a collective reading becomes possible. The quantifier in (18b) still modifies the subject DP *the peasants*, but its adjacency to the predicate, created by stranding, refocuses its scope.

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<sup>3</sup> Gil (1995) p. 322.

As I will point out in Sections 3 and 6 of this chapter, there are those, such as Doetjes (1997) and Kobuchi-Philip (2003), who maintain that the scopal differences seen in sentences like (18a) and (18b) arise because the quantifier in (18b) is base-generated as an adjunct to VP. My claim is that there is no need to treat the quantifier in (18b) as an adjunct to VP because stranding accomplishes the same thing by simply changing the positioning of the quantifier with respect to the predicate. This is analogous to what happens in the Italian sentences in (12) and (13). The sentences in (18) are a problem for the Stranding Analysis only if one assumes that stranding should have no effect on meaning. I continue to maintain that a potential change in scope and meaning is a natural consequence of movement and is not a counterargument to the Stranding Analysis.

In this section I have attempted to show that from a syntactic standpoint the Adverbial Analysis is unconvincing in many respects, and that certain semantic phenomena that seem problematic for the Stranding Analysis need not be construed as problematic if one accepts the claim that movement affects relative positioning, scope and meaning as a matter of course. In the remaining sections of this chapter I will look at individual adverbial approaches that have been put forth in the literature.

## 2. The Predicate Specifiers of Baltin (1995)

Baltin (1995) treats floating quantifiers as *predicate specifiers* comparable to English adverbs like *ever*. The following examples indicate why he takes this approach:<sup>4</sup>

- (19) a. I believe these people all to have left.  
 b. I would hate for these people ever to find out they were wrong.

Baltin is concerned with two questions:

### Question 1:

Why, as exemplified in (20), can a floating quantifier not appear before the English infinitival marker *to* if the subject of the infinitive is PRO although it can appear there if the subject of the infinitive is a lexical item or the trace of a lexical item?

- (20) a. \*They tried all to PRO leave.  
 b. They<sub>1</sub> seemed all t<sub>1</sub> to t<sub>1</sub> be happy.  
 c. I would prefer for these people<sub>1</sub> all t<sub>1</sub> to t<sub>1</sub> leave.

### Question 2:

Why, as exemplified in (21), can a floating quantifier appear between a direct object and an argument like a PP, but not if that argument is extraposed?

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<sup>4</sup> Baltin (1995) p. 211.

- (21) a. Give the books all to Sally though we may, it won't matter.  
 b. \*Give the books all though we may to Sally, it won't matter.  
 c. \*Give the books though we may all to Sally, it won't matter

Baltin hypothesises that a predicate specifier like *all* must introduce a *predicative constituent*. I will discuss the concept of predicative constituent in more detail towards the end of this section. For now it is enough for the reader to know that a predicative constituent is a phrase that becomes predicative by virtue of its syntactic positioning and behaviour and by having a mutual c-command relationship with an appropriate DP. It is similar to but not the same as a small clause. In (20a), for example, the potential predicative constituent [<sub>IP</sub> to [<sub>VP</sub> PRO leave]] cannot be introduced by or merged with the predicate specifier *all* because it has no mutual c-command relationship with an appropriate DP. The subject of this IP is PRO, and since, according to Baltin, PRO does not move out of VP it cannot c-command the phrase. In (20b) and (20c), both of which involve the movement of a DP, a trace of the moved DP mutually c-commands the predicative constituent introduced by *all*. In (21a), the DP *the books* mutually c-commands the predicative constituent introduced by *all*, which is [<sub>XP</sub> all [<sub>PP</sub> to Sally]]. This makes the DP *the books* function like a subject, that is, the subject of the predicative constituent. In (21b) and (21c), the phrase *though we may* interrupts the mutual c-command relationship that the DP *the books* has with the predicative constituent.

Baltin considers the Stranding Analysis of Sportiche (1988) similar to but inferior to his own analysis. The Stranding Analysis is similar to Baltin's analysis in that both approaches rely on the VP-internal Subject Hypothesis and on the idea that movement of PRO from VP to IP is unmotivated. Baltin has three criticisms of the Stranding Analysis, which we will now take a close look at. The first one, which I referred to in Chapter 1 and in the Introduction to this chapter, is a standard criticism made by proponents of the Adverbial Analysis. It is the famous claim that the Stranding Analysis incorrectly predicts the grammaticality of the following sentence:

- (22) \*The people were seen all.

I will not dwell on this criticism here because I have already shown that it is invalid in light of the Split VP Hypothesis, which allows for passive and unaccusative subjects to be base-generated not as complements of V but as specifiers of VP. Under this scenario, (22) cannot be generated.

Baltin's second criticism of Sportiche's Analysis is that it is insufficiently general because it cannot explain why the position of floating quantifiers is identical to that of other preverbs like *ever*, as shown in (19). It is interesting that Baltin does not mention the fact that his analysis also misses a very obvious generalisation, namely, the very clear relationship between sentences like the following two:

- (23) a. All the people were seen.  
 b. The people were all seen.

Baltin, like so many proponents of an Adverbial Analysis, also ignores the fact that floating quantifiers bear Case and show  $\Phi$ -feature agreement while adverbs do not. Furthermore, contrary to Baltin's claim, Sportiche *does* explain how a floating quantifier gets into its so-called adverbial position. It is stranded there by a vP- or VP-internal subject that moves to a higher position. Finally, I would say that Baltin's claim that floating quantifiers and other preverbal elements like *ever* occupy identical positions is too strong:

- (24) a. \*Will we all be able to ever live in peace?  
 b. Will we ever be able to all live in peace?

Baltin's second criticism of the Stranding Analysis is thus very weak at best. His third criticism is the most interesting one. He says that the Stranding Analysis incorrectly predicts that stranded quantifiers will never appear before *to* in sentences such as the following:

- (25) I persuaded the men all to resign.

He bases this on the idea that PRO does not move to [SPEC, IP]. He accepts the arguments of Chomsky and Lasnik (1993) that PRO is assigned Null Case, but he claims that this case assignment takes place in [SPEC, VP]. Clearly, in order for (25) to be generated under the Stranding Analysis the phrase [<sub>QP</sub> all [<sub>DP</sub> PRO]] must move to [SPEC, IP] of the infinitival clause. The question that I must pose, in defence of the Stranding Analysis, is whether the claim that PRO does not move to [SPEC, IP] is well supported. I will do this by scrutinising the arguments against movement of PRO made by Sportiche and Baltin, who of course work within two different frameworks. We begin with Sportiche, who says that negation offers evidence that PRO does not move to [SPEC, IP].

If we assume that negation is between IP and vP in French, the following sentences from Sportiche (1988) indicate that PRO selected by the quantifier *tous* (*all*) remains in vP:

- (26) a. Ils ont décidé de ne pas tous partir à la même heure.  
 they have decided to not all leave at the same time  
 b. \*Ils ont décidé de tous ne pas partir à la même heure.  
 they have decided to all not leave at the same time

My first comment on (26b) is that I question the judgement. That the sentence is downgraded with respect to (26a) is clear, but not all speakers reject it. Be that as it may, assuming for the sake of argument that (26b) is ungrammatical, the question is whether its unacceptability is really due to the movement of PRO to [SPEC, IP] and not to something else. Consider the following sentences, also from Sportiche (1988), in which there is no PRO and yet the results are similar to those seen in (26):

- (27) a. ??Les enfants ont semblé tous ne pas vouloir venir.  
           the children have seemed all not to want to come
- b. Les enfants ont semblé ne pas tous vouloir venir.  
           the children have seemed not all to want to come

The high marginality of (27a) cannot have anything to do with PRO, since this is a raising construction that involves not PRO but a DP that moves first to [SPEC, IP] of the lower clause, where it strands a quantifier, and then to the higher clause. One would expect (27a) to be acceptable under the Stranding Analysis. The point is this: One cannot rule out the possibility that (26b) and (27a) are downgraded for the same reason, which means that movement of PRO is not necessarily the reason for the unacceptability of (26b). The problem with both sentences could, for example, have something to do with the movement of a quantifier across negation. The example in (28) from Sportiche (1988), like (26b), also involves the structure [<sub>QP</sub> all [<sub>DP</sub> PRO]] that moves across negation into [SPEC, IP]:

- (28) ?/\* Il aurait fallu tous ne pas partir à la même heure.  
       it would have been necessary all not to leave at the same time

What is important is that examples (26b) and (28) may be downgraded but they cannot be completely ruled out. Sportiche's data therefore lead one to the conclusion that movement of PRO takes place but can cause marginality or ungrammaticality. Sportiche attributes the marginality to the fact that PRO, which is (or was) assumed to be ungoverned, does not need to move to avoid government, since the head of an infinitival IP is not a governor. I would suggest that the downgrading of sentences like (27a) and (28) comes from the fact that PRO is moving from one non-case position to another, that is, from [SPEC, VP] to [SPEC, IP] in an infinitival clause. In any case, if one accepts movement of PRO in spite of its apparent markedness, one can generate (25) under the Stranding Analysis. Baltin of course rejects movement of PRO altogether. We will now examine his reason for doing this.

Baltin's reason for rejecting movement of PRO is that since PRO is assigned Null Case in [SPEC, VP] movement to [SPEC, IP] is unnecessary and is therefore blocked by Economy principles. Baltin can explain the sentences in (26) and (27) within the framework of his theory. He would say that (26a) is grammatical because PRO, as the subject of the lower VP, c-commands the predicative constituent selected by *all*. For (26b), he would say that PRO, again in VP, does not c-command the predicative constituent selected by *all*. In (27a) and (27b), in which a lexical DP has moved upward in a raising construction, the trace of that moved DP mutually c-commands the predicative constituent selected by *all* and the sentences are expected to be acceptable. Baltin's model seems to work for these sentences. Nonetheless, there are reasons to doubt his claim that PRO does not move, which I will now discuss.

Sportiche and Baltin base their arguments related to movement of PRO on government and case considerations, but neither one mentions the Extended

Projection Principle. In Adger (2003)<sup>5</sup> it is argued that PRO moves to [SPEC, IP] to satisfy the EPP. Others like Grewendorf (2002) and Culicover (1997) also assume that PRO moves to [SPEC, IP].<sup>6</sup> If PRO moves to [SPEC, IP], the Stranding Analysis can generate (25) and Baltin's third criticism becomes invalid. I would say that the EPP feature is probably not very strong, which is why it sometimes gives way to Economy principles and non-movement is preferred. This is illustrated in the following two sentences, in which non-movement produces better results:

- (29) a. The linguists promised all to leave.  
b. The linguists promised to all leave.

The second of these sentences sounds better than the first. The point is that there is reason to believe, and it is argued in the literature, that PRO can move to [SPEC, IP], which means that the Stranding Analysis can generate (25), contrary to Baltin's criticism.

The most convincing argument against Baltin's hypothesis, I believe, has to do with example (20a), repeated here:

- (30) \*They tried all to leave.

Baltin says that this sentence is ungrammatical because the potential predicative constituent *all to leave* does not have a mutual c-command relationship with a DP, which is due to the fact that the subject of *to leave*, which is PRO, does not move up. To me, (30) does not sound ungrammatical, although I would admit that it sounds marginal. However, if one considers other subject control verbs like *promise*, *decide* or *manage*, the results are much better. All of the following examples were found on the Internet:

- (31) a. They had promised all to stick by him no matter what.  
b. We told them to form a strong alliance, which they promised all to do.  
c. We have promised all to meet up and do this again.  
d. The servants promised all to take care of the life of Caesar.  
e. They promised all to pray for me.  
f. We decided all to go to the Twisted Monkey.  
g. The tourists decided all to swarm the shop.  
h. As it was very nice weather we decided all to go to the beach.  
i. At closing time we decided all to go back to my friend's flat.  
j. After three years the producers and Lilian decided all to go their own way.  
k. Thank God we managed all to flee safely.  
l. Luckily we managed all to hitch a lift back in good time.  
m. We managed all to be so relaxed about what we actually did.  
n. They managed all to penetrate the building with the same deepness.  
o. They managed all to broadside in and gently slap the side of our vehicle.

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<sup>5</sup> Adger (2003) pp. 306-313.

<sup>6</sup> Grewendorf (2002) p. 110 and Culicover (1997) p. 75-77.

The only way that Baltin could explain the grammaticality of these sentences would be to assume that PRO moves to [SPEC, IP]. PRO is the only DP that could possibly have a mutual c-command relationship with the control clause. His third and final criticism of the Stranding Analysis, which is based on the claim that PRO does not move to [SPEC, IP], must therefore be rejected.

Having shown that Baltin's three criticisms of the Stranding Analysis are not well founded, I would like to come back to the examples in (21), since they are critical to Baltin's arguments. They are repeated here:

- (32) a. Give the books all to Sally though we may, it won't matter.  
 b. \*Give the books all though we may to Sally, it won't matter.  
 c. \*Give the books though we may all to Sally, it won't matter

Although I do not agree with Baltin's overall analysis, I accept his claim that in these sentences the DP *the books* and the PP *to Sally* form some kind of phrase together. I will provide my own reasons for supporting this claim shortly. Since this type of phrase does not fit the description of a Small Clause, I will use Baltin's term *predicative constituent*. Baltin emphasises that the predicative status of a phrase does not necessarily depend on its semantics, but rather on its syntactic positioning and behaviour. In fact, the same phrase may or may not be predicative, depending on its position. Baltin offers the following data to demonstrate his point, claiming that VP ellipsis can apply not only to VPs but also to other predicative elements:<sup>7</sup>

- (33) a. I consider Fred [an excellent teacher] but I don't think Mary is \_\_\_\_\_.  
 b. \*I looked for [an excellent teacher], but I don't think Fred is \_\_\_\_\_.

Based on Baltin's predicative constituent concept, I will now show how the Stranding Analysis deals with the sentences in (32). I will then provide my own reasons for adopting the predicative constituent concept.

Assuming that the sentences in (32) contain a predicative constituent, abbreviated PC, under the Stranding Analysis the base-structure of the sentences would be as follows:

- (34) [<sub>CP</sub> Though [<sub>IP</sub> [<sub>ModalIP</sub> may [<sub>VP</sub> we give [<sub>PC</sub> all the books to Sally]]]]]

In all of the sentences in (32), the subject pronoun *we* moves to [SPEC, IP] and the modal verb *may* moves to I. This leaves the remnant vP *give all the books to Sally*, which is topicalised. In (32a) the DP *the books* has moved out of the predicative constituent, perhaps to [SPEC, AgrOP] or some position in vP, and has stranded the quantifier, presumably in [SPEC, PC]. In (32b) and (32c), the topicalised material does not represent the entire vP. It is a partial constituent. If one is going to topicalise a constituent, then everything in that constituent must be fronted. The Stranding Analysis thus makes the proper predictions about all the sentences in (32).

<sup>7</sup> Baltin (1995) p. 233.

Before ending this section on Baltin (1995) I would like to present my own evidence in support of the concept *predicative constituent*. There are phrases that do not qualify as Small Clauses but do form some kind of predicative element. Quantifier stranding provides evidence for the existence of such phrases. Consider the following Italian sentences:

- (35) a. Ho comprato [tutti i libri da Gianni].  
 (I) have bought all the books from Johnny
- b. ?Ho comprato i libri<sub>i</sub> [tutti t<sub>i</sub> da Gianni].  
 (I) have bought the books all from Johnny
- (36) a. Ho comprato tutti i libri di Gianni.  
 (I) have bought all the books of Johnny's
- b. \*Ho comprato i libri tutti di Gianni  
 (I) have bought the books all of Johnny's

The phrase *tutti i libri da Gianni* (*all the books from Johnny*) in (35a) seems to constitute a predicative constituent of some kind, because the quantifier can be stranded inside that constituent, as shown in (35b). On the other hand, the phrase *tutti i libri di Gianni* (*all the books of Johnny*) in (36a) does not constitute a predicative constituent, as can be seen in (36b). Because there is no predicative constituent in (36a), there is no phrase in which to strand a quantifier. (Remember from Chapters 2, 3 and 4 that object quantifiers can only be stranded in the Romance languages if they can be construed as actually being subjects of a Small Clause or something similar.)

This observation holds not only for Italian. I would say that the English glosses of the Italian sentences in (35b) and (36b) seem to produce the same grammaticality judgements as their Italian equivalents. Dutch, which uses the same preposition for the English *of* and *from*, provides additional evidence for the claim that (35) contains a kind of predicative constituent while (36) does not. Consider the following Dutch sentences:

- (37) a. Ik heb al de boeken van Jan gekocht.  
 I have all the books of/from John bought
- b. Ik heb de boeken allemaal van Jan gekocht.  
 I have the books all from John bought

Example (37a) is ambiguous. It can be construed as containing a predicative constituent with the meaning *all the books from John*, or as containing a DP with a possessive PP complement that does not qualify as a predicative constituent. Sentence (37b) has only one reading. It would be ungrammatical if one interpreted the PP *van Jan* as a possessive PP. This again strongly suggests that a predicative constituent is a phrase very similar to a Small Clause in that its subject can move out

and strand a quantifier. Scrambling data from German also offers evidence that certain types of phrases seem to be predicative and form a kind of constituent:

- (38) a. Ich habe die Studenten<sub>1</sub> [alle t<sub>1</sub> während des Vortrages] gesehen.  
 I have the students all during the lecture seen
- b. \*Ich habe die Studenten<sub>1</sub> [alle aus t<sub>1</sub> Prag] gesehen.  
 I have the students all from Prague seen

The phrase meaning *all the students during the lecture* in (38a) clearly forms some kind of constituent, unlike the more stative phrase meaning *all the students from Prague* in (38b). Intuitively, it does make sense to posit a structure for phrases of a predicative nature that differs from the structure of phrases that are not predicative. For example, if books are bought from someone, one can speak of a kind of event or motion and the term *predicative* seems appropriate. In the case of possession, however, one would have to speak of a state rather than an event, which would make the term *predicative* less appropriate. What is interesting is that these intuitions regarding predicative constituents are backed up by stranding data. It would be beyond the scope of this thesis to analyse the exact syntactic, semantic and psychological factors that determine whether or not a phrase qualifies as a predicative constituent. What is important is that such phrases exist.

To summarise this section, the analysis in Baltin (1995) does not account for floating quantifiers as well as the Stranding Analysis, especially in sentences with subject control verbs, and Baltin's three criticisms of the Stranding Analysis were shown to be invalid. Nonetheless, the concept of predicative constituent that Baltin introduced proves to be useful in explaining certain kinds of stranding. We will now continue to look at other versions of the Adverbial Analysis.

### 3. The Generalised L-Tous Analysis of Doetjes (1997)

As originally pointed out in Kayne (1975 and 1981), a distinction can be made between floating quantifiers that appear to the right of the NP that they modify and those that appear to the left of it. This is illustrated in the following French examples from Doetjes (1997):<sup>8</sup>

- (39) a. Les enfants ont tous dormi  
 the children have all slept
- b. J'ai tous voulu les voir.  
 I have all wanted them see  
 (I wanted to see them all.)

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<sup>8</sup> Doetjes (1997) p. 202.

These two phenomena, referred to as “rightward tous float” and “leftward tous float” or simply “R-tous” and “L-tous,” have traditionally been dealt with as separate phenomena, not only in Kayne but also in Sportiche (1988). Rather than account for R-tous and L-tous in separate analyses, Doetjes claims that the analysis of (39b) can be generalised to that of (39a). Accordingly, she refers to her approach as the Generalised L-tous Analysis. According to this analysis, floating quantifiers are generated in an adverbial position and bind an empty category in an argument position. It is thus this empty category that licenses the floating quantifier. In (39a) the empty category would be the trace of the subject DP *les enfants* (*the children*), which has moved from its VP-internal position to canonical subject position, while in (39b) the empty category would be the trace of the moved clitic pronoun *les* (*them*). Doetjes posits the following structures for (39a) and (39b), respectively:

- (40) a. Les enfants<sub>i</sub> ont [<sub>VP</sub> tous<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> dormi]]  
           the children have   all           slept
- b. J’ai [<sub>VP</sub> tous<sub>i</sub> [<sub>VP</sub> voulu   les<sub>i</sub> voir t<sub>i</sub>]]  
           I have   all       wanted them see

Included in the Generalised L-Tous Analysis are the claim that  $\Phi$ -feature and Case agreement between a floating quantifier and its associated DP is “a reflex of the binding relation between the floating quantifier and the DP trace”<sup>9</sup> and the claim that a floating quantifier contains an empty pronominal element, as follows:

- (41) [<sub>QP</sub> tous [<sub>DP</sub> pro]]

The advantage of Doetjes’ Generalised L-tous Analysis is that it can account for the sentences in (39a) and (39b) in a unified manner, since in both sentences the floating quantifier appears to the left of the empty category that it binds. The Stranding Analysis can easily explain (39a), but (39b) cannot possibly be a case of stranding. It would have to be explained as a kind of focalisation of the quantifier.

Despite the advantage of Doetjes’ analysis, it has weaknesses. One weakness, also cited in Bobaljik (2003), is that it does not explain why floating quantifiers should need to bind anything in the first place. This is not claimed for other adjuncts to VP. Under the Stranding Analysis as I am defending it, the issue of binding an empty category is irrelevant because a stranded quantifier always precedes the trace of the DP that has stranded it. There are no questions about binding or being licensed by empty categories.

Another potential weakness in Doetjes’ analysis is her claim that the  $\Phi$ -feature and Case agreement between a floating quantifier and the DP that it is associated with arises from the binding relation between the quantifier and the trace of its associated DP. The question is whether this binding relationship, which is nothing more than

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<sup>9</sup> Doetjes (1997) p. 205.

co-indexation, can really produce  $\Phi$ -feature agreement. In a discussion of Doetjes' theory in Fitzpatrick (2006) it is suggested that it is the nominal element *pro* contained in the floating quantifier that makes the agreement possible. This is an interesting idea, however agreement is normally treated as something that arises from a SPEC-head relationship, at least in the case of agreement between verbs and subjects or objects. Or, as I pointed out in Chapter 1, within the nominal domain syntactic heads share  $\Phi$ -feature and Case agreement. The claim that an adjunct to VP somehow inherits  $\Phi$ -features and Case from nominal heads is thus not convincing. Furthermore, one must ask why floating quantifiers are affected by this agreement phenomenon while other adjuncts to VP that have a semantic relationship with the subject are not. Consider a subject-oriented adverb like *stupidly*, which appears in the same position as a floating quantifier and has a clear semantic relationship with the subject. The following two French sentences will illustrate what I mean:

- (42) a. Les enfants ont stupidement répondu.  
           the children have stupidly answered
- b. Les enfants ont répondu stupidement.  
           the children have responded stupidly

These sentences have different meanings. In the first sentence the adverb occupies the same position that the floating quantifier *tous* would occupy and is a true subject-oriented adverb, since the meaning is that it was stupid of the children to answer at all. The second sentence does not mean that it was stupid of the children to answer. It means that they answered in a stupid manner. Agreement between the adverb in (42a) and the DP *les enfants* (*the children*) is theoretically possible, since the adverb could take on the form of the adjective that it is derived from. However, such agreement does not occur with an adverb the way it does with a floating quantifier:

- (43) a. \*Les enfants ont stupides répondu.  
           the children have stupid (masc. pl.) answered
- b. Les enfants ont tous répondu.  
           the children have all (masc. pl.) answered

Given Doetjes' claim that a floating quantifier is an adjunct to a verbal phrase, she might have to explain why no  $\Phi$ -feature agreement is produced in (43a) in contrast to (43b) even though such agreement is morphologically possible. She would presumably rely on her claim that a floating quantifier, unlike the adverbs in (42), is a nominal element. However, the adverb in (42a) is also derived from a nominal element, an adjective.

I would also like to suggest that positing a covert nominal element (*pro*) in the QP as illustrated in (41) is questionable in a non-*pro* drop language like French or English.

The covert nominal element is used in order to distinguish floating *tous* from the bare quantifier *tout* (*everything*), which, because it moves to preverbal position like a clitic pronoun, is also considered to be a floating quantifier:

- (44) Jean a tout lu.  
John has everything read

Doetjes analyses this sentence as follows:

- (45) Jean a [<sub>VP</sub> tout<sub>i</sub> [<sub>VP</sub> lu t<sub>i</sub>]

Doetjes argues that because floating *tous* contains a nominal element, it cannot be an operator and is prevented from licensing the empty categories that follow it in the sentences in (40). (The empty categories in (40) are licensed by the elements of which they are a trace.) However, the quantifier *tout* in (44) and (45) does not contain a nominal element and can therefore function as an operator and license the empty category that follows it, which is its own trace.

Doetjes bases her claims first of all on the arguments in Chomsky (1981) that an empty category can only be licensed if locally bound by an operator, and secondly on evidence presented in Cinque (1990) that bare quantifiers in Italian can license an empty category when left-dislocated, just as the left-dislocated quantifier *tout* seems to be doing in (45):

- (46) a. Qualcuno, (lo) troveremo  
          someone (him) we will find  
      b. Qualcosa, di sicuro, io (lo) farò  
          something for sure I (it) will do

Doetjes offers various kinds of evidence for positing this empty category, none of which I find very compelling. One piece of evidence is that the French floating quantifier *chacun* (*each*) can in some idiolects appear with a complement partitive, which would presumably be a realisation of the covert nominal element:

- (47) a. Les enfants ont chacun acheté une voiture.  
          the children have each bought a car  
      b. Les enfants ont chacun d'eux acheté une voiture.  
          the children have each of them bought a car

This evidence is not compelling because *each* and its equivalents in other languages are not comparable with *all* and its equivalents. First of all, *each* and its equivalents in French, Italian, German etc. remain in the singular although they are associated with a plural noun. Secondly, *each* appears in positions where *all* would never be found, as the following French sentence and its English translation demonstrate:

- (48) a. Les enfants ont acheté deux voitures chacun.  
 the children have bought two cars each
- b. \*Les enfants ont acheté deux voitures tous.  
 the children have bought two cars all

Thirdly, what applies to *chacun* in (47) does not apply to *tous*, since replacing *chacun* with *tous* in (47b) would produce an ungrammatical sentence.

A second argument that Doetjes offers in support of the empty category illustrated in (41) is that some floating quantifiers cannot select an overt DP but can appear alone. She concludes that these floating quantifiers cannot occur with a DP because they already contain a covert DP, as in (41). She offers the following examples, first from French and then from Dutch:

- (49) a. Les enfants sont tous les trois allés à la plage  
 the children are all the three gone to the beach
- b. \*Tous les trois les enfants sont allés à la plage  
 all the three the children are gone to the beach
- c. Tous les trois sont allés à la plage  
 all the three are gone to the beach
- (50) a. De kinderen zijn allen gekomen.  
 the children are all come
- b. \*Allen kinderen zijn gekomen.  
 all children are come
- c. Allen zijn gekomen.  
 all are come
- d. Alle kinderen zijn gekomen.  
 all children are come
- e. \*Alle zijn gekomen.  
 all are come

This evidence simply does not force the conclusion that a floating quantifier contains a covert nominal element. Regarding (49), the reader is reminded of my arguments in Chapter 4 that *tous les trois* is not a quantifier that occupies Q, and is therefore not eligible to be a floating quantifier to begin with. It is simply a QP that can appear in apposition to a DP. This approach accounts for all the sentences in (49).

Regarding (50), once again, the disparities between the use of *alle* vs. *allen* do not prove that there is a covert DP contained in the Dutch floating quantifier *allen*. Two facts are relevant. First of all, no one really understands the inflection on *allen*, and one must ask whether it is a question of orthography, since in the spoken language (50c) is actually pronounced like (50e). Secondly, this argument is very Dutch-specific and not valid even for languages closely related to Dutch. Note the following examples from German (51), Swedish (52) and English (53):

- (51) a. Die Kinder sind alle gekommen.  
           the children are all come
- b. Alle die Kinder sind gekommen.  
           all the children are come
- c. Alle sind gekommen.  
           all are come
- (52) a. Barnerna har alla kommit.  
           children the have all come
- b. Alla barnerna har kommit.  
           all children the have come
- c. Alla har kommit.  
           all have come
- (53) a. The children have all come.  
       b. All the children have come.  
       c. All have come.

In other words, the evidence that a floating quantifier contains an empty nominal element as illustrated in (41) is weak. Under the Stranding Analysis it is not necessary to postulate a covert nominal element in order to differentiate floating *tous* from floating *tout*. (The universal quantifier can of course select the empty category PRO, but this is not the same.) Stranding can admittedly not explain L-*tous*, which seems to be a form of focalisation.

The biggest weakness in Doetjes' approach is that it purports to provide a unified analysis for two linguistic phenomena, L-*tous* and R-*tous*, but in fact accomplishes the opposite by failing to handle the following two sentences, which are clearly related, in a unified manner:

- (54) a. Tous les enfants ont dormi  
           all the children have slept
- b. Les enfants ont tous dormi  
           the children have all slept

The Generalised L-tous Analysis has one advantage. It attempts to account for L-tous and R-tous in a unified manner. The question is whether this one advantage is worth the cost of the weaknesses that come with it. The L-tous phenomenon is very limited. It does not occur in the Germanic languages and in the Romance languages it occurs primarily in French, although it can occur to some extent in Spanish and perhaps in some varieties of non-standard Italian. Furthermore, it is specific to the quantifier *tous*, since it cannot be done with other kinds of adverbial adjuncts:

- (55) a. Je veux tous qu'ils le lisent.  
I want all that they it read
- b. \*Je veux vite qu'ils le lisent.  
I want fast that they it read
- c. \*Je veux soigneusement qu'ils le lisent.  
I want carefully that they it read
- d. \*Je veux volontiers qu'ils le lisent.  
I want gladly that they it read

In accordance with Kayne (1975 and 1981), Sportiche (1988) and Cinque (1999) I would propose that L-tous and R-tous are not the same phenomenon and that a unified analysis of the two is not worth the price that has to be paid for it. Perhaps another way of expressing this is as follows:

The phenomenon in (54) is attested cross-linguistically and can be accounted for in a unified approach by the Stranding Analysis. L-tous is language-specific and “*tous*-specific.” To opt for Generalised L-tous with its limited applicability and weaknesses and reject the Stranding Analysis does not seem to be a fair trade-off.

Before ending the discussion of the Generalised L-tous Analysis, a word should be said about my suggestion that L-tous is a kind of focalisation of the quantifier. As Doetjes herself points out, L-tous is only possible if a pronoun is involved:

- (56) a. J'ai tous voulu les voir.  
I have all wanted them to see
- b. \*J'ai tous voulu voir les enfants.  
I have all wanted to see the children
- (57) a. Je veux tous qu'ils viennent.  
I want all that they come
- b. \*Je veux tous que les enfants viennent.  
I want all that the children come

Regardless of whether one follows the Generalised L-tous Analysis or another approach, perhaps treating L-tous as a special kind of focalisation or topicalisation, one must explain the discrepancy between the (a) and (b) sentences in (56) and (57). Doetjes claims that it is a binding problem. In the (b) sentences the floating quantifier binds an R-expression, which constitutes a violation of Principle C. In the (a) sentences, a pronoun is bound but not inside its governing domain, so Principle B is not violated. I cannot offer an explanation for the discrepancy in (56) and (57) at this time, but I question the claim that it is the result of a binding problem as suggested by Doetjes. The following sentence is also perfectly grammatical:

- (58) J'ai voulu tous les voir.  
I have wanted all them to see

Doetjes approaches this type of sentence by arguing that the binding domain of the pronoun is the VP, which contains an accessible subject in the form of the VP-internal subject. I would argue that if one takes the binding approach that Doetjes takes, it is more difficult to say that the floating quantifier *tous* binds the pronoun *les* outside of the pronoun's governing domain. I leave this matter for future research.

To summarise our review of the Generalised L-tous Analysis, its advantage is that it attempts to explain L-tous and R-tous in a unified manner. Its disadvantages are that it does not explain why a floating quantifier must bind an empty category, it posits a covert nominal element in QP that cannot really be attested, it offers a weak explanation for the agreement features on a floating quantifier, and the binding arguments that it relies on are questionable, as seen in (58). The biggest weakness of the Generalised L-tous Analysis is that it sacrifices the unified approach to the sentences in (54) which is provided by the Stranding Analysis and which is valid cross-linguistically in order to explain L-tous, which is limited to mainly to French and to the universal quantifier and which can perhaps be explained by other means, such as focalisation.

#### 4. Bobaljik (2003): Neither the Stranding nor the Adverbial Analysis is perfect.

It is not the aim of Bobaljik (2003) to take sides in the Stranding vs. Adverbial debate, and he does not present his own analysis, however he does give an excellent survey of the various approaches taken to floating quantifiers as of 2003 and offers his own comments and criticisms. He ends his article with the statement that no analysis to date has been completely successful in predicting the distribution of floating quantifiers. In this section I will address Bobaljik's criticisms of the Stranding Analysis.

Like most critics of the Stranding Analysis, Bobaljik begins his criticism by stating that the Stranding Analysis incorrectly predicts the grammaticality of sentences such as *The students have arrived all* and *The students were seen all*. I have dealt with this criticism elsewhere in this thesis and will not deal with it again here. Bobaljik

goes on to say that the Stranding Analysis also cannot explain why some (but certainly not most) French speakers accept the following sentences:

- (59) a. ?Les enfants ont été vus tous.  
the children have been seen all
- b. ?Les enfants sont venus tous.  
the children are come all
- c. ?Les enfants ont dormi tous.  
the children have slept all
- d. ?Les enfants ont vu ce film tous.  
the children have seen this film all

Bobaljik fails to mention (and so does Sportiche) that sentences such as these are quite acceptable in other Romance languages. For example, Belletti (1990) and Cinque (1999) have pointed out that past participles and other non-finite verbal elements in Italian can optionally move up to a higher position. In Sections 2, 3 and 4 of Chapter 2, I showed examples of past participles, passive participles, infinitives and gerunds that had optionally moved up, not only in Italian but also in other Romance languages. In view of this phenomenon, the sentences in (59) come as no surprise. They simply show that the optional movement of non-finite verbal elements that one finds in Italian, Romanian and Spanish is also present in French, but to a lesser extent. Given that non-finite verbal elements can move, the sentences in (59) pose no problem for the Stranding Analysis.

Bobaljik's second criticism of the Stranding Analysis has to do with a disparity between A-movement and A-bar movement. Why, he asks, can floating quantifiers in English be associated with normal DP traces but not with wh-traces? He refers to the following examples:

- (60) a. \*The professors who Taylor will have all met before the end of the term...  
b. \*Which professors will Taylor have all met before the end of the term?

I must point out that these examples are not well chosen, because their ungrammaticality has nothing to do with quantifier stranding. Rather, they have to do with various factors that I discussed in Chapter 2, Sections 6 and 7.3. First of all, the quantifiers in (60) are object quantifiers, and object quantifiers are only stranded in scrambling languages like German and Dutch. The German equivalents of the sentences in (60) are grammatical:

- (61) a. Die Professoren, die Taylor alle vor Ende des Semesters  
 the professors whom Taylor all before end (of) the semester  
 kennengelernt haben wird...  
 met have will
- b. Welche Professoren wird Taylor alle vor Ende des Semesters  
 which professors will Taylor all before end (of) the semester  
 kennengelernt haben?  
 met have

There is another problem with (60) in addition to the fact that English does not allow the stranding of object quantifiers, and that is the fact that in English the universal quantifier can only select bare *wh*-words, not full *wh*-DPs such as the ones seen in the German examples in (61). This was also discussed in chapter 2. The following examples illustrate:

- (62) a. Who all has come?  
 b. \*Which students all have come?  
 c. What all did you see?  
 d. \*Which things all did you see?

In summary, the problems with (60) could have to do with the restriction on the stranding of object quantifiers in non-scrambling languages and with the fact that the universal quantifier in English can only select bare *wh*-words. It cannot be denied, however, that even in the case of a bare subject *wh*-word, English does not allow stranding:

- (63) a. Who all has come?  
 b. \*Who has all come?  
 c. What all has happened?  
 d. \*What has all happened?

Examples (63a) and (63b) are impossible in German because the German word for *who* (*wer*) is always singular and cannot combine with a plural quantifier. However, examples (63c) and (63d) are both possible in German:

- (64) a. Was alles ist passiert?  
 what all is happened?
- b. Was ist alles passiert?  
 what is all happened?

The point that I want to make is that while Bobaljik's observations about English are correct, German allows stranding under A-bar movement where English does not. The problem therefore seems to have to do with English-specific properties, not with

a general restriction on stranding under A-bar movement. Bobaljik in fact notes this and ultimately leaves the matter open. He does not rule out the possibility that languages that allow stranding under A-bar movement do so because A-bar movement is preceded by short A-movement. However, as I pointed out in Chapter 2, Section 7.3, English also has instances of A-bar movement preceded by A-movement and nonetheless disallows stranding by wh-words. In (63b), for example, the wh-word undergoes A-movement from VP to PerfP to IP (TP and AgrSP) before finally undergoing A-bar movement to CP, and yet stranding is not licensed in an A-trace position. I therefore stick with my conclusion that just as the selectional properties of the universal quantifier vary within the Germanic language family (the universal quantifier can select full wh-DPs in German but only bare wh-DPs in English), so does the ability of wh-words to strand a quantifier vary within the Germanic language family.

Bobaljik's third challenge to the Stranding Analysis is actually a continuation of the second one, since it also involves A-bar movement. It is based on data from West Ulster English contained in McCloskey (2000). Note the following examples, all of which are ungrammatical in Standard English:<sup>10</sup>

- (65) a. Who did you meet all when you were in Derby?  
 b. I can't remember what I said all.  
 c. What did he say all that he wanted?

In Standard English, the quantifier would have to immediately follow the wh-word in each of these sentences. Examples (65a) and (65b) are a double-challenge because they not only involve the stranding of a quantifier by a wh-word but the stranding of an *object* quantifier. West Ulster English thus shows signs of being like German. The similarity to German ceases in example (65c), however. In this sentence an object quantifier has been stranded in the specifier position of a lower CP. German does not allow this, as the following sentence shows:

- (66) \*Welche Würste hat der Peter gesagt alle dass der Hund gegessen hat?  
 which sausages has the Peter said all that the dog eaten has

West Ulster English seems to have completely reset the parameters. The following two sentences, both of which are ungrammatical in Standard English, form a sort of minimal pair for A-movement and A-bar movement:

- (67) a. Who was throwing stones all around Butcher's Gate?  
 b. \*They were throwing stones all around Butcher's Gate.

Bobaljik says that these sentences suggest that in West Ulster English, unlike in Standard English, it is A-bar movement rather than A-movement that licenses a floating quantifier. I would suggest something different. In (67b), assuming that subjects are base-generated in [SPEC, vP], the quantifier is located below its base-

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<sup>10</sup> Bobaljik (2003) p. 122-123.

position, so the sentence cannot be generated. The same would have to be said about (67a). The quantifier in this sentence can therefore only be an adverb. Bobaljik points out that McCloskey draws a comparison between *all* in (67a) and adverbs like *exactly* and *precisely*. One can insert either of these adverbs into the position occupied by *all* in (67a) and get a grammatical sentence in both West Ulster English and Standard English. What is even more interesting is that the meaning of the sentence stays the same when *all* is replaced by *precisely* or *exactly*. In fact, the same holds true for all the sentences in (65), in which replacing *all* with *precisely* or *exactly* would first of all not change the meaning and secondly would produce grammatical sentences also in Standard English. The claim that *all* in (65) and (67a) is an adverb raises two serious questions. First of all, is there any independent support for such a claim, and secondly, why not just say that all floating quantifiers are adverbs?

Regarding the first question, the adverbialisation of the universal quantifier is certainly not unprecedented in the Germanic languages. In this thesis we have seen examples in German, in which the plural nominal form *alle* can appear as the neuter singular form *alles*, in Dutch, in which the nominal form *allen* is more often than not replaced by the adverbial *allemaal*, and in Swedish, in which the quantifier *alla* is frequently replaced with the adverbial *allihop*.

- (68) a. Wer war alles da? (German)  
       who was all there
- b. De Studenten zijn allemaal gekomen. (Dutch)  
       the students are all come
- c. Doktorerna undersöker allihop patienten. (Swedish)  
       doctors the examine all patient the

Because the universal quantifier in English is uninflected for case and gender, it lends itself to adverbialisation. That *all* can be nominal or adverbial in English is clearly demonstrated by the ambiguity of the following sentence:

- (69) The dogs are all wet.

In one reading of this sentence *all* is a stranded quantifier modifying *the dogs* and in the other reading it is an adverb modifying *wet*. The fact that *all* can modify an adverb in sentences like *Where all did you go?* also shows that it can be adverbial in English.

Regarding the second question, several reasons have been offered in this thesis for why one cannot say that all floating quantifiers are simply adverbs. Floating quantifiers in many languages are inflected. Adverbs are not. Floating quantifiers and adverbs do not always appear in the same positions, as we saw in the Spanish, Romanian and Swedish examples in the introduction to this chapter. Most importantly, a major generalisation would be missed if one said that there was no

relationship between the following sentences, even though there is a subject trace in every position that can be occupied by a floating quantifier:

- (70) a. All the children might have been sleeping.  
 b. The children all might have been sleeping.  
 c. The children might all have been sleeping.  
 d. The children might have all been sleeping.  
 e. The children might have been all sleeping.

In concluding his discussion of West Ulster English, Bobaljik says that it poses a challenge to any theory of floating quantifiers and that ultimately we are faced with two unattractive alternatives. Either we say that the quantifier *all* in West Ulster English has different lexical properties than it does in other versions of English or we say that there is some independent syntactic parameter, yet to be discovered, that distinguishes West Ulster English from Standard English. His conclusions are thus not incompatible with my own, except that I am not so upset about saying that in West Ulster English the adverbial *all* can be used more flexibly than it can in Standard English, a phenomenon that is comparable to the adverbialisation that we have seen in German *alles*, Dutch *allemaal* and Swedish *allihop*.

The fourth criticism that Bobaljik raises against the Stranding Analysis is one that I have referred to already, namely, that there are instances in which a floating quantifier and its associated DP seem to have never formed a constituent. Some of his examples involve *each* and its French equivalent *chaque*. I have not considered these quantifiers in this thesis because they are too different from *all* and its equivalents. Consider the following sentences:

- (71) a. Each child has eaten one sandwich.  
 b. \*A child has each eaten one sandwich.  
 c. The children have each eaten one sandwich.  
 d. The children have eaten one sandwich each.

The (a) and (b) sentences show us that unlike *all*, *each* is singular and cannot float when modifying a singular noun. The (c) sentence shows us that for *each* to float it must be associated with a plural noun although it remains in the singular. This lack of number agreement shows that *each* cannot be the same kind of syntactic category as *all*. The (d) sentence shows us that *each* appears in a position that is unavailable to *all*. My claim that *each* and *all* are two different kinds of category is nothing new. In Zimmermann (2002), which is titled *Boys Buying Two Sausages Each*, one can find convincing arguments that so-called *distance distributivity elements* like *each* are fundamentally different from floating quantifiers. It is for these reasons that in this thesis I will not consider arguments related to *each* as being relevant to the question of quantifier stranding.

Other examples that Bobaljik offers in which a floating quantifier and its associated DP seem to have never formed a constituent are the following from English and French:

- (72) a. Larry, Darryl and Darryl have all come into the café.  
 b. \*All Larry, Darryl and Darryl have come into the café.
- (73) a. Some of the students might all have left in one car.  
 b. \* All some of the students might have left in one car.
- (74) a. Elles sont toutes les trois intelligentes.  
 they are all the three intelligent
- b. \*Toutes les trois elles sont intelligentes.  
 all the three they are intelligent
- (75) a. We have all three of us completed the assignment on time.  
 b. \*All three of us we have completed the assignment on time.

I discussed an example like (72) in the introductory section of this chapter. I suggested that there might be a Surface Structure constraint that prevents the universal quantifier, which is plural, from appearing before a singular noun and that this constraint can be circumvented by stranding. This type of constraint is admittedly undesirable in a theory, but, as I said in the introduction to this chapter, the Adverbial Analysis would also require a constraint, perhaps lexical in nature, in order to prevent the universal quantifier from selecting a compound DP consisting of singular nouns. Thus, regarding (72), it is not clear that the Adverbial Analysis is really preferable.

Example (73) is interesting. I personally find the sentence anomalous and question its pertinence in this discussion. In order to make this sentence acceptable, I would have to do one of two things. Either I would change *all* to *together*, as in (76), or I would make *all* the subject of an appositive Small Clause, as in (77):

- (76) Some of the students might have left together in one car.  
 (77) Some of the students might have left all in one car.

Regarding (74), I presented several reasons in Chapter 4 for why one cannot consider the phrase *toutes les trois* (*all the three*) in languages like French, Spanish, Portuguese and Catalán to be universal numeric quantifiers comparable to the ones found in Dutch, Italian and Romanian. They behave like appositive QPs, not like floating quantifiers, and they do not have the internal structure of floating quantifiers. The same could be said of the English phrase *all three of us* in (75).

To summarise what has been said far so in this section, we have looked at four challenges to the Stranding Analysis presented in Bobaljik (2003). I have argued that these challenges, which are of a syntactic nature, do not offer compelling reasons for abandoning the Stranding Analysis. Bobaljik also presents challenges to the Stranding Analysis that are semantic in nature, which I would now like to comment on.

Bobaljik begins by pointing out, correctly, that one of the reasons given in Sportiche (1988) for preferring the Stranding Analysis is that it “transformationally” links two sentences that not only contain the same elements but also have the same *meaning*. Bobaljik then states that if Sportiche’s claim about meaning is true, a non-floating quantifier and its floating counterpart should quantify over their associated DPs in the same way. He then presents evidence that floating and non-floating quantifiers do *not* quantify in the same way, which he says should be taken as evidence against the Stranding Analysis. What I will argue is that while Sportiche’s argument on semantics is interesting, it should not be taken as absolutely vital to the Stranding Analysis. I have already argued in this chapter that different scopal relations can arise as a result of movement, whether stranding is involved or not, and that this should not be considered a reason to abandon the Stranding Analysis. Consider the following sentences from Bobaljik, which indicate semantic differences between floating and non-floating quantifiers:

- (78) a. All lions, tigers and bears are scary.  
 b. Lions, tigers and bears are all scary.
- (79) a. All students, professors and clowns have come to the meeting.  
 b. Students, professors and clowns have all come to the meeting.
- (80) a. All the contestants could have won.  $\diamond > \forall$ ,  $\forall > \diamond$   
 b. The contestants could have all won.  $\diamond > \forall$ ,  $*\forall > \diamond$

Let’s take a careful look at these sentences. In (78a), the meaning is that every lion, every tiger and every bear is scary. Bobaljik assumes, and I find the assumption reasonable, that in this sentence a universal quantifier has selected conjoined DPs, so that we have the following structure:

- (81) [<sub>QP</sub> all [<sub>DP</sub> lions, tigers and bears]]

Example (78b) allows this reading also, so that we could have a case of normal quantifier stranding. However, (78b) also allows a second reading that is unavailable to (78a), namely, that lions are *generally* scary, tigers are *generally* scary and bears are *generally* scary. Bobaljik says that this is because a floated quantifier and a non-floated one somehow quantify in different ways. I do not believe that this is necessarily the reason for the second reading that is available to (78b). Rather, I would suggest that in (78a) and the second (generic) reading of (78b) it is the DPs/NPs that differ from each other. In (78a), we do not have bare NPs, and there is universal reference. In (78b), we have bare NPs, which normally have a generic meaning in English and refer to a species in general rather than to individual members of that species. As a result of this generic meaning, under the second (generic) reading of (78b) the word *all* could be omitted without changing the meaning of the sentence. This is certainly not true of (78a), since omitting the quantifier from (78a) would make the NPs generic rather than universal. What this

shows is that it is the DPs in (78a) and (78b) that are different, not the quantifiers, as Bobaljik has claimed.

Nonetheless, even if the DPs in (78a) and (78b) are different in nature, Bobaljik still has a point, although he expresses it somewhat between the lines: What is it that prevents a second reading of (78a), or, what is it that allows a second reading of (78b)? As I pointed out while discussing example (72b) above, it seems that although *all* can select conjoined DPs that are singular, such as *Larry, Daryl and Daryl*, there is a Surface Structure constraint against the appearance of a plural quantifier before a singular DP. The constraint can be circumvented by stranding. I am going to suggest that this is what is going on in the second (generic) reading of (78b). That is, even though the NPs are in the plural, their semantics is singular because they refer to a single species, and this triggers the Surface Structure constraint that blocks the universal quantifier from appearing in front of a singular noun. To demonstrate that under the second reading of (78b) the semantics of the NPs is singular, I point out that (78b), unlike (78a), can be paraphrased using singular DPs, as follows:

- (82) a. A lion, a tiger and a bear are all scary.  
 b. The lion, the tiger and the bear are all scary.  
 c. The species “lion,” the species “tiger” and the species “bear” are all scary.

In all of these sentences, the reading is that lions, tigers and bears are generally scary, and if the quantifier is not floated the sentence is ungrammatical. I would therefore suggest that in these sentences a universal quantifier has selected a series of singular DPs but because a plural quantifier sounds strange before a singular DP, stranding is required, just as in (72). For the sake of discussion I will assume a base-structure like the following for the sentences in (82):

- (83) [<sub>QP</sub> all [<sub>DP</sub> species lion, species tiger and species bear]]

As for the second reading of (78b), because its semantics are the same as the sentences in (82), its base-structure may be analysed as (83). The result would be that the same Surface Structure constraint that forces stranding in (82) also forces stranding in the second reading of (78b). In summary, both (81) and (83) are possible. In the case of (81), stranding is optional, so that both (78a) and (78b) can be derived from it. If (83) is chosen, because of the singular number (or singular semantics) of the DPs, stranding is obligatory, resulting in (78b). Since (78b) can result from either (81) or (83), two readings are possible.

Admittedly, the explanation that I have offered for the discrepancy seen in (78) is a bit tenuous, since it depends not only on a Surface Structure constraint but also on interpreting plural nouns as singular because of their singular semantics. The question is whether the Adverbial Analysis really explains the discrepancy in (78) any better than the constraint that I have suggested. That is, does one really explain the different semantics in (78a) and (78b) by simply saying that in (78b) the quantifier is really an adverb? Adverbiality does not necessarily mean different

semantics. This is illustrated by the following sentences, also from Bobaljik, which have the same semantics:

- (84) a. Horses will always eat sugar.  
 b. Horses will all eat sugar.  
 c. All horses will eat sugar.

Bobaljik in fact does not say that adverbial quantification and quantification by a nominal element have to be different. He simply says that they *can* be different, and he makes the observation that floating quantifiers and their non-floating counterparts can also produce different semantics. It seems, then, that what is at stake is not the Stranding Analysis itself but the supposition that stranding should not be able to affect meaning. There is no a priori reason why this should be so. As I have often mentioned, stranding affects positioning, positioning affects scope, and scope affects meaning.

At this point I would like to comment on the claim made in Sportiche (1988) that the fact that the following two French sentences mean the same thing provides semantic support for the Stranding Analysis:

- (85) a. Tous les enfants ont dormi.  
 all the children have slept  
 b. Les enfants ont tous dormi.  
 the children have all slept

It is not my intention to deny the validity of Sportiche's claim. If two sentences contain the same elements and have the same meaning, it certainly is not unreasonable to expect them to have been derived from the same source. My point is that semantics *need* not remain the same after movement, including movement that results in stranding.

We turn now to (79), which is similar to (78). I repeat (79) here for convenience:

- (86) a. All students, professors and clowns have come to the meeting.  
 b. Students, professors and clowns have all come to the meeting.

In (86b), the conjoined DPs are non-universal. They refer only to a type of human being, not to every individual in that type. The base-structure of (86b) would therefore be analogous to that of (78b) (*Lions, tigers and bears are all scary*), in other words, more like (83). This makes stranding obligatory. Once again, I would say that the difference between the two sentences in (86) does not necessarily mean that the quantifier in (86b) is an adverb rather than a stranded quantifier.

I mention (80), repeated here, only because I disagree with Bobaljik's judgements.

- (87) a. All the contestants could have won.  $\diamond > \forall$ ,  $\forall > \diamond$   
 b. The contestants could have all won.  $\diamond > \forall$ ,  $*\forall > \diamond$

Bobaljik states that (87a) can mean either that all the contestants had an equal chance of winning but that there would be only one winner, or that all the contestants could have won the same contest, so that there would be several winners. He claims that (87b) only has the latter interpretation. I think that not everyone would agree with that. I find both sentences equally ambiguous.

In this section I have provided an abbreviated account of syntactic and semantic arguments against the Stranding Analysis presented in Bobaljik (2003). The syntactic arguments were not convincing. The semantic arguments were much more interesting and challenging. They are partially based on the premise that stranding should not affect meaning, which I believe is questionable. Furthermore, as I pointed out, even if one assumes that floating quantifiers are adverbs, one has not necessarily arrived at a real explanation for the different semantics. Bobaljik himself ends his discussion by saying that there are still unanswered questions. I would agree that there are questions that need to be answered, especially those of a semantic nature, but that there is no compelling reason to abandon the Stranding Analysis.

##### 5. Fitzpatrick (2006): Adnominal and Adverbial Floating Quantifiers Both Exist

Fitzpatrick argues that the ability of a quantifier to float is dependent on whether it is adnominal or adverbial and on whether A-bar movement or A-movement has occurred. Adnominal floating quantifiers can only occur in instances of A-bar movement, while adverbial floating quantifiers can only occur under A-movement.

In Fitzpatrick's terminology, an adnominal floating quantifier is one that is base-generated as an adjunct to a nominal phrase and can be stranded in the manner postulated by Sportiche (1988) provided that its associate DP has undergone A-bar movement. One finds adnominal floating quantifiers in Japanese and West Ulster English. Examples will be provided later in this section.

An adverbial floating quantifier, as the name suggests, is one that is base-generated as an adjunct to a verbal phrase and can occur in cases of A-movement. Fitzpatrick follows Doetjes (1997) and assumes that all floating quantifiers in Standard English and French are base-generated as adjuncts to a verbal phrase and contain an empty nominal element that is co-indexed with the quantifier's associate DP, as follows:

- (88) [The students]<sub>i</sub> have [<sub>VP</sub> [all pro<sub>i</sub>] [<sub>VP</sub> t<sub>i</sub> had lunch]].

Note that the sentence in (88) is an instance of A-movement.<sup>11</sup>

Fitzpatrick also partially follows Bošković (2004), according to whom stranding cannot take place in a  $\theta$ -position. Fitzpatrick claims that adverbial quantifiers such as those in French and English cannot be floated in their  $\theta$ -position, but that adnominal quantifiers such as those in West Ulster English and Japanese can.

I have already presented my reasons for not following Doetjes (1997) in Section 3. Regarding Bošković (2004), if one follows the Split VP Hypothesis and assumes that the base-position (and  $\theta$ -position) of subjects is [SPEC, vP], one only has to look at the data that I presented in Chapters 2 and 3 to see that [SPEC, vP] is a very popular place for stranding a quantifier. From my standpoint, therefore, Fitzpatrick does not start out on very solid ground. Furthermore, as the reader will see in the following discussion, many of his conclusions are unfortunately based on questionable grammaticality judgements. Ultimately I believe that the manner in which he distinguishes adverbial from adnominal floating quantifiers is questionable and that he does not succeed in showing that stranding/floating depends on whether A-movement or A-bar movement has occurred. Nonetheless, his observations and arguments are interesting and worth looking at. He begins with the following data from West Ulster English as presented in McCloskey (2000):

- (89) a. \*The criminals have been arrested all.  
b. What did he say that he wanted all?

Fitzpatrick says that since the quantifier is in the same position in both of these sentences but only one of the sentences is grammatical, a dual analysis that allows for both adverbial and adnominal floating quantifiers is inevitable. (I agree, with this statement, but for totally different reasons, as I will point out shortly.) There are two reasons why (89a) is ungrammatical if one follows Fitzpatrick. First of all, the quantifier in this sentence is an adverbial quantifier that is stranded in its  $\theta$ -position, which, following Bošković (2004), is not possible. Secondly, and more importantly, Fitzpatrick claims that an adverbial floating quantifier can only occur under A-bar movement, and (89a) is a case of A-movement. He claims that an adnominal quantifier can only be stranded under A-bar movement because he believes that stranding is a kind of extraction from DP and that extraction from DP under A-movement is impossible, as shown in the following sentence:

- (90) a. Which student did you see a picture of?  
b. \*The mayor arrived a friend of.

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<sup>11</sup> While Fitzpatrick's use of the term *adverbial* is certainly not inappropriate when referring to adjuncts to a verbal phrase, to avoid confusion I must point out that Doetjes herself calls floating quantifiers in English and French adnominal, even though they are base-generated as adjuncts to a verbal phrase, because they are actually adjacent to the nominal element *pro*. In this section I will use Fitzpatrick's terminology to avoid confusion.

Fitzpatrick attributes the grammaticality difference between (90a) and (90b) to the strong *wh*-feature that drives A-bar movement. Regarding (89b), Fitzpatrick follows McCloskey (2000) and says that the quantifier in this sentence is an adnominal that can be stranded under A-bar movement even though it is in its  $\theta$ -position.

I think that there are three problems with Fitzpatrick's approach so far. First of all, to say that the quantifier in (89a) is adverbial while the one in (89b) is adnominal is not only counter-intuitive but not supported by the facts. As I pointed out in Section 4 of this chapter, the quantifier in (89b) can be replaced by adverbs like *exactly* and *precisely* without even changing the meaning of the sentence. Also, English and other non-scrambling languages do not allow the stranding of object quantifiers, which means that the quantifier in (89b) cannot have gotten into its position under any analysis that treats it as an adnominal. It must therefore be an adverb.

The second problem with Fitzpatrick's approach is that it incorrectly compares stranding à la Sportiche, which Fitzpatrick accepts, with the extraction that is taking place in (90b). In (90b) a DP has been extracted from a PP inside another DP. Under the Stranding Analysis, there is no extraction from a DP. There is simply movement of a DP from a QP. The claim that stranding should not be able to take place under A-movement because of (90b) is thus highly questionable.

The third problem with Fitzpatrick's analysis is that if one considers the following data from German, it becomes very difficult to say that the ability of a quantifier to float has anything to do with whether A-movement or A-bar movement has occurred:

- (91) a. Welche Studenten sind alle gekommen?  
           which students are all come
- b. Ich glaube, dass die Studenten alle gekommen sind.<sup>12</sup>  
           I believe that the students all come are

Under Fitzpatrick's analysis one would have to say that in (91a), an instance of A-bar movement, the quantifier must be an adnominal while in (91b), a case of A-movement, it is an adverbial. I see no motivation for claiming that there is any difference between the quantifiers in the (a) and (b) sentences. In fact, it would make sense to say that they are both adnominal, since German has another floating quantifier that is really adverbial. It is morphologically related to the quantifiers in (91) but is not inflected for agreement with its associated DP:

- (92) Wer ist alles gekommen?  
       who is all (Adv.) come  
       (Who all has come?)

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<sup>12</sup> As most readers probably know, German uses the auxiliary verb meaning *to be* for unaccusative verbs. In these sentences I have applied literal translation.

Fitzpatrick would presumably say that German floating quantifiers are the same as French and English ones, namely, adverbial. Whether he calls them adverbial or adnominal, the sentences in (91) pose a problem for his analysis, especially if he wants to stick to his claim that the distinction between A-movement and A-bar movement really makes a difference in stranding. So far, then, there are problems with both of the main aspects of Fitzpatrick's analysis. The adverbial/adnominal distinction is not clear and the significance of A-movement vs. A-bar movement is not clear either.

I have explained why Fitzpatrick claims that adnominal quantifiers can only be stranded under A-bar movement. It is because of his very questionable belief that quantifier stranding involves the same kind of extraction that one sees in (90b). I have not yet explained why he claims that adverbial floating quantifiers only occur in cases of A-movement. I will do that now. By looking at (88) the reader can see that when the subject DP moves to subject position it crosses over a pro that is co-indexed with it. Fitzpatrick claims that under A-movement, based on (88), there is no cross-over effect. Under A-bar movement, however, he claims that there is a cross-over effect, based on the following sentence:

(93) \*Who<sub>1</sub> did [all of them<sub>1</sub>] see t<sub>1</sub>?

Therefore, Fitzpatrick concludes, adverbial floating quantifiers will only be found in instances of A-movement. This poses a problem for Fitzpatrick's theory as it is formulated. Given that Fitzpatrick considers all floating quantifiers in Standard English and French to be adverbial, he would presumably say the same about floating quantifiers in German, as I mentioned above. Within Fitzpatrick's theoretical framework, (91a) would thus be an example of an adverbial floating quantifier in an instance of A-bar movement, which he would predict to be ungrammatical. As a side comment on (93), I must point out that if a subject and an object are co-indexed, the object normally must be a reflexive pronoun. I suspect that this is the problem with example (93) and the following one:

(94) \*Whom<sub>1</sub> did they<sub>1</sub> see t<sub>1</sub>?

In any case, apart from why (93) and (94) might be ungrammatical, (91a) shows that A-bar movement across a quantifier does not cause a cross-over effect, contrary to Fitzpatrick's theory. Fitzpatrick would attempt to argue his way out of this problem by claiming that in (91a) the quantifier is adnominal, unlike the quantifier in (91b), and that it contains no pro, so that there is no cross-over effect. He would also claim that in (91b) the floating quantifier is adverbial and does contain pro but that no cross-over effect is felt because (91b) is a case of A-movement. I reiterate my assertion that one would be very hard pressed to claim that the quantifier in (91a) is adnominal while the one in (91b) is adverbial. Furthermore, I do not believe it is valid to say that a cross-over effect is avoided in (91b) simply because of A-movement. This doesn't really follow from any principle. The Stranding Analysis accounts for (91a) and (91b) equally well without concern for A-movement vs. A-bar movement and without concern for cross-over effects.

Fitzpatrick also discusses Japanese and claims that all floating numeric quantifiers in that language are adnominal and that is why they can only appear in cases of A-bar movement. I will now discuss Fitzpatrick's analysis of Japanese. I must first of all warn the reader that many of his conclusions are based on questionable grammaticality judgements. Furthermore, there are compelling arguments in the literature, for example in Kobuchi-Philip (2003a, 2003b, and 2006), that Japanese floating numeric quantifiers can be both adverbial and adnominal. Ignoring these points for the time being, let's take a look at Fitzpatrick's analysis of Japanese.

Fitzpatrick claims that in English floating quantifiers must be adverbial because they occur in the same position regardless of whether their associate DP is the subject of an active verb, a passive verb, an unergative verb or an unaccusative verb:

- (95) a. The students have all done their work.  
 b. The students have all been helped.  
 c. The students have all worked.  
 d. The students have all arrived.

Fitzpatrick's conclusion that English floating quantifiers *must* be adverbial because they appear in the same place regardless of the type of verb is not logical. As I have already demonstrated, if the Stranding Analysis is updated for the Split VP Hypothesis it can easily account for all appearances of floating quantifiers with any type of verb. Nonetheless, let's continue with Fitzpatrick's assumptions. Unlike English floating quantifiers, Fitzpatrick claims, Japanese floating numerals appear in different positions depending on the type of verb they occur with and must therefore be stranded adnominals:

- (96) a. Gakusei-ga ofisu-ni huta-ri kita yo.  
 students-NOM office-DAT two-Cl. came EXCL  
 (Two students came to the office.)  
 b. \*Gakusei-ga [zibun-no kane]-de huta-ri denwasita yo  
 students-NOM self-GEN money by two-Cl. called EXCL  
 (Two students called using their own money.)

Fitzpatrick observes that in the (a) sentence, which contains an unaccusative verb, a floating numeral can appear between a non-argument and the verb, but this is not possible in (b), which contains an unergative. I cannot agree with Fitzpatrick's analysis. First of all, the two sentences in (96) are not very comparable, given that the (b) sentence contains a PP that contains a reflexive. The following sentence, which parallels (96a) except that it contains an unergative like (96b), is just as perfectly grammatical as (96a):

- (97) Gakusei-ga ofis-kara huta-ri denwasita yo  
 students-NOM office-from two-Cl. called EXCL  
 (Two students called from the office.)

Furthermore, according to my informants (96b) is perfectly grammatical anyway. Thus, Fitzpatrick's claim that Japanese floating quantifiers are adnominal simply because they occur in different places depending on the type of verb is extremely questionable. Nonetheless, let's continue with his analysis. Consider now the following sentence:

- (98) Gakusei-o       otagai-no       sensei-ga       sikatta.  
 students-ACC each other-GEN teachers-NOM scolded  
 (Each other's teachers scolded the students.)

Fitzpatrick assumes that the object scrambling in this sentence is a case of A-movement because it creates a binding possibility, which he says is cross-linguistically typical of A-movement. Following Fitzpatrick's assumptions, if (98) is an example of A-movement, and if Japanese floating numeral quantifiers are adnominal, and if adnominal quantifiers can only be floated in cases of A-bar movement, then (98) should not be possible with a floating numeral. Fitzpatrick offers the following example as support for this conclusion:

- (99) \*Gakusei-o       otagai-no       sensei-ga       huta-ri sikatta.  
 students-ACC each other-GEN teachers-NOM two-Cl. scolded  
 (Each other's teachers scolded two students.)

Fitzpatrick's conclusion is based on two assumptions that could be wrong. First of all, the fact that binding possibilities are typically created by A-movement does not mean that (98) necessarily involves A-movement. Secondly, the claim that adnominal quantifiers can only be stranded under A-bar movement is contradicted by all the evidence offered in the Stranding Analysis. I would therefore like to suggest another way of approaching the sentences in (98) and (99). Regardless of whether it involves A-movement or A-bar movement, sentence (98) is grammatical because object scrambling allows a reciprocal to be properly bound, thereby avoiding a Condition A violation. Regarding (99), the following sentence, which is structurally the same as (99), shows that it is not the floating numeral in (99) that causes the ungrammaticality:

- (100) Gakusei-o       Taroo-no       sensei-ga       huta-ri sikatta.<sup>13</sup>  
 students-ACC Taroo-GEN teachers-NOM two-Cl. scolded  
 (Taroo's teachers scolded two students/Taroo's two teachers scolded the students.)

As the reader can see from the gloss of this sentence, it is ambiguous and grammatical for both readings, which contradicts Fitzpatrick's claim that a quantifier cannot be floated under A-movement. One might suggest that the difference in grammaticality between (99) and (100) is that (99) contains an anaphor and that this might have something to do with its ungrammaticality. The following sentence, which is structurally identical to (99), shows that the anaphor has nothing to do with the problem:

<sup>13</sup> My thanks to Mana Kobuchi-Philip for her judgement on this sentence, which I concocted myself.

- (101) Hon-o otagai-no sakka-ga ni-satsu katta.<sup>14</sup>  
 books-ACC each other-GEN authors-NOM two-Cl. bought  
 (Each other's authors bought two books.)  
 (Two books were bought by each other's authors.)

The only way for Fitzpatrick to explain why (99) is ungrammatical while (101) is grammatical, although they appear to be identical in structure, would be to make the claim that (99) involves A-movement and (101) A-bar movement. One could do this by assuming that in (99) the direct object *gakusei* (*students*) has undergone A-scrambling for EPP purposes and the subject *otagai-no sensei-ga* (*each other's teachers*) has remained in its base-position, while in (101) the subject has moved to the EPP position and the object has been scrambled around the subject, which would constitute A-bar movement. It would not be obvious from the Surface Structure that the two sentences involved different kinds of movement, but in a scrambling language like Japanese such things are possible. The question is whether there is any independent motivation for claiming that (99) and (101) involve different kinds of movement (other than providing support for Fitzpatrick's theory). I would maintain that there is no independent motivation for claiming that (99) and (101) involve different kinds of movement. This raises the question of how I would explain the ungrammaticality of (99). It seems that in this sentence the reciprocal and the numeral are incompatible. A reciprocal implies two specific individuals. However, specificity is incompatible with the numeral *huta-ri*, which indicates an indefinite, arbitrary, unidentifiable set of two students.<sup>15</sup> Example (99) is therefore not a valid example for this discussion.

Let's summarise the conclusions that can be drawn from examples (98) to (100). Fitzpatrick claims that the contrast between (98) and (99) shows that numeral stranding cannot take place under A-movement. This claim is seriously challenged by my example (100).

Consider now the following sentences, which Fitzpatrick introduces in order to demonstrate that A-bar movement but not A-movement produces weak cross-over effects in English:

- (102) a. \*Who<sub>1</sub> did his<sub>1</sub> mother see t<sub>1</sub>?  
 b. John<sub>1</sub> seems to his mother t<sub>1</sub> to be smart

Based on this evidence, Fitzpatrick assumes that in (103b) the fronting of the wh-object must be A-movement, since it obviates the cross-over effect seen in (103a):

<sup>14</sup> My thanks to Masumi Nagasawa for helping me construct this sentence.

<sup>15</sup> My thanks to Mana Kobuchi-Philip for this insight.

- (103) a. \*[pro<sub>1</sub> osieta sensei] -ga dare<sub>1</sub>-o yatou no?  
 pro<sub>1</sub> taught teacher-NOM whom<sub>1</sub> hire ?  
 (Whom<sub>1</sub> will the teacher who taught him<sub>1</sub> hire?)

- b. Dare<sub>1</sub>-o rainen [pro<sub>1</sub> osieta sensei] -ga yatou no?  
 whom next year pro<sub>1</sub> taught teacher-NOM hire ?  
 (Whom<sub>1</sub> will the teacher who taught him<sub>1</sub> hire next year?)

Again, if sentences like (103b) are instances of A-movement, according to Fitzpatrick they should become ungrammatical if they involve a floating numeral, since he claims that Japanese floating numerals are adnominal and can only be floated under A-bar movement. The following pairs of sentences are offered as supporting evidence:

- (104) a. Donna gakusei<sub>1</sub>-o san-nin rainen [pro<sub>1</sub> osietta sensei]-ga t<sub>1</sub>  
 which students ACC three-Cl. next year taught teacher NOM  
 yatou no?  
 hire ?

- b. \*/? Donna gakusei<sub>1</sub>-o rainen [pro<sub>1</sub> osietta sensei]-ga t<sub>1</sub> san-nin  
 which students ACC next year taught teacher NOM three-Cl.  
 yatou no?  
 hire ?

(Which three students will the teacher who taught them hire next year?)

- (105) a. [Donna booru]<sub>1</sub>-ga mit-tu [pro<sub>1</sub> katta hito] -ni atatta no?  
 which ball NOM three-Cl. bought person DAT hit ?  
 b. \*/? [Donna booru]<sub>1</sub>-ga [pro<sub>1</sub> katta hito] -ni mit-tu atatta no?  
 which ball NOM bought person DAT three-Cl hit ?

(Which three balls hit the person who bought them?)

- (106) a. Donna gakusei<sub>1</sub>-ga san-nin asita [pro<sub>1</sub> osietta sensei]-ni  
 which students NOM three-Cl. tomorrow taught teacher DAT

sikarareru no?  
 scold ?

- b. \*/? Donna gakusei<sub>1</sub>-ga asita [pro<sub>1</sub> osietta sensei]-ni san-nin  
 which students NOM tomorrow taught teacher DAT three-Cl.

sikarareru no?  
 scold ?

(Which three students will be scolded tomorrow by the teacher who taught them?)

Fitzpatrick assumes that the (a) sentences in (104) to (106) are instances of A-movement. For the sake of argument, we will grant him this assumption (even though the sentences contain wh-movement). In the (a) sentences, the numeral quantifier is not floated and the sentences remain grammatical. In the (b) sentences, the quantifiers are floated and the sentences are marginal. Fitzpatrick claims that this shows that Japanese numerals are adnominals that can only float under A-bar movement. These data are undeniably interesting, as are Fitzpatrick's observations. The question is whether the data convincingly show that Japanese numerals can be floated only under A-bar movement. In the (b) examples in these three sets of sentences Fitzpatrick's informants are not sure about their judgements, which already raises doubts about his conclusions. My informant could also not completely rule the sentences out. If sentences of this type are typically marginal but not ungrammatical, Fitzpatrick might have to concede that Japanese numerals can be stranded under A-movement. He could perhaps explain the marginal acceptability of the (b) sentences in (104) to (106) in another way, namely, by arguing that these sentences are actually instances of A-bar movement. Given that they involve wh-questions, this would not be problematic in and of itself, but it would nullify Fitzpatrick's generalisation that only A-movement obviates cross-over effects, as he attempted to show in (103). My reaction to Fitzpatrick's analysis of the sentences in (103) through (106) is that there is confusion about what constitutes A-movement and A-bar movement, particularly given the claim that wh-questions involve A-movement, and that the conclusions are partially based on uncertain grammaticality judgements.

Fitzpatrick ends his discussion of Japanese with some very interesting sentences and observations. Unfortunately, his conclusions are again based on questionable grammaticality judgements. The sentences have to do with the interaction of the universal quantifier *zen'in* (*all/everybody*) and negation. Some background information is required before I can begin the discussion.

In Japanese, the EPP requires that something move to the specifier position of a Topicalisation Phrase (TP). It does not have to be the subject that moves. It is also possible to move an object into [SPEC, TP] and this would be considered A-

movement, as seen in (107a). It is also possible to move the subject into [SPEC, TP] for EPP purposes and then to scramble the object around the subject into [SPEC, CP], as seen in (107b).

- (107) a. [<sub>TP</sub> Object<sub>1</sub> [<sub>VP</sub> Subject t<sub>1</sub> Verb]]  
 b. [<sub>CP</sub> Object<sub>2</sub> [<sub>TP</sub> Subject<sub>1</sub> [<sub>VP</sub> t<sub>1</sub> t<sub>2</sub> Verb]]]

The Surface Structure word order is the same for these two types of movement, but there is a test for determining which kind of movement has taken place. The test involves the ambiguity that can arise when negation, which is a verbal infix, co-occurs with the universal quantifier *zen'in*. It works in the following way.

Imagine a sentence in which *zen'in* is the subject of a transitive verb that is inflected for negation. If in this type of construction the object of the verb undergoes A-movement to [SPEC, TP] in order to satisfy the EPP, leaving the subject inside VP/vP as in (107a), negation retains scope over the subject, producing a [ $\neg > \forall$ ] reading. If, on the other hand, the subject moves out of vP to TP for EPP purposes and the object undergoes A-bar scrambling and is moved around the subject, as in (107b), negation no longer takes scope over the subject, and the reading is [ $\forall > \neg$ ]. This seems to be a very plausible way to explain ambiguity in Japanese. With that background, Fitzpatrick looks at what happens when numeral quantifiers are floated in sentences with *zen'in* (*all*) and negation, and again concludes (incorrectly, as I will show) that floating numerals are associated with A-bar movement. Observe the following sentence:

- (108) Hon-o san-satu zen'in-ga kawanakatta yo.  
 book-ACC three-CL all-NOM buy-not-PAST EXCL  
 (All did not buy three books.)

In (108), an object has been fronted with its numeral quantifier. Since the fronted object could be in CP or TP and the subject in TP or vP, one would expect the sentence to be ambiguous for [ $\neg > \forall$ ] and [ $\forall > \neg$ ] readings, which is indeed the case. Now, what happens if the quantifier is floated? Fitzpatrick's prediction is that only a reading produced by A-bar movement would be allowed. This would be a reading in which the subject is outside of VP and takes scope over negation. Fitzpatrick says that this prediction is borne out because the following sentence, which is based on (108), has only a [ $\forall > \neg$ ] reading:

- (109) Hon-o zen'in-ga san-satu kawanakatta yo.  
 book-ACC all-NOM three-CL bought not EXCL  
 (All did not buy three books.)

I consulted three informants on this sentence. Two could get only a [ $\neg > \forall$ ] reading and the other one could get both a [ $\forall > \neg$ ] and a [ $\neg > \forall$ ] reading. My findings are thus in total contradiction to the claim made by Fitzpatrick. My conclusion is

therefore that stranding is possible under both A-movement and A-bar movement in Japanese and Fitzpatrick's hypothesis needs rethinking.

To summarise this section, Fitzpatrick's aim was to show that floating quantifiers in languages like Standard English and French are adverbials as proposed in Doetjes (1997) that can only float under A-movement, and that Japanese floating numerals are adnominals that can be stranded in the manner of Sportiche but only under A-bar movement. His data and observations are very interesting and his hypothesis very clever. Also, his claim that a language can have both adnominal and adverbial floating quantifiers is plausible. I showed that this was the case in West Ulster English and will show in the next section that it is also true of Japanese. The problem is that Fitzpatrick's hypothesis breaks down in too many areas. The German examples in (91) show that quantifiers can be stranded under both A-movement and A-bar movement, and the examples in (104) to (106) and (108) strongly suggest that in Japanese the distinction between A-movement and A-bar movement is also not the deciding factor. Furthermore, Fitzpatrick's claim that all Japanese floating numeral quantifiers are adnominal is completely untenable, as I will show in the next section.

#### 6. Kobuchi-Philip (2003 and 2006): Japanese Floating Numerals are Adverbials and Adnominals

The analysis in Kobuchi-Philip (2003 and 2006) deals with floating numeral quantifiers in Japanese, consisting of a cardinal number and a classifier, and presents strong evidence that adnominal and adverbial floating quantifiers can co-occur intralinguistically. Her analysis is mainly of a semantic nature, however if one approaches it from a syntactic standpoint one discovers that it provides evidence, perhaps inadvertently, for the Stranding Analysis. My goal in this section is to review Kobuchi-Philip's analysis in order to show that floating quantifiers can be both adnominal and adverbial and that quantifier stranding occurs in Japanese.

In Kobuchi-Philip (2003) it is shown that there are various positions that a numeral quantifier can appear in, exemplified in the following sentences:

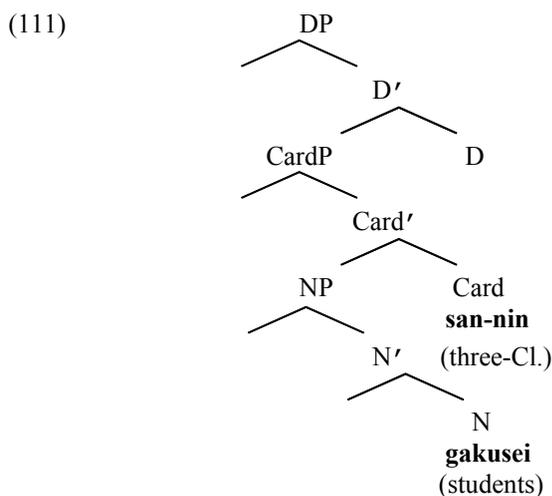
- (110) a. [Gakusei san-nin]-ga hon-o katta.  
 students three-Cl-NOM. book-ACC bought
- b. [Gakusei-ga san-nin] hon-o katta.  
 students-NOM three-Cl. book-ACC bought
- c. Gakusei-ga, [san-nin hon-o katta].  
 students-NOM three-Cl. book-ACC bought
- d. San-nin<sub>1</sub> gakusei-ga [t<sub>1</sub> hon-o katta].  
 three-Cl. students-NOM book-ACC bought
- e. [San-nin-no gakusei]-ga hon-o katta.  
 three-Cl.-GEN students-NOM book-ACC bought

Kobuchi-Philip refers to the numeral quantifiers in examples (110a), (110b) and (110e) as “DP-internal numeral quantifiers” and to the numeral quantifiers in (110c) and (110d) as “floating numeral quantifiers” that initiate as adjuncts to a verbal phrase. Note that DP-internal numeral quantifiers can be pre-nominal, as in (110e), in which case they bear a genitive marker, or post-nominal, as in (110a) and (110b). In this section, when talking about numeral quantifiers that are base-generated in DP I will use the term *adnominal numeral quantifier* or simply *adnominal* instead of Kobuchi-Philip’s term *DP-internal numeral quantifier*. Likewise, when discussing numeral quantifiers that originate as adjuncts to a verbal phrase, as in (110c) and (110d), I will use the term *adverbial numeral quantifier* or simply *adverbial* instead of *floating numeral quantifier*. Let’s first consider (110a) and (110b), which both mean *Three students read a book*. Assuming that the numeral quantifiers in these two sentences initiate in DP as argued by Kobuchi-Philip, then the two sentences should be derived from a common source. The question is how. Assuming that Japanese is head-final, and assuming, following Kawashima (1998) and others, that in the nominal hierarchy phrases headed by a cardinal number outrank NP, the structure of the subject in (110a) and (110b) would be as in (111).<sup>16</sup>

Example (110a) seems straightforward. In this sentence the entire DP moves to a position in which the nominative case marker *ga* is assigned. In (110b), however, the NP *gakusei* (*students*) moves out of CardP via the specifier position and up to the position where nominative case is assigned, stranding the quantifier. The question here is whether a NP can move by itself out of DP for case. Nonetheless, given the structure in (111), the only way to explain the position of the nominative marker in (110b) is to argue that the numeral and classifier have been stranded in CardP. In Bošković (2008) it is argued that languages without articles, including Japanese, do not have DP and that NP functions as DP. Example (110b) in fact supports Bošković’s claim. I will assume here that Bošković’s arguments are correct.

<sup>16</sup> Kawashima uses the term NumP. I have changed it to CardP for the sake of consistency.

We move now to (110c). Its word order is the same as that of (110b), but Kobuchi-Philip argues that it must be analysed differently. She points out that there are intonational differences between (110b) and (110c) and that there is a pause after the subject in (110c), which shows that the numeral quantifier in this sentence is more closely associated with the predicate than with the subject. This is why the numeral quantifiers in (110b) and (110c) are analysed as adnominal and adverbial, respectively. It is also significant that the tendency is for (110b) to allow a collective or a distributive reading while (110c) produces only a distributive reading. I will show later in this section that the forced distributive reading of (110c) is very relevant to Kobuchi-Philip's treatment of numeral quantifiers such as the one in (110c) as adjuncts to vP.



Turning now to (110d), this sentence is treated by Kobuchi-Philip as being derived from (110c) by scrambling the adverbial numeral quantifier. She bases this analysis on the claim that the meaning of (110d) corresponds to (110c) rather than to (110b), that is, the reading is distributive. Furthermore, as shown in (110e), when a numeral precedes a noun it must bear the genitive case marker *no*, which indicates that the numeral in (110d) must have started out in a post-nominal position.

To summarise where we are so far, a syntactic model based on the Stranding Analysis and on arguments in Bošković (2008) can generate (110a) and (110b) from a common source. Structurally, (110c) could also be treated as stranding, but Kobuchi-Philip offers reasons for treating the numeral quantifier in (110c) as a vP adjunct rather than a stranded quantifier. Based on this analysis, (110d) is easy enough to derive by scrambling the adverbial numeral. The point is that the first four sentences in (110) are not incompatible with the Stranding Analysis as long as one accepts the premise that adverbial and adnominal floating quantifiers can co-exist. Example (110e) requires special attention.

In (110e) we see that when an adnominal numeral quantifier precedes a noun, it must bear the genitive marker *no*. This sentence contains the same elements and has the same meaning as (110a) and (110b). It would therefore be desirable to derive (110a), (110b) and (110e) from the same base-structure. There are, however, two major hurdles to this approach. One is the case marking on the numeral quantifier in (110e) and the other is the fact that it is difficult to imagine how, in a head-final language, a noun in a structure like (111) can end up in a position following the numeral. It is no surprise that in the literature one finds a tendency not to approach pre- and post-nominal numerals in a unified manner. Inoue (1978), Miyagawa (1989), Saito and Murasugi (1990) and Kawashima (1998) have all avoided a unified analysis. If one does not follow a unified approach, I assume that a sentence like (110e) would be derived by base-generating the numeral and classifier in [SPEC, NP] or [SPEC, DP], where they would be assigned genitive case and the marker *no*. This is consistent with arguments in Miyagawa (1991) regarding the assignment of the genitive case in a SPEC position, and it is also consistent with my arguments in Chapter 1 regarding the assignment of the genitive and the possessive dative case in SPEC positions. Note that under this approach pre-nominal numerals are outside the scope of a study of floating quantifiers, since they are located in a SPEC position in the nominal domain rather than in a head position like a strandable quantifier and are not subject to stranding.

I must point out that in Kobuchi-Philip (2006) there is a proposal for treating pre- and post-nominal numerals in Japanese in a unified way. Not only does this proposal offer a unified approach to pre- and post-nominal numeral quantifiers, it also offers a means of accounting for an English measurement phrase such as *two tablespoons of sugar* and its equivalent in Japanese in a unified manner. It is based on Corver (2004), which is an analysis of English measurement phrases, but it modifies Corver's analysis so that it can account for measurement phrases in both English and Japanese. Under Kobuchi-Philip's analysis, a measurement phrase is a kind of Small Clause in which the modified NP is the subject, the numeral and classifier are the predicate, and the measurement term (tablespoon, bottle, etc.) is the complement of the predicate. The Small Clause predicate can remain in its post-nominal position, which results in structures such as (110a or 110b), or it can undergo optional subject-predicate inversion, in which case, the predicate, including the numeral, classifier and measurement term, move around the subject to the SPEC position of an FP inside DP. This is how the numeral quantifier ends up in pre-nominal position as seen in (110e). The genitive marker *no* is inserted just as *of* is inserted in English under the analysis in Corver (2004) in order to obtain a phrase like *two tablespoons of sugar*. What is important to my analysis is that under this approach a pre-nominal numeral quantifier is in a SPEC position in the nominal domain and not subject to stranding. Thus, if Kobuchi-Philip's unified approach to pre- and post-nominal numeral quantifiers is correct, pre-nominal numeral quantifiers with *no* remain outside the scope of a study of floating quantifiers.

In summary, there are two points that I would like to make so far. First, I am treating pre-nominal numeral quantifiers as being outside the scope of a study of floating quantifiers. Secondly, it seems upon first glance that the Stranding Analysis

can handle (110a) and (110b). Even (110c) could theoretically be derived by stranding, in which case (110d) would be derived by first stranding and then scrambling the numeral quantifier. However, there are compelling arguments in Kobuchi-Philip (2003) for base-generating numeral quantifiers such as the one in (110c) as adjuncts to a verbal phrase. In the remainder of this section I will elaborate on this.

I have already mentioned that despite their identical word order there are a number of differences between (110b) and (110c), repeated here:

- (112) a. [Gakusei-ga san-nin] hon-o katta.  
 students-NOM three-Cl. book-ACC bought
- b. Gakusei-ga, [san-nin hon-o katta].  
 students-NOM three-Cl. book-ACC bought

The intonation in these two sentences is different, there is a pause in (112b) between the subject DP and the numeral quantifier, and (112b) must have a distributive interpretation. These are signs that the two sentences in (112) must be analysed differently. In Kobuchi-Philip (2003 and 2006) there are additional arguments, both syntactic and semantic in nature, for the dual analysis in (112). I will now give a brief survey of them.

One very compelling reason for the split analysis in (112) is that there are instances in which a numeral quantifier cannot possibly be linked to an associate DP because it lacks the proper scopal relation with a DP. Observe the following example from Kobuchi-Philip (2003):

- (113) Narande hashitteita suu-dai-no torakku-ga,  
 in a row running some-Cl.-GEN truck-NOM
- san-dai gaadireeru-ni butuskatta  
 three-Cl. guardrail-DAT hit

(Three of several trucks driving in a row hit the guardrail.)

There are two quantifiers in this sentence, *suu-dai* (*some/several*) and *san-dai* (*three*). As can be seen from the classifier *dai*, which refers to vehicles, both quantifiers quantify over the same general thing. However, unlike the quantifier *suu-dai*, the quantifier *san-dai* does not take scope over all of the trucks that are being driven in a row. It only takes scope over the three that hit the guardrail. It therefore cannot have been stranded by the subject in this sentence. Since it takes scope only over vehicles that have the property of having hit the guardrail, it can only be construed as an adjunct to the predicate.

Another compelling reason for positing adverbial numeral quantifiers is that there are numeral quantifiers whose classifier is incompatible with any DP that might be

associated with them. These are referred to as event classifiers. In the following two examples, the direct object is a pistol that has been fired twice, but the classifier *hatsu* attached to the numeral is the classifier used for shots, blasts or explosions, not for pistols. The only possible phrase that can be associated with the numeral quantifier is the predicate:

- (114) a. John-ga kono pisutoru-o, ni-hatsu utta.  
 John-NOM this pistol-ACC two-CL. fired  
 (John fired two shots from this pistol.)
- b. John-ga pisutoru-o, sokode ni-hatsu hanatta.  
 John-NOM pistol-ACC there two-CL. fired  
 (John shot a pistol twice there.)

There is other evidence for the adverbiality of numeral quantifiers such as the ones in (112b) and (113), such as the fact that floating numeral quantifiers can be coordinated with adverbs:

- (115) Shoon-nin-ga, [san-nin katsu tashikani] sono jiko-o mokugekishita.  
 witnesses-CL-NOM three-CL. and certainly the accident-ACC witnessed  
 (Three witnesses certainly witnessed the accident.)

I have mentioned that one argument in favour of the split analysis in (112) is that numeral quantifiers such as the one in (112b) have a forced distributive reading while numerals like the one in (112a) can be interpreted distributively or collectively. I will now present more compelling evidence from Kobuchi-Philip (2003) for the forced distributive reading of adverbial numeral quantifiers and also discuss what it is that might cause the forced distributivity.

Consider first the so-called “once only” predicates, which, because they describe events that can only occur once, require a collective reading. Because a floating adverbial numeral quantifier must be interpreted distributively, it cannot occur with a “once only” predicate:

- (116) \*Otoko-ga Hibiyakooen-no baiten-de, san-nin Tanaka-o koroshita.  
 men-NOM Hibiya Park-GEN kiosk-in three-CL. Tanaka-ACC killed  
 (Three men killed Tanaka at the kiosk in Hibiya Park.)

Even a *partially* collective predicate is incompatible with a floating numeral. For example, if there are only two copies of Newsweek left in a shop and three customers buy them, either the three customers buy the two copies together, as a group, in which case there is a collective reading, or two customers buy one copy together and the other customer buys the remaining copy, which would be an instance of partial collectivity. In the following discourse from Kobuchi-Philip (2003), neither of these collective readings is possible because the adverbial numeral quantifier forces an impossible distributive reading:

(117) Kesa        Newsweek-ga,    ni-bu    nokotteita.  
 this morning Newsweek-NOM two-Cl. remained

\*Sono Newsweek-o        kyaku-ga,        san-nin    katta.  
 these Newsweek-ACC customers-NOM three-Cl. bought

(This morning two copies of Newsweek remained. Three customers bought them.)

The second sentence is ungrammatical because it cannot be true of each customer that he or she bought the two magazines. Perhaps the most convincing evidence in Kobuchi-Philip (2003) that adverbial numeral quantifiers must be interpreted distributively is the following pair of sentences from the field of chemistry:

(118) a. Futa-tsu-no        suiso-genshi-ga        kono    ondo-de  
 two-Cl.-GEN hydrogen atom-NOM    this temperature-at

hito-tsu-no        suiso-bunshi-o        tsukuru.  
 one-Cl.-GEN hydrogen molecule-ACC    form

b. \*Suiso-genshi-ga        kono    ondo-de,  
 hydrogen atom-NOM    this temperature-at

futa-tsu    hito-tsu-no        suiso-bunshi-o        tsukuru.  
 two-Cl. one-Cl.-GEN hydrogen molecule-ACC    form

(At this temperature two hydrogen atoms form one hydrogen molecule.)

We have seen syntactic, semantic and phonological reasons for the split analysis in (112) proposed in Kobuchi-Philip (2003). What remains to be done is to explain why adverbial numeral quantifiers in Japanese must have a distributive interpretation. I will now present Kobuchi-Philip's arguments and my own comments.

Kobuchi-Philip (2003) offers a semantic explanation for the forced distributive reading of adverbial numeral quantifiers, using the concept of *atomicity*. The term *atomicity* refers to the idea that when a Japanese numeral counts the quantity of elements specified by its classifier, it counts *individuals* or *atoms* rather than groups or sums of elements. This condition whereby classifiers must represent atoms is referred to as the *Atomicity Constraint*.<sup>17</sup> This need to count individuals/atoms is what causes the distributivity of adverbial numeral quantifiers in Japanese. To understand this, consider the following sentence from Kobuchi-Philip (2003), in which the adverbial numeral quantifier must be interpreted distributively:

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<sup>17</sup> For an explanation of this constraint the reader is referred to Kobuchi-Philip (2003) 201-207.

- (119) Otoko-ga, san-nin booto-o tsukutta.  
 man-NOM three-Cl. boat-ACC built  
 (Three men made a boat.)

The numeral *san* (*three*) represents the intersection of the set of individuals specified by the classifier *nin*, which I will refer to as the *restriction* of the numeral, and the set of individuals with the property of having built a boat, which I will refer to as the *scope* of the numeral.<sup>18</sup> Kobuchi-Philip argues that the atomicity of the classifier must persist after it has been intersected with the property specified by the predicate. For the atomicity of the classifier to be maintained, the property of having built a boat must be true of each individual included in the set specified by the classifier. In other words, the sentence in (119) can only be true if the property of having built a boat is true of each individual man, hence the forced distributive reading of the adverbial numeral quantifier. This explanation seems plausible to me, and I would suggest that the same line of reasoning might also be able to explain the ability of an adnominal numeral quantifier to have a distributive or a collective reading, provided, of course, that the predicate and pragmatics allow it. My reasoning is as follows:

Let's assume that adnominal and adverbial numeral quantifiers are not really different in that they are both subject to the Atomicity Constraint, and let's apply this idea to (113), repeated here:

- (120) Narande hashitteita suu-dai-no torakku-ga,  
 in a row running some-Cl.-GEN truck-NOM  
  
 san-dai gaadireeru-ni butuskatta  
 three-Cl. guardrail-DAT hit

(Three of several trucks driving in a row hit the guardrail.)

Consider the adnominal numeral quantifier *suu-dai*. I assume, in keeping with the Atomicity Constraint, that the denotation of the classifier *dai* must be atomic. Furthermore, following Kobuchi-Philip's argument, the intersection of the denotation of *dai* with the scope of *suu* (trucks being driven in a row) must also be atomic in order for the sentence to be true. That is, the property of being a truck driven in a row must be true for every item denoted by the *dai* in *suu-dai*. What is important is that the atomicity of the intersection of the restriction (the classifier) and the scope (the trucks) is assured within the nominal domain *independently of the predicate of the sentence*. Since the predicate has no role to play in ensuring that the intersection of the restriction and the scope remains atomic, it does not matter whether it produces a collective or distributive reading.

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<sup>18</sup> I use the terms *restriction* and *scope* to facilitate discussion. The reader might well be used to other terms, such as *domain of quantification* and *nuclear scope*.

Things are different for the adverbial *san-dai* in (120), whose scope is not specified by a nominal element but by the predicate. In order for the intersection of the restriction and scope of *san* to be atomic, the property of hitting a guardrail must be true of every item designated by *dai*. Since in the case of an adverbial numeral quantifier the predicate has a role to play in assuring atomicity, a distributive reading is required.

In this section I have given a brief, simplified overview of the theory of floating quantifiers presented in Kobuchi-Philip (2003 and 2006). I believe that this review has taught us three important things. First of all, there is evidence that Japanese has instances of true quantifier stranding that is consistent with the theory that I am defending, as shown in (110a) and (110b), repeated here:

- (121) a. [Gakusei san-nin]-ga hon-o katta.  
 students three-Cl-NOM. book-ACC bought
- b. [Gakusei-ga san-nin] hon-o katta.  
 students-NOM three-Cl. book-ACC bought

Example (121a) is ambiguous for a collective or a distributive interpretation, and so is (121b). The scope of the numeral quantifier in both sentences must therefore be the subject DP, which means that the numeral quantifier is a stranded adnominal, not an adverbial. Furthermore, the position of the nominative marker in (121b) (or the lack of case marking on the numeral quantifier) can only be explained if one assumes that in this sentence the numeral quantifier has been stranded in a position below the one in which nominative case is assigned.

Secondly, our review of the theory in Kobuchi-Philip (2003 and 2006) reminds us of something that we learned from West Ulster English, namely, that a language can have both adnominal and adverbial floating quantifiers. Whereas the numeral quantifiers in (121) are adnominal, in the following sentences they are adverbial:

- (122) a. Gakusei-ga, [san-nin hon-o katta].  
 students-NOM three-Cl. book-ACC bought
- b. San-nin<sub>1</sub> gakusei-ga [t<sub>1</sub> hon-o katta].  
 three-Cl. students-NOM book-ACC bought

The sentence in (122a) has the same Surface Structure as (121b) but not only does it involve a pause and different intonation, its reading is distributive. The scope of the numeral quantifier is therefore the predicate, not the subject. Example (122b), which has the same semantics as (122a), would be derived from (122a) by scrambling the adverbial numeral quantifier.

Thirdly, we may have gained an understanding of why in the Indo-European languages there is a strong preference for a distributive interpretation of stranded universal quantifiers. The Germanic and Romance languages do not have classifiers,

which means that the restriction of a stranded quantifier in these language families is necessarily the associate DP. Consider the following sentence:

(123) The students have all eaten a pizza.

Since there is no classifier in this sentence, the restriction of the quantifier is the DP *the students* and the scope is specified by the predicate *eat a pizza*. The restriction of the quantifier must be atomic, and this atomicity must be maintained in the intersection of the restriction and the scope. Thus, the property expressed by the predicate must be true of each person within the restriction of the quantifier, and a distributive reading is produced. This does not explain why a collective reading is also possible in (123), but it might explain why the distributive reading is the preferred reading of universal quantifiers in the Germanic and Romance languages.

In this section we have seen evidence that in Japanese some floating numeral quantifiers are best explained as stranded adnominals and others are best explained as adjuncts to a verbal phrase. We have also seen evidence that adnominal numeral quantifiers can be stranded in Japanese.

In Kobuchi-Philip (2003) it is argued that the forced distributive interpretation of adverbial floating numerals in Japanese results from the fact that not only the restriction of a quantifier but also the intersection of the restriction and the scope must be atomic. The property expressed by the predicate must therefore be true of every individual covered by the restriction, resulting in a distributive interpretation. I suggested that in the case of adnominal numeral quantifiers the predicate does not specify the scope of the numeral quantifier and thus plays no role in ensuring that the intersection of the restriction and scope of the quantifier is atomic. This perhaps allows more flexibility in collective vs. distributive interpretations.

The fact that the Germanic and Romance languages do not have classifiers comparable to the ones found in Japanese means that the restriction of a Germanic or Romance universal quantifier is its complement DP and its scope is specified by the predicate. I suggested that this might be the reason why there is a strong preference for a distributive interpretation of universal quantifiers in the Germanic and Romance languages.

## 7. Final Comments, Summary and Conclusions

In this chapter we have reviewed challenges that are faced by the Stranding Analysis and have also looked at several analyses in which it is claimed that all floating quantifiers are base-generated as adjuncts to a verbal phrase. We have found that the challenges faced by the Stranding Analysis are not really solved by taking an adverbial approach to floating quantifiers and that the adverbial approaches are themselves faced with significant problems and offer no *compelling* reason to abandon the Stranding Analysis. The approach in Kobuchi-Philip is different from the approaches in, for example, Baltin, Bobaljik and Doetjes in that it allows for the

possibility that a language can have floating quantifiers that originate inside a nominal phrase and floating quantifiers that originate as adjuncts to a verbal phrase. Other analyses not covered in this thesis are similar. For example, the conclusion reached in Benmamoun (1999), which is mainly about Arabic, is that some floating quantifiers seem to be the heads of a nominal phrase like a QP whereas others behave like adjuncts to a verbal phrase.

Apart from reaching the conclusion that the adverbial approaches do not offer a convincing alternative to the Stranding Analysis, we also found that adnominal and adverbial quantifiers can co-exist intra-linguistically. We saw this to a limited extent in West Ulster English and to a great extent in Japanese. Furthermore, and most importantly, we saw that when a language has both adnominal and adverbial quantifiers, like Japanese, the adnominal ones can undergo stranding. This is perhaps the most compelling evidence in support of the Stranding Analysis. If a language has quantifiers in floating positions and some of those quantifiers are adverbial and others adnominal, there is only one way for the adnominal quantifiers to end up in a floating position. They have to be stranded there.



## Chapter 6: Summary, Conclusions, Future Research

The purpose of this thesis has been to take a fresh look at the Stranding Analysis of floating quantifiers first of all by considering how it may have been impacted by some of the more recent developments in linguistic theory and secondly by testing it against much more empirical data than have heretofore been considered. I actually began this thesis with a question: If the Stranding Analysis is updated for more recent developments such as the Split VP Hypothesis, and if it is evaluated using much more empirical data involving a wider range of different syntactic structures in a greater number of languages, how will it fare against the various adverbial analyses of floating quantifiers that have been proposed during the last several years? I believe that I have shown that if the Stranding Analysis is supplemented with the Split VP Hypothesis, the most serious criticisms of it that have been made over the years immediately become untenable. Furthermore, if one is really thorough in the evaluation of empirical data and considers a wide range of syntactic constructions in several languages, one sees that the explanatory power of the Stranding Analysis is far-reaching and that it captures more generalisations than the various adverbial approaches. It is true that there are problems with the Stranding Analysis, as there are with all linguistic theories, but the problems with the Stranding Analysis are not solved by adopting an adverbial approach.

In the remainder of this chapter I will provide the reader with a brief overview of each chapter of this thesis and I will present what I feel to be some very interesting opportunities for future research.

I began Chapter 1 with a brief history of the treatment of floating quantifiers. Because they appear to occupy the same position as adverbs, floating quantifiers were originally analysed as though they were adverbs, that is, as adjuncts to a verbal phrase. There were a number of problems with this adverbial approach, especially the fact that it failed to account for the seemingly obvious relationship between sentences such as the following two:

- (1) a. All the children are sleeping.
- b. The children are all sleeping.

Other problems with the adverbial approach were that it could not straightforwardly account for the  $\Phi$ -feature and case agreement shown by floating quantifiers, it did not deal with the question of what type of adverb a floating quantifier is and how its position is determined, and it could not explain why a floating quantifier, if it is base-generated as an adjunct to a verbal phrase, needs a local, c-commanding antecedent.

Sportiche (1988) developed an entirely new approach in which a floating quantifier is a nominal element that initiates not as an adjunct to a verbal phrase but as an adjunct to a VP-internal NP. Under this approach, when the NP moves up, for example to subject position, it can optionally strand the quantifier in VP. This

approach, which came to be known as the Stranding Analysis, accounted for the relationship between the sentences in (1), it explained the  $\Phi$ -feature and case agreement shown by floating quantifiers, it explained how a quantifier ends up in an adverbial position, and it solved the mystery of why a floating quantifier must have a c-commanding antecedent. The Stranding Analysis had another big advantage. It provided independent support for the then incipient VP-internal Subject Hypothesis.

The Stranding Analysis went through some refinements. Cardinaletti and Giusti (1989) proposed that a quantifier is not simply an adjunct to NP as originally proposed by Sportiche but a phrasal head. Giusti (1990) extended Sportiche's analysis, which mainly covered French and English, to German. Shlonsky (1991), working with Hebrew, carried the idea still further and proposed that a floating quantifier heads a Quantifier Phrase and selects a DP as its complement. Under Shlonsky's approach, the complement DP can strand the quantifier in QP when it moves up. This put the finishing touches on the syntactic structure and the mechanics that are involved in the Stranding Analysis.

In spite of the attractiveness of the Stranding Analysis, beginning in the early 1990s one could see a new tendency to defend an approach in which floating quantifiers do not initiate as the heads of QP but as adjuncts to a verbal phrase. One of the main reasons for returning to an adverbial approach was that the Stranding Analysis was felt to over-generate, producing ungrammatical sentences such as the following:

- (2) a. \*The students are coming all.  
 b. \*The criminals were arrested all.

As a reaction to the resurgence of the adverbial analysis, in this thesis I have made further refinements to Sportiche's original theory by incorporating the Split VP Hypothesis into its theoretical framework. By following the widely accepted arguments that subjects are base-generated in [SPEC, vP] rather than in [SPEC, VP] and that direct objects are base-generated in [SPEC, VP] rather than as complements of V, I prevent the Stranding Analysis from over-generating and thereby refute some of the most significant criticisms raised against the theory.

After providing a history of the study of floating quantifiers, I continued Chapter 1 by presenting the theoretical foundations and assumptions that I would base my thesis on. The most relevant of these were basic X-bar theory as developed in Chomsky (1970), whereby all verbal projections contain both a specifier and a complement position, the VP-internal subject hypothesis as proposed in Kitagawa (1986) and elsewhere, the split VP hypothesis that originated in Larson (1988), the arguments in Den Besten (1983) that in V2 languages the main clause verb moves to C, and the theory of sentential negation in Zeijlstra (2004).

In Chapter 2 we saw data from several different languages that involved many different kinds of syntactic structures, including active sentences, passive sentences, unaccusative sentences, sentences with multiple verbal elements, control verbs, raising verbs, small clauses and German *infinitivus pro participio* constructions, and

we looked at quantifier floating under both A-movement and A-bar movement. We found that quantifiers could be positioned in virtually any A-position, as predicted by the Stranding Analysis. Certain restrictions were noted, however. In Romanian and Spanish, for example, stranding between a perfect auxiliary and a past participle is not possible. This restriction does not exist in French and Italian. As pointed out later, in chapter 5, the restriction in Spanish and Romanian cannot be better explained by an adverbial approach, since adverbs can appear between perfect auxiliaries and past participles in those languages.

Our analysis of stranding under A-bar movement in Chapter 2 was less conclusive. In all the languages reviewed, stranding in non-restrictive relative clauses was unproblematic. However, we saw that while German allows stranding by *wh*-words, English does not. English was seen to be peculiar in this regard anyway, because it allows the universal quantifier to select only bare *wh*-words like *who* and *what*, whereas German allows the universal quantifier to select full *wh*-DPs.

Another important observation made in Chapter 2 was that stranding is generally something that happens to subject quantifiers and not to object quantifiers. Object quantifiers can only be stranded in scrambling languages like German, Dutch and Japanese. I will bring this up again later in this chapter.

In Chapter 3 we analysed data that were similar to the data analysed in Chapter 2 except that they involved negated quantifiers. Ultimately, the findings in Chapter 3 were essentially the same as they were in Chapter 2, however in Chapter 3 it was necessary to deal with a number of negation-related issues that did not arise in Chapter 2. I argued, for example, that the difference between sentential and constituent negation is that sentential negation involves the negation of a finite verb, and I showed that stranded negated quantifiers are truly negated constituents, not simply non-negated stranded quantifiers that happen to fall under the scope of a sentential negation marker. I also argued that not only quantifiers and negated quantifiers but also negation markers can be stranded and that this can account for certain instances of ambiguity and inverse scope in the Germanic languages. Finally, by adapting the theory of sentential negation in Zeijlstra (2004) to constituent negation, I also offered explanations for why negated quantifiers are stranded in the Germanic languages but not in the Romance languages and why inverse scope is possible in the Germanic languages when there is interaction between a universal quantifier and negation but difficult or impossible in the Romance languages.

In Chapter 4 I dealt with a type of floating quantifier that consists of a universal quantifier and a cardinal numeral. An example is the English *all three*. I referred to this type of quantifier as a *universal numeric quantifier* and showed that it occupies the Q position just like a bare universal quantifier. I argued that a universal numeric quantifier can be analysed as a *syntactic word* as defined in Di Sciullo and Williams (1987). It behaves the same as a syntactic word and, like a syntactic word, it is inserted from the lexicon into an  $X^{\circ}$  position, namely, Q. I also discussed the actual formation of universal numeric quantifiers. I argued that they are formed by a lexical rule very comparable to the number formation rules referred to as *constructional*

*idioms* in Booij (2008). By combining the theories of Di Sciullo and Williams and Booij with the Stranding Analysis I was able to account for the behaviour of universal numeric quantifiers. I noted that universal numeric quantifiers in English and German are exceptional because if they are not stranded they require that the definite article in the selected DP be deleted.

In Chapter 5 I showed that whereas there are problems with the Stranding Analysis, most of those problems also pose challenges for the adverbial approach to floating quantifiers. We reviewed the adverbial analyses of Baltin (1995), Doetjes (1997), Bobaljik (2003) and Fitzpatrick (2006), none of which presented a compelling reason for abandoning the Stranding Analysis. The analysis in Kobuchi-Philip (2003 and 2006) is interesting because it provides strong evidence that some floating numeral quantifiers in Japanese originate inside a nominal phrase while others originate as adjuncts to a verbal phrase. This is important because it shows that one need not assume that floating quantifiers must be either adverbial or adnominal in a given language. What is most important to me in Kobuchi-Philip's analysis, however, is that there is evidence that numeral quantifiers that originate inside a nominal phrase in Japanese can be stranded. To be more precise, there are adnominal quantifiers in Japanese that occupy a position below the nominative case marker, and there is only one way for them to end up in that position: They must have been *stranded* there. The defence rests!

Before ending this chapter I would like to mention some open questions that I think could be very interesting subjects for future research. Perhaps the most fundamental question is why some languages allow stranding while others do not. Based on the theory that I have proposed, stranding can occur only if there is a nominal phrase, like QP, higher than DP. In Japanese, numbers located in a CardP that dominates NP can also be stranded, but this can perhaps be explained by following the claim in Bošković (2008) that Japanese has no DP and NP functions as DP. In any case, it needs to be determined by extensive cross-linguistic research whether stranding is simply a parameter or whether it follows from the hierarchical structure within the nominal domain in a given language.

Related to the question of why a language does or does not allow stranding is the question of why it is primarily universal quantifiers that are stranded. Is it because only universal quantifiers head QP? If there are languages in which non-universal quantifiers can also be stranded, can it be shown that in those languages QP can be headed by both universal and non-universal quantifiers? It is reported in Delsing (1993) that in Icelandic, for example, non-universal quantifiers can be stranded, however they co-occur with the definite article, which would indicate that they head a phrase higher than DP even though they are not universal. This question on universality is clearly one that only a lot of cross-linguistic research would be able to answer.

Another area worth investigating is why languages like Romanian and Spanish, unlike French and Italian, do not allow stranding between a perfect auxiliary and a past participle. This is a bit mysterious, since this position is open to other elements,

such as adverbs. The very same thing can be said about Swedish. This would also be worth looking into.

Another potentially interesting research topic, which I alluded to earlier in this chapter, has to do with object quantifiers. The reader will recall from Chapter 2 that the stranding of object quantifiers is virtually non-existent outside of scrambling languages like German, Dutch and Japanese, the only exception being climbing object clitic pronouns, which can also strand a quantifier. It is not really clear why object quantifiers cannot be stranded. I suggested that it might have to do with the fact that a subject quantifier has more positions available to it than an object quantifier, but this is not really a satisfying explanation. Even in a non-scrambling language it is thinkable that a direct object could strand a quantifier in [SPEC, VP] when it moves to [SPEC, AgrOP]. So, the fact that a subject has far more positions available for stranding than an object has is not really relevant. One position is enough, and if one believes in AgrO, the stranding of object quantifiers should be possible. Future research is required here.

There is another open question regarding objects, referred to in Chapter 3, which could also be an interesting research item, and that is the fact that negated object quantifiers are not permitted in VO languages but they are allowed in OV languages, as the following English and German sentences demonstrate:

- (3) a. \*He has read not all the books.  
       b. Er hat nicht alle die Bücher gelesen.  
           He has not all the books read

I pointed out that this phenomenon seems to have something to do with the fact that constituent negation must be above the position of sentential negation, but this observation is first of all purely descriptive and secondly not cross-linguistically tested. Again, further research is necessary.

My final suggestion for future research is based on my observation that there is a correlation between a quantifier's syntactic positioning and its semantic features (*universality, strength, symmetry, cardinality* and *monotonicity*). This correlation poses the question of whether semantic features can actually predict syntactic positioning. Consider, for example, the quantifiers *all, some* and *most*. *All* occupies Q, *some* occupies D, given that it does not co-occur with determiners, and *most*, at least in some instances, occupies a position below D, perhaps an adjectival position, as seen in the following examples from German and English:

- (4) a. Die meisten Studenten haben dieses Buch gelesen.  
           the most students have this book read  
       b. John has read the most books.

Let's take a quick look at the universality, strength, symmetry, cardinality and monotonicity of these three quantifiers and see how they differ. The quantifier *all*, unlike *some* and *most*, is *universal* because it applies to every individual or element in its domain of quantification. The quantifiers *all* and *most* are *strong* and *some* is *weak*, as the following examples illustrate:

- (5) a. \*There are all books on the table.  
 b. \*There are most books on the table.  
 c. There are some books on the table.

The term *symmetric* as it relates to quantifiers can be defined using the logical statement  $R(A,B) \Leftrightarrow R(B,A)$ , to be read *If a relation that holds between a and b also holds between b and a, the relation is symmetric.*<sup>1</sup> By this definition, *all* and *most* are *asymmetric* and *some* is *symmetric*. The following examples illustrate this:

- (6) a. All monkeys are primates.  $\langle \neq \rangle$  All primates are monkeys.  
 b. Most birds are flying creatures.  $\langle \neq \rangle$  Most flying creatures are birds.  
 c. Some Spaniards are bullfighters.  $\langle = \rangle$  Some bullfighters are Spaniards.

I treat the quantifiers *all* and *most* as *proportional* because they can be defined in terms of percentages:

- (7) a. All = 100%  
 b. Most > 50%

I treat *some* as *non-proportional* or *cardinal* because its meaning is *at least two*.

The final feature to consider is *monotonicity*, which refers to the inference to subsets (monotone decreasing) or to supersets (monotone increasing). A distinction is also made between left and right monotonicity, whereby the terms *left* and *right* refer to elements/arguments to the left or to the right of the NP/DP modified by the quantifier in question.<sup>2</sup> For example, in the sentence *All the Belgian delegates arrived early*, the adjective *Belgian*, which occurs to the left of the NP *delegates*, is a left argument of that NP, while the VP *arrived early*, which is to the right of *delegates*, is a right argument. The following examples will illustrate the meaning of *monotone increasing* vs. *monotone decreasing*.

- (8) a. All the delegates arrived early.  $= >$  All the delegates arrived.  
 b. All the delegates arrived.  $\neq >$  All the delegates arrived early.

The VP *arrived early*, which is the right argument of the NP, is a subset of the VP *arrived*. The quantifier *all* therefore allows inference from a subset to a superset for its right argument, as shown in (8a), but does not allow inference from a superset to a subset, as shown in (8b). *All* is therefore *right monotone increasing*. However, for

<sup>1</sup> De Swart (1998), p. 80, 181.

<sup>2</sup> De Swart (1998) p. 186-188, 192-193.

the *left* argument of the NP, which is the adjective *Belgian*, *all* allows inference only from a superset to a subset and is therefore *left monotone decreasing*:

- (9) a. All the delegates arrived.  $\Rightarrow$  All the Belgian delegates arrived.  
 b. All the Belgian delegates arrived.  $\neq >$  All the delegates arrived.

The point is that for *all*, left and right monotonicity are opposites. This is not the case for *some*, which is monotone increasing for both its left and right arguments:

- (10) a. Some delegates arrived early.  $\Rightarrow$  Some delegates arrived.  
 b. Some delegates arrived.  $\neq >$  Some delegates arrived early.  
 c. Some delegates arrived.  $\neq >$  Some Belgian delegates arrived.  
 d. Some Belgian delegates arrived.  $\Rightarrow$  Some delegates arrived.

The quantifier *most* is different from *all* and *some*. It is right monotone increasing, like *some* and *all*:

- (11) a. Most delegates arrived early.  $\Rightarrow$  Most delegates arrived.  
 b. Most delegates arrived.  $\neq >$  Most delegates arrived early.

However, it has no left monotonicity at all, since it does not allow inference to a subset or to a superset for its left argument:

- (12) a. Most delegates arrived.  $\neq >$  Most Belgian delegates arrived.  
 b. Most Belgian delegates arrived.  $\neq >$  Most delegates arrived

To summarise, the following chart shows that the quantifiers *all* and *some* are the opposite in all the semantic features that we have looked at, and that *most* is different from both of them (LM and RM refer to left monotonicity and right monotonicity):

(13)

| <i>All</i> (floating) | <i>Some</i> (non-floating) | <i>Most</i> (non-floating) |
|-----------------------|----------------------------|----------------------------|
| Q position            | D position                 | A position                 |
| Universal             | Non-universal              | Non-universal              |
| Strong                | Weak                       | Strong                     |
| Asymmetric            | Symmetric                  | Asymmetric                 |
| Proportional          | Cardinal                   | Proportional               |
| LM $\neq$ RM          | LM = RM                    | LM undefined               |

This correlation between syntactic positioning and semantic features is striking, but its exact relevance to linguistic theory is not yet clear. If it is further researched cross-linguistically it may lead to a better understanding of the link between syntax and semantics and answer the question of whether semantic features can predict syntactic positioning.

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## Summary of Thesis in English

This thesis is about the phenomenon known as *floating quantifiers*. A floating quantifier is one that is separated from the DP that it modifies:

- (1) a. All the children are sleeping.
- b. The children are all sleeping.

Traditionally, there have been two ways to approach floating quantifiers. One way has been to analyse them as elements that initiate as modifiers of a DP and are “left behind” or “stranded” by that DP. This approach is known as the Stranding Analysis. The other approach has been to treat floating quantifiers as a kind of adverb. The purpose of this thesis is to take a fresh look at the Stranding Analysis, first of all by considering how it may have been impacted by some of the more recent developments in linguistic theory and secondly by testing it against much more empirical data than have heretofore been considered. The thesis actually begins with a question: If the Stranding Analysis is updated for more recent developments such as the Split VP Hypothesis, and if it is evaluated using much more empirical data involving a wider range of different syntactic structures in a greater number of languages, how will it fare against the various adverbial analyses of floating quantifiers that have been proposed during the last several years? I believe that I show that if the Stranding Analysis is supplemented with the Split VP Hypothesis, the most serious criticisms of it that have been made over the years immediately become untenable. Furthermore, if one is really thorough in the evaluation of empirical data and considers a wide range of syntactic constructions in several languages, one sees that the explanatory power of the Stranding Analysis is far-reaching and that it captures more generalisations than the various adverbial approaches. It is true that there are problems with the Stranding Analysis, as there are with all linguistic theories, but the problems with the Stranding Analysis are not solved by adopting an adverbial approach.

Chapter 1 begins with a brief history of the treatment of floating quantifiers. Because they appear to occupy the same position as adverbs, they were originally analysed as though they were adverbs, that is, as adjuncts to a verbal phrase, as the following example shows:

- (2) The students have probably/thoroughly/slowly/already/all read the book

There were a number of problems with this adverbial approach, especially the fact that it failed to account for the seemingly obvious relationship between sentences such as the two in (1).

Other problems with the adverbial approach were that it could not straightforwardly account for the  $\Phi$ -feature and case agreement shown by floating quantifiers, it did not deal with the question of what type of adverb a floating quantifier is and how its position is determined, and it could not explain why a floating quantifier, if it is

base-generated as an adjunct to a verbal phrase, needs a local, c-commanding antecedent.

Because of the problems with the various adverbial approaches, Sportiche (1988) developed an entirely new approach in which a floating quantifier is a nominal element that initiates not as an adjunct to a verbal phrase but as an adjunct to a VP-internal NP. Under this approach, when the NP moves up, for example to subject position, it can optionally strand the quantifier in VP. This so-called Stranding Analysis accounted for the relationship between the sentences in (1), it explained the  $\Phi$ -feature and case agreement shown by floating quantifiers, it explained how a quantifier ends up in an adverbial position, and it solved the mystery of why a floating quantifier must have a c-commanding antecedent. The Stranding Analysis had another big advantage. It provided independent support for the then incipient VP-internal Subject Hypothesis.

The Stranding Analysis went through some refinements. Cardinaletti and Giusti (1989) proposed that a quantifier is not simply an adjunct to NP as originally proposed by Sportiche but a phrasal head. Giusti (1990) extended Sportiche's analysis, which mainly covered French and English, to German. Shlonsky (1991), working with Hebrew, carried the idea still further and proposed that a floating quantifier heads a Quantifier Phrase and selects a DP as its complement. Under Shlonsky's approach, the complement DP can strand the quantifier in QP when it moves up to a higher position. Shlonsky's additions to the theory were the finishing touches on the syntactic structure and the mechanics that are involved in the Stranding Analysis.

In spite of the attractiveness of the Stranding Analysis, beginning in the early 1990s one could see a new tendency to defend an approach in which floating quantifiers do not initiate as the heads of QP but as adjuncts to a verbal phrase. One of the main reasons for returning to an adverbial approach was that the Stranding Analysis was felt to over-generate, producing ungrammatical sentences such as the following:

- (3) a. \*The students are coming all.  
 b. \*The criminals were arrested all.

As a reaction to the resurgence of the adverbial analysis, in this thesis I further refine Sportiche's original theory by incorporating the Split VP Hypothesis into its theoretical framework. By following the widely accepted arguments that subjects are base-generated in [SPEC, vP] rather than in [SPEC, VP], that direct objects are base-generated in [SPEC, VP] rather than as complements of V, and that not non-agentive, intransitive verbs do not move from V to v, I prevent the Stranding Analysis from over-generating and thereby refute some of the most significant criticisms raised against the theory.

After providing a history of the study of floating quantifiers, I continue Chapter 1 by presenting the theoretical foundations and assumptions that my thesis is based on. The most relevant of these are basic X-bar theory as developed in Chomsky (1970), whereby all verbal projections contain both a specifier and a complement position, the VP-internal subject hypothesis as proposed in Kitagawa (1986) and elsewhere, the split VP hypothesis that originated in Larson (1988), the arguments in Den Besten (1983) that in V2 languages the main clause verb moves to C, and the theory of sentential negation in Zeijlstra (2004).

In Chapter 2 we see data from several different languages that involve many different kinds of syntactic structures, including active sentences, passive sentences, unaccusative sentences, sentences with multiple verbal elements, control verbs, raising verbs, small clauses and German *infinitivus pro participio* constructions, and we observe quantifier floating under both A-movement and A-bar movement. It is shown that quantifiers can be positioned in virtually any A-position, as predicted by the Stranding Analysis. Certain restrictions can be noted, however. In Romanian and Spanish, for example, stranding between a perfect auxiliary and a past participle is not possible. This restriction does not exist in French and Italian. As pointed out later in chapter 5, the restriction in Spanish and Romanian cannot be better explained by an adverbial approach, since adverbs can appear between perfect auxiliaries and past participles in those languages.

The analysis of stranding under A-bar movement in Chapter 2 is less conclusive. In all the languages reviewed, stranding in non-restrictive relative clauses is shown to be unproblematic. However, while German allows stranding by *wh*-words, English does not. English is shown to be peculiar in this regard anyway, because it allows the universal quantifier to select only bare *wh*-words like *who* and *what*, whereas German allows the universal quantifier to select full *wh*-DPs.

Another important observation made in Chapter 2 is that stranding is generally something that happens to subject quantifiers and not to object quantifiers. Object quantifiers can only be stranded in scrambling languages like German, Dutch and Japanese.

In Chapter 3 the data are similar to the data analysed in Chapter 2 except that they involve negated floating quantifiers such as in the following German examples:

- (4) a. *Nicht alle* die Studenten haben das Buch gelesen.  
       not all the students have the book read
- b. Die Studenten haben *nicht alle* das Buch gelesen.  
           the students have not all the book read

Ultimately, the findings in Chapter 3 are essentially the same as in Chapter 2, however in Chapter 3 it becomes necessary to deal with a number of negation-

related issues that do not arise in Chapter 2. I argue, for example, that the difference between sentential and constituent negation is that sentential negation involves the negation of a finite verb, and I show that stranded negated quantifiers such as the one in (4b) are truly negated constituents, not simply non-negated stranded quantifiers that happen to fall under the scope of a sentential negation marker. I also argue that not only quantifiers and negated quantifiers but also negation markers can be stranded and that this can account for certain instances of ambiguity and inverse scope in the Germanic languages, as illustrated in the following ambiguous English example:

- (5) All the students have not read the book.

That is, in the reading of this sentence in which the negation marker takes scope over the quantifier, with the meaning *Not all the students have read the book*, I argue that the subject is the negated QP *not all the students* and that the QP *all the students* strands the negation marker *not*.

Finally, by adapting the theory of sentential negation in Zeijlstra (2004) to constituent negation, I also offer explanations for two interesting differences between the Germanic and Romance languages. The first of these differences is that the inverse scope seen in (5) when there is interaction between a universal quantifier and negation is readily obtainable in the Germanic languages but is difficult or impossible in the Romance languages. The second difference is that negated quantifiers can be stranded in the Germanic languages, as seen in (4), but not in the Romance languages, as shown in the Italian examples in (6):

- (6) a. Non tutti gli studenti hanno letto il libro.  
       not all the students have read the book
- b. \*Gli studenti hanno non tutti letto il libro.  
       the students have not all read the book

In Chapter 4 I deal with a type of floating quantifier that consists of a universal quantifier and a cardinal numeral. An example is the English *all three* and its equivalents in Dutch (*alle drie*) or Italian (*tutti e tre*). I refer to this type of quantifier as a *universal numeric quantifier* and show that it occupies the Q position just like a bare universal quantifier. I argue that a universal numeric quantifier can be analysed as a *syntactic word* as defined in Di Sciullo and Williams (1987). It behaves the same as a syntactic word and, like a syntactic word, it is inserted from the lexicon into an  $X^{\circ}$  position, namely, Q. I also discuss the actual formation of universal numeric quantifiers. I argue that they are formed by a lexical rule very comparable to the number formation rules referred to as *constructional idioms* in Booij (2008). By combining the theories of Di Sciullo and Williams and Booij with the Stranding Analysis I am able to account for the behaviour of universal numeric quantifiers. I note that universal numeric quantifiers in English and German are exceptional

because if they are not stranded they require that the definite article in the selected DP be deleted.

In Chapter 5 it is shown that whereas there are problems with the Stranding Analysis, most of those problems also pose challenges for the adverbial approach to floating quantifiers. I review the adverbial analyses of Baltin (1995), Doetjes (1997), Bobaljik (2003) and Fitzpatrick (2006), none of which present a compelling reason for abandoning the Stranding Analysis. The analysis in Kobuchi-Philip (2003 and 2006) is interesting because it provides strong evidence that some floating numeral quantifiers in Japanese originate inside a nominal phrase while others originate as adjuncts to a verbal phrase. This is important because it shows that one need not assume that floating quantifiers must be either adverbial or adnominal in a given language. What is most important in Kobuchi-Philip's analysis, however, is that there is evidence that numeral quantifiers that originate inside a nominal phrase in Japanese can be stranded. To be more precise, there are adnominal quantifiers in Japanese that occupy a position below the nominative case marker, and there is only one way for them to end up in that position: They must have been *stranded* there.

Chapter 6 contains a summary and some conclusions and also offers some ideas for future research. Perhaps the most fundamental open question is why some languages allow stranding while others do not. Stranding seems to occur only if there is a nominal phrase, like QP, higher than DP. In Japanese, numbers located in a CardP that dominates NP can also be stranded, but this can perhaps be explained by following the claim in Bošković (2008) that Japanese has no DP and NP functions as DP. In any case, it needs to be determined by extensive cross-linguistic research whether stranding is simply a parameter or whether it follows from the hierarchical structure within the nominal domain in a given language.

Related to the question of why a language does or does not allow stranding is the question of why it is primarily universal quantifiers that are stranded. Is it because only universal quantifiers head QP? If there are languages in which non-universal quantifiers can also be stranded, can it be shown that in those languages QP can be headed by both universal and non-universal quantifiers? It is reported in Delsing (1993) that in Icelandic, for example, non-universal quantifiers can be stranded, however they co-occur with the definite article in these instances, which would indicate that they head a phrase higher than DP even though they are not universal. This question on universality is clearly one that only a lot of cross-linguistic research would be able to answer.

Another area worth investigating is why languages like Romanian and Spanish, unlike French and Italian, do not allow stranding between a perfect auxiliary and a past participle. This is a bit mysterious, since this position is open to other elements, such as adverbs. The very same thing can be said about Swedish. This would also be worth looking into.

Another potentially interesting research topic, mentioned in Chapter 2, has to do with object quantifiers. The stranding of object quantifiers is virtually non-existent outside of scrambling languages like German, Dutch and Japanese, the only exception being climbing object clitic pronouns, which can also strand a quantifier. It is not really clear why object quantifiers cannot be stranded. Future research is required here.

There is another open question regarding objects, referred to in Chapter 3, which could also be an interesting research item, and that is the fact that negated object quantifiers are not permitted in VO languages but they are allowed in OV languages, as the following English and German sentences demonstrate:

- (7) a. \*He has read not all the books.  
 b. Er hat nicht alle die Bücher gelesen.  
     he has not all the books read

This may have something to do with the fact that constituent negation generally must be above the position of sentential negation, but this observation is purely descriptive and cross-linguistically untested. Again, further research is necessary.

My final suggestion for future research is based on my observation that there seems to be a correlation between a quantifier's syntactic positioning and its semantic features. I assume that *all* occupies Q, *some* occupies D and *most* occupies an adjectival position, as in *John has read the most books*. Further observation reveals that these three quantifiers not only occupy different syntactic positions but also differ from each other in the semantic features of *universality*, *strength*, *symmetry*, *cardinality* and *monotonicity*. This correlation between syntactic positioning and semantic features is striking, but its exact relevance to linguistic theory is not yet clear. If it is further researched cross-linguistically it may lead to a better understanding of the link between syntax and semantics and answer the question of whether semantic features can predict syntactic positioning.

## Samenvatting in het Nederlands (Summary in Dutch)

Deze dissertatie gaat over het fenomeen *floating quantifiers* (*zwevende kwantoren*). Een *floating quantifier* is een kwantor die is gescheiden van de DP die hij modificeert:

- (1) a. All the children are sleeping.
- b. The children are all sleeping.

Traditioneel gezien bestaan er twee methodes om floating quantifiers te benaderen. Sommigen hebben ze geanalyseerd als elementen die als modificeerders van een DP beginnen en dan door die DP achtergelaten of “gestrand” worden. Deze manier van benaderen wordt *Stranding Analyse* genoemd. Anderen hebben floating quantifiers als VP-adjuncten of adverbialen geanalyseerd.

Het doel van deze dissertatie is om een nieuwe kijk op de Stranding Analysis te krijgen. Hiervoor zal ten eerste in acht genomen worden hoe meer recente ontwikkelingen in de taalkunde deze analyse hebben kunnen beïnvloeden. Ten tweede zal deze met behulp van veel meer empirische data in veel meer talen getest worden dan tot heden is gedaan. De dissertatie begint zodoende met de volgende vraag: Als de Stranding Analysis is geactualiseerd met meer recente ontwikkelingen zoals de *Split VP Hypothesis*, en als deze geëvalueerd wordt door middel van meer empirische data die een breder bereik van verschillende syntactische structuren in een grotere aantal van talen omvatten, hoe zou deze dan concurreren met de diverse adverbialen analyses van floating quantifiers die in de laatste jaren zijn geopperd. Ik denk dat ik aantoon dat als de Stranding Analysis wordt aangevuld met de Split VP Hypothesis, de hevigste kritiek uit de laatste jaren onhoudbaar wordt. Bovendien, als men echt consequent is in de evaluatie van de empirische data en een breder bereik van syntactische constructies in veel talen beschouwt, ziet men dat de Stranding Analyse veel kan verklaren en meer generalisaties kan omvatten dan de diverse adverbialen benaderingen. Het is weliswaar waar dat er met de Stranding Analyse, zoals er met alle linguïstische theorieën, problemen zijn, maar de problemen met de Stranding Analyse worden niet opgelost door een adverbialen benadering aan te nemen.

Hoofdstuk 1 begint met een korte geschiedenis van hoe taalkundigen floating quantifiers hebben benaderd. Oorspronkelijk worden ze als adverbialen geanalyseerd omdat ze de posities van adverbialen lijken te bezetten:

- (2) a. De studenten hebben het boek waarschijnlijk gelezen.
- b. De studenten hebben het boek grondig gelezen.
- c. De studenten hebben het boek langzaam gelezen.
- d. De studenten hebben het boek zorgvuldig gelezen.
- e. De studenten hebben het boek allemaal gelezen.
- f. De studenten hebben het boek allen gelezen.

Er waren een aantal problemen met deze adverbiale benadering, in het bijzonder het feit dat deze niet in staat was om het klaarblijkelijke verband tussen zinnen zoals die onder (1) uit te leggen.

Andere problemen met de adverbiale benadering waren dat het niet op een directe manier de congruentie in de  $\Phi$ - en casus-features die door de floating quantifiers getoond wordt, kon verklaren; dat het geen rekening hield bij welk soort van adverbium een floating quantifier hoort en hoe zijn positie wordt bepaald; en het kon niet verklaren waarom een floating quantifier, als het als VP-adjunct basisgegenereerd wordt, een lokale “c-commanding antecedent” nodig heeft.

Vanwege de problemen met de verschillende adverbiale benaderingen heeft Sportiche (1988) een volledig nieuwe benadering ontwikkeld waarin een floating quantifier een nominaal element is dat niet gegenereerd wordt als VP-adjunct maar als een adjunct bij een VP-interne NP. Volgens dit standpunt kan de NP soms, als deze zich naar boven verplaatst (bijvoorbeeld naar de subject-positie), de kwantor in de VP achterlaten of “stranden.” Deze zogenaamde Stranding Analysis verklaarde het verband tussen de zinnen in (1); verklaarde de congruentie in  $\Phi$ - en casus-features die door de floating quantifiers worden getoond; verklaarde hoe een floating quantifier in een adverbiale positie belandt en loste het geheim op, waarom een floating quantifier een c-commanding antecedent moet hebben. De Stranding Analysis had een ander groot voordeel. De analyse voorzag in een onafhankelijke ondersteuning van de beginnende VP-internal Subject Hypothesis.

De Stranding Analysis is door verschillende etapes van verfijning gegaan. Cardinaletti en Giusti (1989) hebben beargumenteerd dat een kwantor niet alleen een NP-adjunct is, zoals oorspronkelijk door Sportiche werd beweerd, maar de kop van een woordgroep. Giusti (1990) breidde Sportiches analyse, die hoofdzakelijk over floating kwantoren in het Frans en het Engels ging, uit tot het Duits. Shlonsky (1991), die het Hebreeuws onderzocht, heeft het idee verder uitgewerkt en stelde voor dat een floating quantifier de kop is van een Quantifier Phrase en een DP als complement selecteert. Volgens Shlonsky kan de complement-DP de kwantor “stranden” als hij naar boven gaat. Shlonsky’s toevoegingen waren de “finishing touch” van de syntactische structuur en de formele eigenschappen van de Stranding Analysis.

Ondanks de voordelen van de Stranding Analysis ontstond in het begin van de jaren 90 een nieuwe tendens om een benadering te verdedigen waarin floating quantifiers niet als kop van QP beginnen maar als VP-adjunct. Een van de hoofdredenen waarom men naar een adverbiale benadering teruggekeerde was dat men vond dat de Stranding Analysis “overgenereerde” waardoor ongrammaticale zinnen geproduceerd worden zoals de volgende:

- (3) a. \*The students are coming all.  
 b. \*The criminals were arrested all.

Als reactie tegen het opnieuw opduiken van de adverbiale analyse, verfijn ik in deze thesis de oorspronkelijke theorie van Sportiche verder door de Split VP Hypothesis in zijn theoretische framework op te nemen. Ik volg hierbij de algemeen geaccepteerde argumenten dat subjecten in [SPEC, vP] en niet in [SPEC, VP] basis-gegenereerd worden, dat directe objecten in [SPEC, VP] en niet als complementen van V gegenereerd worden, en dat niet-agentieve werkwoorden niet van V naar verplaatsen. Deze argumenten verhinderen dat de Stranding Analysis overgenereert en hiermee weerleg ik de belangrijkste kritieken tegen deze theorie.

Na de gescheidenis van de studie van floating quantifiers ga ik door met Hoofdstuk 1 waarin ik de theoretische basis en aannames waarop mijn thesis gebaseerd is presenter. Het relevants hiervoor zijn X-bar theory, zoals ontwikkeld in Chomsky (1970), waarbij alle verbale projecties zowel een specificier- als en complementpositie bevatten; de VP-internal subject hypothesis, zoals voorgesteld in Kitagawa (1986) en in anderen; de split VP hypothesis die in Larson (1988) ontstond; de argumenten in den Besten (1983) waarin het werkwoord van de hoofdzin in V2-talen zich naar C verplaatst; en de theorie van zinsontkenning in Zeijlstra (2004).

In Hoofdstuk 2 bespreek ik data uit veel talen die vele verschillende soorten van syntactische structuren bevatten, inclusief actieve zinnen, passieve zinnen, onaccusatieve zinnen, zinnen met veelvoudige verbale elementen, controlwerkwoorden raising-werkwoorden, small clauses en duitse *infinitivus pro participio* constructies, en hierbij kan “quantifier floating” onder zowel A-verplaatsing als A-bar verplaatsing geobeserveerd worden. Dit hoofdstuk toont aan dat kwantoren in bijna elke A-positie kunnen worden geplaatst, zoals voorspeld door de Stranding Analysis. Hierbij moeten echter bepaalde opmerkingen geplaatst worden. In sommige talen, zoals in het Roemeens en in het Spaans, is stranding tussen een hulpwerkwoord van tijd en een voltooid deelwoord niet mogelijk. Deze beperking bestaat niet in het Frans en het Italiaans. Zoals later in Hoofdstuk 5 wordt beschreven, kan de restrictie in het Spaans en in het Roemeens echter niet beter uitgelegd worden door een adverbiale benadering, aangezien in deze talen bijwoorden tussen hulpwerkwoorden en voltooid deelwoorden kunnen verschijnen.

De analyse van stranding onder A-bar verplaatsing in Hoofdstuk 2 is minder conclusief. In al de onderzochte talen is stranding in niet-restrictieve betrekkelijke bijzinnen onproblematisch. Een verschil is echter te vinden tussen het Engels en het Duits. Terwijl in het Duits de stranding door wh-woorden toegestaan is, is dit in het Engels niet het geval. Engels is sowieso eigenaardig wat dit betreft, omdat het de universele kwantor alleen toestaat kale wh-woorden zoals *who* en *what* te selecteren, terwijl het Duits de universele kwantor het toestaat volle wh-DPs te selecteren.

Een andere belangrijke observatie in Hoofdstuk 2 is dat stranding in het algemeen iets is dat alleen met subject-kwantoren plaatsvindt en niet met object-kwantoren. Object-kwantoren kunnen alleen gestrand worden in zogenaamde *scrambling*-talen zoals het Duits, het Nederlands en het Japans.

De data in hoofdstuk 3 zijn hetzelfde als de data geanalyseerd in hoofdstuk 2, maar nu gaat het om ontkende zwevende telwoorden zoals in de volgende Duitse voorbeelden:

- (4) a. *Nicht alle* die Studenten haben das Buch gelesen.  
niet al de studenten hebben het boek gelezen
- b. Die Studenten haben *nicht alle* das Buch gelesen.  
de studenten hebben niet allemaal het boek gelezen

De uitkomsten van hoofdstuk 3 zijn in essentie hetzelfde als die van hoofdstuk 2, maar een aantal ontkenning-gerelateerde zaken die niet in hoofdstuk 2 voorkomen vragen om een oplossing in hoofdstuk 3. Zo betoog ik dat het verschil tussen zins- en constituentontkenning is, dat zinsontkenning draait om het ontkennen van een finiet werkwoord. Verder laat ik zien dat gestrande ontkenkende telwoorden zoals in (4b) eigenlijk ontkenkende constituenten zijn en niet simpelweg niet-ontkenkende gestrande telwoorden die toevallig onder de *scope* van een zinsontkenningsmarkeerder vallen. Ik beargumenteer ook dat niet alleen telwoorden en ontkenkende telwoorden, maar ook ontkenningsmarkeerders kunnen worden gestrand. Hierdoor kunnen bepaalde gevallen van ambiguïteit en *inverse scope* in de Germaanse talen worden verklaard, zoals geïllustreerd in het volgende ambigue Engelse voorbeeld:

- (5) All the students have not read the book.

Ik betoog dat, in de lezing van deze zin waarin de ontkenningsmarkeerder bereik heeft over het telwoord, met de betekenis *niet al de studenten hebben het boek gelezen*, het onderwerp de ontkende QP *not all the students* is en dat de QP *all the students* de ontkenningsmarkeerder *not* laat stranden.

Tenslotte geef ik ook verklaringen voor twee interessante verschillen tussen de Germaanse en Romaanse talen door voor constituentontkenning de theorie van zinsontkenning in Zeijlstra (2004) aan te nemen. Het eerste verklaarde verschil is dat de *inverse scope* uit (5) door interactie tussen een universeel telwoord en ontkenning gemakkelijk te verkrijgen is in Germaanse talen, maar heel moeilijk of niet mogelijk in de Romaanse talen. Het tweede verschil is dat ontkende telwoorden in Germaanse talen kunnen worden gestrand, zoals we hebben gezien in (4), maar dat dit niet kan in de Romaanse talen, zoals de Italiaanse voorbeelden in (6) laten zien:

- (6) a. Non tutti gli studenti hanno letto il libro.  
niet al de studenten hebben gelezen het boek
- b. \*Gli studenti hanno non tutti letto il libro.  
de studenten hebben niet allemaal gelezen het boek

In hoofdstuk 4 behandel ik een type zwevend telwoord dat bestaat uit een universele kwantor en een hoofdtelwoord. Een voorbeeld is het Nederlandse *alle drie*. Ik

verwijs naar dit type telwoord als *universal numeric quantifier* en laat zien dat het de Q-positie bezet, net als een losse universele kwantor. Ik pleit ervoor dat een *universal numeric quantifier* geanalyseerd kan worden als een *syntactic word* zoals gedefinieerd in Di Sciullo en Williams (1987). Het gedraagt zich hetzelfde als een syntactisch woord en het wordt, net als een syntactisch woord, vanuit het lexicon ingevoegd in een  $X^0$  positie, namelijk Q. Ik bespreek ook de daadwerkelijke vorming van *universal numeric quantifiers*. Ik beargumenteer dat ze worden gevormd door een lexicale regel die erg vergelijkbaar is met getalsvormingregels waarnaar in Booij (2008) verwezen wordt als *constructional idioms*. Door de theorieën van Di Sciullo en Williams en Booij te combineren met de Stranding Analysis kan ik het gedrag van *universal numeric quantifiers* verklaren. Ik merk hierbij op dat *universal numeric quantifiers* in het Engels en Duits uitzonderlijk zijn omdat ze, als ze niet gestrand zijn, vereisen dat het bepaalde lidwoord in de geselecteerde DP wordt gedeleerd.

In Hoofdstuk 5 wordt aangetoond dat, hoewel er problemen zijn met de Stranding Analysis, de meeste van die problemen ook uitdagingen vormen voor de adverbiale benadering voor floating quantifiers. Ik bespreek de adverbiale analyses van Baltin (1995), Doetjes (1997), Bobaljik (2003) en Fitzpatrick (2006), die geen van allen een overtuigende reden presenteren om de Stranding Analysis op te geven. De analyse in Kobuchi-Philip (2003 en 2006) is interessant, omdat het sterk bewijs levert dat sommige floating numeral quantifiers in het Japans afkomstig zijn uit een nominale constituent, terwijl anderen afkomstig zijn uit een adjunct van een VP. Dit is van belang, omdat het aantoont dat men niet hoeft aan te nemen dat floating quantifiers noodzakelijkerwijs ofwel adverbiaal of adnominiaal moeten zijn in een bepaalde taal. Wat echter het meest van belang is in de analyse van Kobuchi-Philip, is dat er bewijs is dat numerieke kwantoren, die hun oorsprong hebben binnen een naamwoordelijke groep in het Japans, gestrand kunnen zijn. Meer exact, er zijn adnominale kwantoren in het Japans die een positie innemen onder de nominatieve casus-markeerder, en er is slechts één manier waarop ze in die positie terecht kunnen zijn gekomen: Ze moeten er *gestrand* zijn.

Hoofdstuk 6 bevat een samenvatting en enkele conclusies en stelt ook enkele ideeën voor voor toekomstig onderzoek. Misschien de meest fundamentele open vraag, is waarom sommige talen stranding toestaan en andere niet. Stranding lijkt alleen voor te komen als er een naamwoordelijke groep is, zoals bijvoorbeeld QP, die hoger is dan de DP.

In het Japans kunnen getallen die zich bevinden in een CardP die NP domineert, ook gestrand zijn, maar dit kan misschien verklaard worden door het volgen van de claim in Bošković (2008), dat het Japans geen DP heeft en NP functioneert als DP. In ieder geval is het nodig om door middel van uitgebreid crosslinguïstisch onderzoek te bepalen of stranding simpelweg een parameter is of dat het volgt uit de hiërarchische structuur binnen het nominale domein in een bepaalde taal.

Gerelateerd aan de vraag waarom een taal wel of niet stranding toestaat, is de vraag waarom het primair universele kwantoren zijn die gestrand zijn. Is het omdat alleen

universele kwantoren hoofd kunnen zijn van een QP? Als er talen zijn, waarin niet-universele kwantoren ook gestrand kunnen zijn, kan dan aangetoond worden dat in die talen zowel universele als niet-universele kwantoren als hoofd van een QP kunnen dienen? In Delsing (1993) wordt gerapporteerd dat in het IJslands bijvoorbeeld niet-universele kwantoren gestrand kunnen zijn, hoewel ze in deze gevallen samen voorkomen met het bepalend lidwoord, wat suggereert dat ze het hoofd zijn van een hogere frase dan de DP, hoewel ze niet universeel zijn. Deze kwestie van universaliteit is er duidelijk een die alleen beantwoord zou kunnen worden door een heleboel crosslinguïstisch onderzoek.

Een ander thema dat interessant is om nader te onderzoeken is de vraag waarom talen als het Roemeens en het Spaans in tegenstelling tot het Frans en het Italiaans stranding tussen een hulpwerkwoord een voltooid deelwoord niet toestaan. Dit is enigszins mysterieus, aangezien deze positie wel beschikbaar is voor andere elementen, zoals bijwoorden. Exact hetzelfde geldt voor het Zweeds. Ook deze taal is dus interessant om naar te kijken.

Een ander mogelijk interessant onderzoeksonderwerp, al genoemd in hoofdstuk 2, heeft te maken met objectskwantoren. De stranding van objectskwantoren komt in feite alleen voor in *scrambling*-talen zoals Duits, Nederlands en Japans. De enige uitzondering hierop zijn “climbing object clitic pronouns” die ook een kwantor kunnen laten stranden. Het is niet echt duidelijk waarom objectskwantoren niet kunnen worden gestrand. Verder onderzoek is hiervoor nodig.

Er is ook een andere open vraag met betrekking tot objecten, aangekaart in hoofdstuk 3, dat een interessant onderzoeksthema kan zijn, namelijk het feit dat ontkende objectskwantoren niet toegestaan zijn in VO-talen, maar wel in OV-talen. De onderstaande Engelse en Duitse zinnen illustreren dit.

- (7) a. \*He has read not all the books.  
 b. Er hat nicht alle die Bücher gelesen.  
 hij heeft niet al de boeken gelezen

Dit zou iets te maken kunnen hebben met het feit dat constituentenontkenning zich in het algemeen boven de positie van zinsontkenning moet bevinden. Deze beschrijving is echter puur descriptief en cross-linguïstisch niet getest. Opnieuw is meer onderzoek noodzakelijk.

Mijn laatste suggestie voor toekomstig onderzoek is gebaseerd op mijn observatie dat er een correlatie lijkt te zijn tussen de syntactische positionering van een kwantor en zijn semantische kenmerken. Ik neem aan dat *all* Q bezet, dat *some* D bezet en dat *most* op een adjectivische positie terecht komt, zoals in *John has read the most books*. Verdere observaties laten zien dat deze drie kwantoren niet alleen verschillende syntactische posities bezetten, maar ook van elkaar verschillen wat betreft hun semantische kenmerken, als *universaliteit*, *sterkte*, *symmetrie*, *kardinaliteit* en *monotoniteit*. Deze correlatie tussen syntactische positionering en

semantische kenmerken is weliswaar opmerkelijk, maar de exacte relevantie voor taalkundige theorieën is nog onduidelijk. Als dit cross-linguïstisch verder onderzocht wordt, kan dit leiden tot beter begrip van het verband tussen syntaxis en semantiek en mogelijk de vraag beantwoorden of semantische kenmerken syntactische positionering kunnen voorspellen.



## CURRICULUM VITAE

Robert Cirillo was born on the 4<sup>th</sup> of February 1949 in the town of Winamac in the state of Indiana in the United States of America. He obtained his BA in Linguistics and French *cum laude* at Indiana University in 1971 and was granted a four-year PhD scholarship by the same university. As part of this scholarship he taught an introductory linguistics course.

After two years in the PhD program at Indiana University, having earned enough credits for an MA degree, he regretfully interrupted his studies in linguistics to pursue a career in international business. He earned an MBA degree and became a CPA (Certified Public Accountant). His business career lasted for twenty-eight years, during which time he worked for four different multi-national companies in the United States, Germany and the Netherlands and advanced from Financial Analyst to International Auditor to Financial Controller to Director of Finance to Vice-President of Finance. He obtained business experience in more than twenty different countries in North America, South America, Europe and Asia.

In 2004 his company was taken over by another multi-national company and he lost his position. He decided at that time to resume his study of linguistics. Since his MA from Indiana University was nearly thirty years old, it was necessary that he redo it, which he did *cum laude* at the University of Amsterdam in 2005. In the same year he was admitted to the doctoral program at the University of Amsterdam. His doctoral thesis was completed at the end of 2008. During these three years in the doctoral program he presented at four major conferences and succeeded in getting an article accepted for publication in the journal *Linguistics*.