The syntax of floating quantifiers: stranding revisited
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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:

\[(1)\]
\[
\begin{align*}
a. \text{All the children are sleeping.} \\
b. \text{The children are all sleeping.}
\end{align*}
\]

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 \textit{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° 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 Bosković (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.

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 $R(A,B) \iff R(B,A)$, to be read If a relation that holds between a and b also holds between b and a, the relation is symmetric. By this definition, all and most are asymmetric and some is symmetric. The following examples illustrate this:

(6) a. All monkeys are primates. $< \neq >$ All primates are monkeys.
b. Most birds are flying creatures. $< \neq >$ Most flying creatures are birds.
c. Some Spaniards are bullfighters. $< \Rightarrow >$ 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. 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. $\Rightarrow$ All the delegates arrived.
b. All the delegates arrived. $\not\Rightarrow$ 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

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the left argument of the NP, which is the adjective Belgian, all allows inference only from a superset to a subset and is therefore is left monotone decreasing:

(9) a. All the delegates arrived. \( \implies \) All the Belgian delegates arrived.  
b. All the Belgian delegates arrived. \( \nRightarrow \) 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. \( \implies \) Some delegates arrived.  
b. Some delegates arrived. \( \nRightarrow \) Some delegates arrived early.  
c. Some delegates arrived. \( \nRightarrow \) Some Belgian delegates arrived.  
d. Some Belgian delegates arrived. \( \implies \) 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. \( \implies \) Most delegates arrived.  
b. Most delegates arrived. \( \nRightarrow \) 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. \( \nRightarrow \) Most Belgian delegates arrived.  
b. Most Belgian delegates arrived. \( \nRightarrow \) 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) | All (floating) | Some (non-floating) | Most (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.