

**The Syntactic and Semantic Roots of Floating  
Quantification**

by

**Justin Michael Fitzpatrick**

Submitted to the Department of Linguistics and Philosophy  
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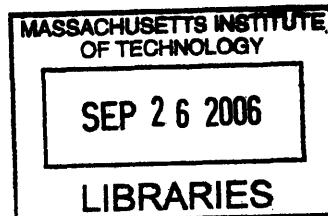
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Author .....  
Department of Linguistics and Philosophy  
June 2, 2006

Certified by .....  
Norvin Richards  
Associate Professor of Linguistics  
Thesis Supervisor

Accepted by .....  
Irene Heim  
Section Head, Department of Linguistics and Philosophy



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## Abstract

Through the study of floating quantifiers in a variety of languages, I demonstrate that floating quantification is not a uniform phenomenon and outline a series of puzzles that force us to adopt a two-part analysis. I argue that certain floating quantifiers are related to their nominal associate by syntactic transformation (the *stranding approach*, Sportiche 1988; Miyagawa 1989) and that others are related only semantically (the *adverbial approach*, Dowty and Brody 1984; Bobaljik 1995; Doetjes 1997).

Evidence for this split comes from the syntactic distribution of these elements within and across languages and from two other points of difference. First, I show that each type of floating quantifier imposes a different restriction on the movement of its nominal associate. An adverbial floating quantifier restricts its associate to A-movement, while a stranded floating quantifier restricts its associate to A'-movement. Furthermore, these two classes of quantifiers divide along semantic lines: Adverbial floating quantifiers have *exhaustive* semantics, while stranded adnominal floating quantifiers are *non-exhaustive*.

The analysis developed here provides an explanation for these syntactic and semantic differences. The syntactic behavior is linked to the structural make-up of the two types of elements and to more general syntactic principles. I propose that quantifier stranding can only arise through A'-movement and that this restriction reflects a general ban on subphrasal extraction through A-movement. I suggest that this difference in locality conditions has roots in deeper differences between A- and A'-movement. My analysis of adverbial floating quantifier structure draws on Doetjes's (1997) analysis of adverbial floating quantifiers as containing a possibly null pronominal element. I extend this analysis to treat a variety of characteristics found with adverbial floating quantifiers, including agreement patterns, co-occurrence with pronouns, and locality conditions. The presence of this null pronominal is also argued to account for the observed A-movement restriction by disallowing *cross-over* via A'-movement. Thus the behavior of floating quantifiers can be used as a tool for the investigation of differences among movement types. The semantic differences that exist between types of floating quantifiers are tied to the syntax of partitivity. I argue that quantifier stranding can only arise via a partitive structure and that only non-exhaustive

elements are eligible for this structure. On the other hand, only exhaustive elements can take part in the structure that is required for adverbial quantifier float.

The analysis not only provides a solution to the puzzle of floating quantification cross-linguistically, but raises other more general issues. In particular, the present analysis forces us to reevaluate the interplay of A- and A'-movement in a derivation. I show that in some cases a phrase that is generally assumed to undergo both A- and A'-movement in fact undergoes direct A'-movement. Thus floating quantification provides fertile ground for the investigation of differences and interactions between these two types of displacement. The results presented here should also provide a model for the analysis of other types of split constituency across languages.

Thesis Supervisor: Norvin Richards  
Title: Associate Professor of Linguistics



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# Chapter 1

## Types of Floating Quantification

### 1.1 Floating and Non-Floating Quantifiers

In (1a), English *all* appears adjacent to the determiner phrase (DP) *the students* and, perhaps predictably, seems to be semantically composed with this DP (1a). *All* may also appear non-adjacent to *the students*, however, as in (1b), and yet this *all* seems to produce the same semantic effect that was observed in (1a). With no intended theoretical implications, I follow the standard practice of calling elements like *all* in (1b) *floating quantifiers* (FQs).

- (1) a. [All the students] have had lunch.  
b. [The students] have all had lunch. (English FQ)

Much like English *all* (as well as other English FQs like *both* and *each*), Japanese numeral quantifiers such as *san-satu* ‘3-CL’ can appear internal to a noun phrase (NP), as

shown in (2a).<sup>1</sup> In this position, unsurprisingly, *san-satu* quantifies over its constituent-mate phrase (in this case, *gakusei* ‘student’). Again, this quantificational element can appear non-adjacent to its associated NP, and yet it still seems to contribute the same quantificational force (2b).

- (2) a. *Gakusei-ga* [hon-o *san-satu*] *yonda*.  
 student-NOM [book-ACC 3-CL] read  
 ‘The student bought three books.’
- b. [Hon-o] *gakusei-ga* *san-satu* *yonda*.  
 [book-ACC] student-NOM 3-CL read  
 ‘The student bought three books.’ (Japanese FQ)

What is important here is not the fact that quantifiers like English *all* and Japanese *san-satu* can appear in several syntactic positions. English *a lot* (3) and French *beaucoup* ‘a lot’ (4), neither of which can be a floating quantifier, also appear in various syntactic positions.

- (3) a. **A lot** of students like to relax on the weekends.  
 b. John goes to the movies **a lot**.

---

<sup>1</sup>I gloss elements like *satu* as ‘CL(assifier)’. Japanese requires the presence of a classifier particle on numerals. The choice of classifier is determined by the associated noun phrase. For example, *satu* appears with *hon* ‘book’ but would be incompatible with *gakusei* ‘student’, which requires the classifier *nin* in this case. This property of Japanese numeral quantifiers makes them particularly useful in the study of floating quantification, since, despite surface non-adjacency, it is always clear in examples like (2b) which NP is related to the numeral.

I follow Watanabe (To appear) and others in analyzing phrases like *hon-o san-satu* as a single constituent. Note, however, that such phrases are, in principle, ambiguous in structure. They may be either a single constituent or two constituents. This difference is reflected in prosody for many speakers (Nakanishi 2006). In order to force “floating” structures in which the NP and FNQ do not form a constituent, I will place intervening material between the two elements in examples where this is necessary.

Note that, though I label phrases like *hon-o* as NPs here, none of the claims made here would be materially affected, to my knowledge, if Japanese were to contain DPs (Kawashima 1998; Watanabe To appear).

- (4) a. **Beaucoup** de linguistes ont dansé la salsa.  
 a-lot of linguists have danced the salsa  
 ‘Many linguists danced the salsa.’
- b. Les linguistes ont **beaucoup** dansé la salsa.  
 the linguists have a-lot danced the salsa  
 ‘The linguists danced the salsa a lot.’ (Doetjes 1997)

These quantificational elements appear within a DP in (3a) and (4a) and elsewhere in the sentence (perhaps VP-adjoined) in (3b) and (4b). Unlike English *all* (1) and Japanese numerals (2), however, the change in position within a sentence of *a lot* or *beaucoup* results in a striking change in the meaning of the sentence. When *a lot* or *beaucoup* appears with a DP, it tells us something about the quantity of students or linguists. When these elements appear non-local to the DP, they tell us how much going to the movies or salsa dancing we are talking about. I take the pattern in (3) and (4) to be what is expected under fairly straight-forward assumptions about semantic compositionality. When it appears local to a DP, *a lot* provides DP-type quantification over entities/individuals, when it appears local to a VP, it provides VP-type quantification over events.

Given that the pattern in (3) and (4) is expected, floating quantification, as in (1) and (2), presents us with a puzzle. A given quantificational element ought to quantify over a set that is specified locally. For example, *three* quantifies over books in the phrase *three books*, *most* quantifies over cars in the phrase *most cars*, and so on. Given this tidy picture, why do many languages allow the quantifier and the “quantifyee” to appear so far apart? FQs show an apparent mismatch between the position of the quantificational element and its interpretation.

Various types of responses to this challenge have been proposed. In the next section, I address two major approaches to this question. The first proposes a transformational, movement-based analysis of floating quantification (see Sportiche 1988; Miyagawa 1989; Shlonsky 1991; Merchant 1996; Bošković 2004 and many others). The second eschews this transformational treatment and takes a floating quantifier to be an adverbial element that, in some sense, does not directly quantify over the related nominal (see, for example, Dowty and Brody 1984; Bobaljik 1995; Doetjes 1997; Brisson 2000). I then provide an outline of a new analysis that is in many ways a synthesis these two approaches.

Before proceeding further, I must make a note on terminology. Throughout much of this and subsequent chapters, I will use the term *quantificational element* or *quantifier* to refer to words or phrases that contribute some sort of number, amount, or quantity meaning. These terms should not be interpreted as claims about the exact syntactic structure, category, or semantic meaning of these elements. For example, for the moment both *every* and *all* will be called quantifiers or quantificational elements, though analyses exist in which these elements are quite different. For example, for Brisson (1998), *every* is presumably a quantificational determiner with a generalized quantifier meaning, while *all* is a “modifier” that appears in specifier position of a DP and “maximizes” the interpretation of a definite plural (or eliminates exceptions to the universal quantification provided by the plural). Thus these two elements, though at first glance quite similar in meaning, differ in both syntax and semantics. For the moment, and for the next several chapters, I gloss over these distinctions. I return to the syntax of these elements in chapter 5.

## 1.2 Floating Quantification as Quantifier Stranding

The stranding theory of floating quantification seeks to account for the apparent lack of semantic difference between floating and non-floating quantifiers (5) by positing a lack of syntactic difference as well.

- (5) a. [All the students] have had lunch.  
b. [The students] have all had lunch.

It is fairly uncontroversial to assume that the nominal quantification that we observe in (5a) is the result of semantic composition of the DP *the students* with the constituent-mate *all*. Assuming that nominal quantification in (5b) arises through the same mechanism, *all* and *the students* must be constituent-mates in (5b) as well, despite appearances to the contrary.

A long line of empirical and formal argumentation, starting at least with Koopman and Sportiche 1991, has led researchers to assume that subjects originate in a structural position lower than their observed surface position. (They originate in the “VP-internal subject” position.) Given this assumption, (5a) must involve movement of the DP *all the students* as in (6).<sup>2</sup>

- (6) a. [TP \_\_\_\_\_ [T' have [VP [DP all the students] had lunch]]]  
          ↑  
b. [TP [DP All the students] have [T' [VP t had lunch]]].

---

<sup>2</sup>I represent the lower position of the subject as VP-internal. This assumption would likely change, however, in a more complex account of the structure of the verb phrase and the structure that immediately embeds it. Both Koopman and Sportiche (1991) and later researchers, such as Chomsky (1995) and Koizumi (1995), place this lower position outside of the VP, though below the surface Spec-TP position.

If the DP *all the students* can move in this manner, it is a small step to allow for movement of the DP *the students* alone, excluding *all*. The combination of this assumption with the VP-internal subject derivation in (6) results in floating quantification through the derivation in (7). Here the surface position of floating *all* is the low subject position (Sportiche 1988).

- (7) a. [TP \_\_\_\_\_ [T' have [VP [DP all [DP the students]] had lunch]]]  
           ↑  
           └──┘  
       b. [TP [DP The students] have [T' [VP [DP all t] had lunch]]].

This approach suggests that floating quantificational structures are transformationally related to non-floating structures through the representations in (6a) and (7a).<sup>3</sup> At one level of representation, floating *all* is located structurally within the DP *all the students*. Therefore, it is not surprising that *all* composes semantically with *the students* to provide the same meaning that is obtained in non-floating contexts.

The idea that floating quantification is the result of quantifier stranding was arguably the prevailing view in Government & Binding theory after Sportiche (1988) and Miyagawa (1989). This approach has been largely carried over to Minimalism without major revision (Bošković 2004; Miyagawa and Arikawa 2005).

It should be noted that the various proposals that I have grouped here under the rubric of “quantifier stranding” do not agree in all respects. Sportiche (1988) does not unambiguously argue for a movement or stranding approach to quantifier float. Instead, he stops

<sup>3</sup>Historically primary to this transformational approach to FQs is an analysis that posits quantifier movement away from the associated DP (Kayne 1975), which occupies its surface position. I do not address this possibility here.

at the proposal that an FQ appears in argument position attached to an empty nominal of some sort.<sup>4</sup> Miyagawa (1989), in discussing a stranding analysis of Japanese numeral quantifiers, proposes that a floating numeral quantifier is a sort of secondary predicate that must be in a local relationship of mutual c-command with its associated NP. Therefore, though movement and stranding are certainly involved, the FQ and its associated nominal never form a constituent in Miyagawa's (1989) system. Shlonsky (1991), Merchant (1996), and Bošković (2004) embrace analyses that more clearly match the schema of quantifier stranding introduced above. These analyses involve the splitting apart of a DP by movement of some sub-DP constituent.

Proponents of stranding theories tend to stress four purported advantages to this approach. First, quantifier stranding is not only compatible with the VP-internal (or predicate-internal) subject hypothesis (Koopman and Sportiche 1991), but is usually taken to provide evidence for it.<sup>5</sup> In fact, floating quantification is often cited as some of the strongest evidence for low external argument positions.

Second, this approach purports to explain the observed semantic similarity between floated and non-floated quantifiers. Floated quantifiers are structurally just non-floated quantifiers. Any semantic differences between floated and non-floated constructions therefore become challenges to this approach.

Third, the stranding approach is argued to explain the agreement patterns that often arise with FQs (see especially Merchant 1996). When a language shows agreement between a

---

<sup>4</sup>Sportiche (1988) does suggest that this empty nominal category could be a trace of movement, and connects the existence of this low nominal to the lower subject position in Koopman and Sportiche (1991).

<sup>5</sup>For example, such arguments routinely appear in textbooks when the predicate-internal subject hypothesis is introduced. See, for example, Haegeman 1990 and Hornstein et al. 2005.

quantifier and its constituent-mate nominal, this same agreement often appears in floated contexts. We see this invariant agreement pattern in the French examples in (8).

- (8) a. Toutes/\*tous les femmes sont arrivées.  
all-FEM/\*-MASC the women are arrived  
'All the women have arrived.'
- b. Les femmes sont toutes/\*tous arrivées.  
the women are all-FEM/\*-MASC arrived  
'The women have all arrived.'
- c. Tous/\*toutes les hommes sont arrivés.  
all-MASC/\*-FEM the men are arrived  
'All the men have arrived.'
- d. Les hommes sont tous/\*toutes arrivés.  
the men are all-MASC/\*-FEM arrived  
'The men have all arrived.'

The stranding approach is argued to provide a straight-forward explanation for this fact: FQs show the same agreement as non-floated quantifiers because FQs *are* non-floated quantifiers.

Finally, researchers have claimed that the stranding analysis explains the distribution of FQs (Bošković 2004). FQs appear in original or intermediate positions of nominal/argument phrases.

I will address all of these claimed advantages below. These properties of the quantifier stranding approach and its main claimed advantages are summarized in table 1.1.



**Table 1.1**

Properties	Floated Q is within argument DP Movement-derived floating
Claimed Advantages	VP-internal subject hypothesis Semantic similarity to non-floated Q Agreement Distribution

### **1.3 Floating Quantifiers as Adverbials**

The adverbial analysis of floating quantifiers rejects the idea that floating quantification is in fact just non-floating quantification that has been altered by transformation. This approach embraces the surface dissimilarity between floating and non-floating quantifiers and posits a different derivation for each. Though some proposals in the adverbial camp have arisen from inter-theory debate regarding the existence of transformations in general (e.g., Dowty and Brody 1984) other proponents of the adverbial approach base their analyses largely on direct empirical arguments (e.g., Bobaljik 1995; Brisson 2000; Nakanishi 2003, 2004).<sup>6</sup>

Whatever the motivation for a given adverbial analysis, these approaches share certain characteristics. First, no transformational connection is posited between an FQ and the associated nominal. Second, the FQ is generally said to be in an adjunct positioned somewhere in the realm of the VP or lower inflectional domain. Finally, some semantic account is proposed to explain the apparent ability of the adjunct quantificational element to modify

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<sup>6</sup>Baltin's (1995) analysis of FQs as "preverbs" is most easily grouped with non-transformational "adverbial" analyses.

the nominal, despite the lack of a local structural relationship between the two.

One instantiation of these properties is shown in (9), where (9b) is largely based on the semantic treatment of floating *all* that was developed by Dowty and Brody (1984) and adopted by Bobaljik (1995).<sup>7</sup>

- (9) a. Syntax: The students have [<sub>VP</sub> all [<sub>VP</sub> had lunch]].  
 b. Semantics: *all* “maximizes” the external argument of the VP.

$$\llbracket \text{all} \rrbracket = \lambda P_{\langle e,t \rangle} . \lambda x . P(\text{max}(x))$$

The claimed advantages of the adverbial approach are both syntactic and semantic in nature. First, as with the stranding approach, the adverbial approach claims to best explain the distribution of FQs (Bobaljik 1995; Brisson 2000). Second, certain semantic differences between floated and non-floated structures are claimed to be explicable (only) by means of an adverbial analysis.

**Table 1.2**

Properties	No transformational relation between FQ and NP/DP FQ in adjunct position Apparent FQ-NP relationship is semantic
Claimed Advantages	Distribution Semantic differences between floated and non-floated

I will address these claims in subsequent chapters. In particular, the distributional claims will be evaluated in chapters 2 and 3, while the semantic claims will be addressed

<sup>7</sup>I will discuss a more recent proposal regarding the semantics of *all* by Brisson (1998) in later chapters.

at the end of chapter 3.

## 1.4 Floating Quantifier Puzzles

We have now developed a sense of what is special about floating quantification and why this phenomenon is worthy of attention. We have also seen a brief schematic review of two major approaches to this problem: the stranding analysis and the adverbial analysis.

I will now focus on some empirical and theoretical puzzles that surround floating quantification. Some of these puzzles have been noticed and treated to varying degrees in the past, while others are new or have been given limited attention. Regardless of their previous importance, any account of floating quantification must minimally provide an explanation for these puzzles.

The existence of these puzzles often only becomes apparent when viewing the phenomenon of floating quantification through a cross-linguistic lens. Patterns that may be noticed only as minor facts in a particular language become quite clear and striking when viewed across a variety of disparate languages. Most work on floating quantification has focused on the phenomenon only within a single language or group of similar languages.<sup>8</sup> One differentiating factor (and hopefully a virtue) of this study is its more cross-linguistic perspective.

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<sup>8</sup>Notable exceptions include Baltin (1995) and Bobaljik (1998).

### 1.4.1 The Distribution Puzzle

The first empirical puzzle relates directly to the debate between proponents of the stranding approach and adverbial theories of floating quantifiers. When we look hard at the distribution of FQs cross-linguistically and within certain languages, we find that FQs are sometimes quite good indicators of NP/DP-trace positions. In other cases, however, FQs are not good trace indicators. For example, some trace positions for which we have independent evidence do not allow floating quantifiers (i.e., the lack of FQs gives us a false negative). I will discuss some examples in chapter 2. We will also see in chapter 2 that some FQs can appear in positions which we have good reason to believe are not trace positions (i.e., these FQs give us false positives). How could this be? Why are FQs at times linked to trace positions and at times divorced from these positions?

Though this puzzle will receive extensive attention in the next two chapters, I illustrate it here with examples from West Ulster English (WUE) (McCloskey 2000a). WUE has the same pattern of FQ distribution in (10) as we observe in other dialects of English, including “standard English”.

- (10) The “general English” (including West Ulster English) pattern
- a. All the suspects have been arrested.
  - b. \*The suspects have been arrested all.
  - c. The suspects have all been arrested.

Alongside this familiar general English pattern, WUE also allows floating *all* in certain wh-questions (11), an option not available in any other dialects of English that I am aware

of.

(11) The “West Ulster-only” pattern (McCloskey 2000a)

- a. What all did he say that he wanted?
- b. What did he say that he wanted all? [\*other dialects]
- c. What did he say all that he wanted? [\*other dialects]

West Ulster FQs can therefore arise in a wide variety of circumstances (wider, in fact, than in other dialects of English). These FQs are good indicators of trace positions only in the West Ulster-only pattern (11). FQ positions do not seem to track (all) trace positions in the general English pattern (10). Independent arguments support the view that the post-verbal position of both *arrested* and *wanted* are theta positions.<sup>9</sup> That is, we assume that the complement position of these verbs contains an argument DP at some level of representation. But floating *all* can only appear in this position in the “West Ulster only” pattern of wh-*all* split (11b). The same post-verbal trace position cannot be marked by an FQ in the general pattern (10b).

Furthermore, floating *all* in wh-*all* split contexts can appear in other positions which are independently considered to be trace positions. This further supports the claim that these FQs are good indicators of trace positions. As we saw in (11c), *all* can appear in the left periphery of embedded clauses, the same position thought to hold an intermediate trace of long-distance wh-movement, as in (12).

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<sup>9</sup>I will summarize some of these arguments in chapter 2.

(12) What<sub>1</sub> did he say [<sub>CP</sub> t'<sub>1</sub> that [he wanted t<sub>1</sub>]]?

West Ulster English provides us with an example of a single language in which FQs are both good and bad indicators of trace position, depending on where we look. In future chapters we will see the same puzzling contrast when comparing the behavior of FQs across different languages.

### 1.4.2 The Movement Puzzle

Just as the behavior of floating quantifiers is split with respect to their ability to serve as indicators of trace positions, FQs are split in their ability to co-occur with different types of movement. More specifically, some FQs are correlated with A-movement alone, and do not allow A'-movement, while others require A'-movement.

Déprez (1989) observes that FQs in English are generally incompatible with A'-movement

(13).<sup>10</sup>

(14) \*What did John all buy? (=What all did John buy?)

The observation that some FQs show the opposite pattern—acceptance of A'-movement and incompatibility with A-movement—has not been widely noted, however. The observa-

<sup>10</sup>The acceptability of (13) does not show compatibility of wh-movement and floating *all*, as the subject has undergone A-movement across *all* to subject position before undergoing wh-movement.

(13) [<sub>CP</sub> Which students [<sub>TP</sub> t' have all left t]]?

See chapters 2 and 6 for further discussion of examples like this and of the interplay of A-movement and A'-movement in such examples.

tion of this pattern with Japanese floating numeral quantifiers will form the bulk of chapter 3.

West Ulster English provides one instance of an A'-restriction that has been given some attention in the literature. McCloskey (2000a) notes that the *wh-all* split pattern in WUE only arises with *wh*-movement, a type of A'-movement. The two patterns of FQs in WUE is shown again in (15).

- (15) a. The suspects have all been arrested. (general English pattern)  
b. What did he want all? (wh-all split)

Importantly, the reverse pattern does not arise (16).

- (16) a. \*Who did Officer Smith all arrest?  
b. \*The suspects have been arrested all.

Therefore, this split among FQs along A/A'-movement lines arises not only between languages (e.g., English, Japanese), but also within a single language (West Ulster English).

This phenomenon brings up important questions in the analysis of floating quantification and in the study of syntactic movement. Why should there be any link between FQs and movement type in the first place? And, given that there is such a link, why should different FQs show opposing behavior in this area? How exactly do differences between types of movement relate to differences in FQ behavior? Can this behavior of FQs tell us something about the A/A' distinction? I will attempt to provide answers to these questions in subsequent chapters.

### 1.4.3 The Extraction Puzzle

Given the hypothesis that floating quantification can arise from the splitting apart of an NP or DP, one would clearly be interested in the presence or absence of extraction effects in FQ contexts. For example, if DP-split arises through the movement of a part of a DP out of that DP, as in (17), one would expect the normal set of movement constraints (islands, etc.) to apply. That is, movement of YP as in (17) should result in movement violations if some movement constraint applies to this structure or operation.

(17)  $\overline{\text{... [DP XP YP]}}$

Turning our attention to examples from Russian (Madariaga 2005), we see that some FQs do show certain movement restrictions. For example, we see in (18) that, though floating *mnogo* ‘a lot’ can occur related to an object (18a), it is unacceptable when related to a subject (18b).

- (18) a. Knig studenty kupili mnogo.  
books-GEN students-NOM bought many  
‘The students bought many books.’
- b. \*Studentov kupilo ètu knigu mnogo.  
students-GEN bought this book a-lot  
Intended: ‘A lot of students bought this book.’

This asymmetry could be due to the well-documented cross-linguistic restriction on movement out of subjects. For example, English allows wh-movement of a phrase from within an object (19a) but not from within a subject (19b).



- (19) a. Who did you see [a picture of \_\_\_ ]?  
 b. \*Who did [a friend of \_\_\_ ] see at the movies?

If the pattern in (18) is due to the same restriction that accounts for (19), then Russian floating *mnogo* shows extraction effects.

The mere existence of extraction effects is not in itself a puzzle, however. Rather, I once again wish to draw attention to a split in the behavior of FQs. Though floating *mnogo* shows something akin to subject condition effects, floating *vse* ‘all’ fails to show the same restriction. In (20) we see that floating *vse* can be related to both objects (20a) and subjects (20b).

- (20) a. Studentov učitelj’ ljubbat vsex.  
 students-ACC teacher loves all-ACC  
 ‘The teacher loves all the students.’  
 b. Studenty ljubbat učitelj’ vse.  
 students-NOM love teacher all-NOM  
 ‘The students all love the teacher.’

With this we see once again that floating quantifiers show a puzzling mix of behavior, even within the same language. Any treatment of floating quantification should take this split into account.

#### 1.4.4 The Exhaustivity Puzzle

So far we have seen varying syntactic behavior of floating quantifiers both within and across languages. More thorough motivation and illustration of these puzzles can be found in the

following chapters.

After seeing three syntactic puzzles, we turn to a semantic one: When floating quantifiers show varying behavior within a language (and, I will argue, across languages), this variation is paralleled by a semantic difference. For example, we see in (21) that, in Russian, floating *vse* ‘all’ may appear in various positions throughout a clause (21a). However, floating *malo* ‘few’ is much more restricted in its possible positions (21b) (Madariaga 2005).

- (21) a. Komnaty (vse) dolžny byt’ (vse) provetreny (vse).  
rooms-NOM (all) due to-be (all) aired (all)  
‘The rooms must all be ventilated.’
- b. Komnat (\*malo) bylo (\*malo) provetreno (malo).  
rooms-GEN (\*few) was-NEUT.SG (\*few) aired (few)  
‘There were a few rooms ventilated.’

Taking an inventory of floating quantifiers that behave like *vse* and those that behave like *malo* for this distributional test, we obtain the sets in (22).

- (22) a. Elements of type (a): *vse* ‘all’, *oba* ‘both’, *odin* ‘one’.
- b. Elements of type (b): *para* ‘a pair’; *kuča* ‘a lot’, *malo* ‘a little/a few’; *neskol’ko* ‘some’; numerals > 1

The elements in the *malo* class are *non-exhaustive quantifiers*: quantifiers with existential, non-universal, and perhaps partitive meanings. Those in the *vse* class, on the other hand, appear to be *exhaustive*: quantifiers with universal, maximal meanings. One possible exception seems to be *odin* ‘one’. One would expect this element to be an indefinite or ex-

istential, non-universal, non-exhaustive quantifier. However, though this expected meaning is possible with non-floating *odin* (23a), floating *odin* (23b) takes on the reading of ‘alone’. Essentially, this could be taken to be exhaustive ‘one’ much as English *both* is exhaustive ‘two’.<sup>11</sup>

- (23) a. Prišla odna djevočka.  
           came one girl  
           ‘One girl came.’
- b. Djevočka prišla odna.  
           girl        came one  
           ‘The girl came alone.’

This somewhat unexpected semantic difference, seemingly conditioned only by quantifier float, gives support to the notion that quantifier exhaustivity plays a role in the varying behavior of floating quantifiers. In chapter 5, I will argue that syntactic differences between exhaustive and non-exhaustive elements explain the observed differences. This syntactic analysis ties (non-)exhaustivity directly to (non-)partitivity.<sup>12</sup>

### 1.4.5 The Correlation Puzzle

I have outlined and provided initial empirical motivation for four types of floating quantifier puzzles. We have seen that floating quantifiers can be either good or bad indicators of trace positions (the distribution puzzle). They can be correlated to A-movement, to

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<sup>11</sup>Alternatively, one could take floating *odin* ‘alone’ to be totally distinct from *odin* ‘one’. The morphological similarities between the two elements and the semantic commonality between floating *vse* and floating *odin* suggest a closer connection, however.

<sup>12</sup>“Partitivity” has been used as a term for several syntactic and semantic phenomena. The resulting unclarity, along with the possibility that the observed semantic differences among FQs will not, in the end, correspond precisely to (non-)partitivity, lead me to use the term *exhaustivity* here.

the exclusion of A'-movement, or they can be correlated to A'-movement, to the exclusion of A-movement (the movement puzzle). Furthermore, they can either test positive for extraction-like behavior or lack such behavior (the extraction puzzle). Finally, they can have exhaustive or non-exhaustive semantics, and seem to group in their syntactic behavior according to this semantic distinction (the exhaustivity puzzle).

Perhaps the most puzzling, or most promising aspect of all of these observations is that floating quantifiers do not vary haphazardly in their behavior across these puzzles. Instead, all of this varying behavior is correlated: Behavior of a certain type along one dimension is shadowed by behavior of a certain type along other dimensions. That is, FQ behavior organizes itself into two groups. Floating quantifiers that are bad indicators of trace positions are correlated with A-movement, do not show extraction effects, and have exhaustive semantics. FQs that are good trace indicators, on the other hand, are correlated with A'-movement, do show extraction effects, and have non-exhaustive semantics. These two patterns are summarized in Table 1.3.

**Table 1.3**

	Type 1	Type 2
Trace indicator?	No	Yes
Movement Correlation	A-movement	A'-movement
Extraction Restrictions?	No	Yes
Semantics	Exhaustive	Non-exhaustive

This set of correlations does face some empirical challenges. For example, we saw in section 1.3.1 that West Ulster English has two patterns of floating quantification, but that

both patterns seem to involve a single item, *all*. We will see in chapter 4 that floating numerals in Korean also behave in two different ways, depending on whether or not they are case marked. I will address these challenges in chapters 4 and 5.

In the next section I will outline in broad strokes an analysis of floating quantification that attempts to explain the existence of these puzzles. In future chapters I will develop this analysis with more precision and provide extensive empirical arguments for this approach.

## **1.5 Two Types of Floating Quantifiers**

Much of the work on floating quantification of the last thirty years has argued in favor of a single analysis of the phenomenon. Here I propose, based on a cross-linguistic study of floating quantification patterns, that not all FQs are of the same type. That is, there is no single correct analysis of floating quantification. A unified analysis will always be confounded by the puzzles that were introduced above. Certain floating quantifiers, or certain languages, will show one type of behavior, while other quantifiers and languages will show another, opposing pattern.

The varying behavior of floating quantifiers across and within languages shows quite clearly that floating quantification is not a uniform phenomenon. The patterns of quantifier float in West Ulster English, repeated in (24) and (25), beg for an analysis that allows for different types of floating quantifiers.

- (24) The “general English” (including West Ulster English) pattern
- a. All the suspects have been arrested.
  - b. **\*The suspects have been arrested all.**
  - c. The suspects have all been arrested.
- (25) The “West Ulster-only” pattern
- a. What all did he say that he wanted?
  - b. **What did he say that he wanted all** [*\*other dialects*]
  - c. What did he say all that he wanted? [*\*other dialects*]

I propose that the two major groups of proposals regarding floating quantification, the stranding and adverbial theories, both provide essentially correct analyses, but that these analyses apply to different types of floating quantifiers. Specifically, I will argue that adverbial FQs show show the A-movement related, exhaustive pattern shown above, while floating quantification that is derived through stranding of the quantifier results in the A'-related non-exhaustive FQ pattern show above. (This last factor—the idea that FQs can be stranded only under A'-movement—departs from most stranding analyses.<sup>13</sup>)

Much more needs to be said, of course, both to develop a precise theory of stranded and adverbial FQs and to link these analyses to the set of behaviors introduced in this chapter. More precision and empirical motivation for this split will be provided in the following chapters. I will provide just an outline of the analysis here.

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<sup>13</sup>See Yamashita (2001) for a similar idea.

### 1.5.1 Adverbial Floating Quantifiers

I propose that some FQs can be adverbial. That is, a quantificational element can appear in an adjoined adverbial position that is non-local to the apparent NP/DP-associate. For the moment, I will represent adverbial FQs adjoined at the VP level (26), though these elements may well occupy a higher structural position.

(26) [DP The students] will have [VP all [VP had lunch]].

As with previous adverbial analyses of FQs, I will have to explain the semantic relationship between this adjunct and its apparent nominal associate. I will also connect this analysis to one part of the FQ typology introduced above.

A key element of my analysis expands on Doetjes's (1997) proposal that adverbial FQs contain a null pronominal element, as in (27). This pronominal element is related semantically, perhaps by binding, to the associated nominal. This relationship is noted by co-indexation in (27).

(27) [DP The students]<sub>1</sub> will have [VP [all *pro*<sub>1</sub>] [VP t had lunch]]

I expand on this proposal by further developing a theory of the nature of this element and exploiting its syntactic presence to explain a host of other properties of these FQs, including agreement patterns, the restriction of the DP associate to A-movement, and the semantic exhaustivity that is observed with this class of FQs.

## 1.5.2 Stranded Adnominal Floating Quantifiers

The other type of floating quantifier in this dual analysis takes its origin in stranding theories of FQs. These FQs are derived from full DPs that contain quantificational elements, as in (28).

(28)  $[_{CP} \text{What did } [_{TP} \text{John buy } [_{DP} \text{--- all}]]]$ ?

I further refine this analysis, however, by connecting it to the A'-movement restriction of some FQs and to their non-exhaustive semantics. I argue that the first of these facts is related to major differences between A- and A'-movement. Only A'-movement allows the type of sub-phrasal extraction that is required for quantifier stranding. This connection allows floating quantification to be used in the investigation of the A/A' distinction, especially as it relates to locality constraints. The second of these properties requires a closer look at the types of structures that allow extraction of a DP from within a DP, and the semantic properties of these structures. More discussion of these topics can be found in chapters 3 through 5.

## 1.5.3 Summary

The typology of floating quantification that I develop in this and subsequent chapters provides direct answers to the questions raised by the floating quantifier puzzles introduced here. An outline of these answers is given in Table 1.4.



**Table 1.4**

	Adverbial FQs	Adnominal FQs
Distribution	adverbial	NP/DP positions
Movement Correlation	A-movement	A'-movement
Origin	Not stranded	Stranded
Semantics	Exhaustive	Non-exhaustive

I address each of these FQ types in turn in chapters 2 and 2, focusing in particular on the first three properties in Table 1.4. I address the last property, the (non-)exhaustivity connection, in chapters 4 and 5.

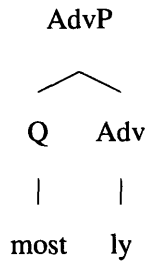
I also suggest at various points in chapters 2, 5, and 6, that there is a third way in which a quantifier can float. Elements like English *mostly* behave a bit like floating quantifiers like *all*, as in (29).

(29) The students have mostly gone home.

( $\approx$  Most of the students have gone home.)

These quantificational adverbs are “de-quantificational” elements. That is, they become adverbial by way of the addition of an adverb head, which is pronounced *-ly* in the case of *mostly*.

(30) De-Quantificational Adverb Structure

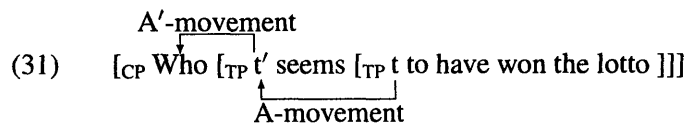


Though I do not present a thorough analysis of such elements, their existence may be important in the analysis of certain FQ-like elements.

## 1.6 Direct A'-Movement

One of the more surprising consequences of the analysis that was outlined above affects our assumptions regarding the role of A- and A'-movement in a derivation. Evidence from the behavior of floating quantifiers suggests that these assumptions have been wrong in certain cases both for individual languages and at a more general theoretical level.

It is fairly uncontroversial to assume that a single DP can undergo both A- and A'-movement in a single derivation. For example, any number of introductory syntax textbooks will suggest a derivation like (31) for a question like *Who seems to have won the lotto?*.



The proposed analysis of certain floating quantifiers suggests that, at least in some cases, this derivation proceeds as in (32), with direct A'-movement of *who*.

(32) [CP Who [TP seems [TP t to have won the lotto ]]]  
↑  
A'-movement

While this result is not without precedent (see, for example, Holmberg and Hróarsdóttir (2003) and Chomsky (fall 2005 class lectures)), it is unorthodox, and leads to the reevaluation of many basic assumptions regarding A-movement, the role of the Spec-TP position, and the source of A- and A'-movement effects. I will address this issue in chapter 6.

## 1.7 An Outline of the Dissertation

Chapter 2 presents numerous arguments that certain floating quantifiers are adverbial. I focus on English and French and develop an explicit analysis of FQs in these languages that helps to explain portions of the puzzles that were introduced in chapter 1. In chapter 3, I argue that floating numeral quantifiers in Japanese and Korean are stranded adnominal elements. Chapter 4 addresses the empirical discovery that differences in FQ types are paralleled by differences in the semantics of these types. I develop an explanation for this link between the syntax and semantics of FQs in chapter 5. Chapter 6 contains discussion of direct A'-movement and its larger consequences outside of floating quantification. Chapter 7 contains a summary of the dissertation and some possible directions for future extensions to this work.



## Chapter 2

# Adverbial Floating Quantifiers

### 2.1 Introduction

I argue in this chapter that the English floating quantifiers (FQs) *all*, *both*, and *each*, as in (1), as well as French FQs like *tous* ‘all’ and *chacun* ‘each’ (2), are adverbial in nature. Furthermore, I argue that these elements fit the precise mold of adverbial floating quantifiers developed in chapter 1: They have adverbial distribution (rather than the distribution of NP/DP arguments), they impose an A-movement restriction on their associated nominal, and they are not derived by movement or quantifier stranding.

- (1) a. The children have all had their lunch.  
b. The boxers were both past their prime.  
c. The students have each chosen a different topic.
- (2) a. Les enfants ont tous dansé.  
the children have all danced  
‘The children all danced.’

- b. Les enfants ont chacun dansé.  
 the children have each danced  
 ‘The children have each danced.’

In this chapter I focus primarily on the first two of these properties: the adverbial distribution of English and French FQs and their connection to A-movement. More extensive argumentation that these adverbial elements are not derived by stranding (the third important property of adverbial FQs mentioned above) can be found in chapters 4 and 5.

## 2.2 Adverbial Distribution

Under the theory that FQs are derived by stranding (Sportiche 1988; Shlonsky 1991; Merchant 1996; Bošković 2004; Miyagawa and Arikawa 2005), as in (3), we expect FQs to appear in all and only positions in which (all else being equal) their associated DP can appear (at some level of representation). We make this prediction because the only source of separation between an FQ and its DP associate is movement of the DP associate. The structures that feed this movement must be structures in which the full phrase [Q DP] appears, as in (3).

- (3) a. [TP            [T' have [VP [DP all [DP the students]] had lunch]]]
- ↑
- b. [TP [DP The students] have [T' [VP [DP all t] had lunch]]].

I argue below that the predictions of this approach are not born out, at least for certain FQs, and that these FQs are instead adverbial in distribution.

### 2.2.1 Passives/Unaccusatives vs. Unergatives

Based on extensive cross-linguistic evidence, I follow a long line of research in concluding that, despite superficial appearances, certain intransitive structures contain a post-verbal DP complement position that is related to the surface subject. Looking within English, we see evidence for this position in passives and unaccusatives, but not in unergatives. We see in (4) that passives like *be arrested* and unaccusatives like *arrive* differ from unergatives like *dance* in allowing post-verbal subjects.

- (4) a. There were arrested over five-hundred protesters. (Passive)  
b. There arrived a letter for you today. (Unaccusative)  
c. \*There danced many students on the floor. (Unergative)

This same asymmetry arises in disparate places cross-linguistically. For example, the Italian clitic *ne* 'of them' can appear related only to objects (verbal complements) and passive or unaccusative subjects (by hypothesis, also verbal complements), but not to unergative or transitive subjects (Burzio 1986).

- (5) a. Furono arrestati molti studenti.  
were arrested many students  
'Many students were arrested.'  
b. Ne furono arrestati molti.  
of-them were arrested many  
'Many of them were arrested.' (Passive)
- (6) a. Arrivano molti studenti.  
arrive many students  
'Many students are arriving.'

- b. Ne arrivano molti.  
of-them arrive many  
‘Many of them are arriving.’ (Unaccusative)
- (7) a. Telefonano molti studenti.  
call many students  
‘Many students are calling.’
- b. \*Ne telefonano molti.  
of-them telephone many  
Intended: ‘Many of them are calling.’ (Unergative)

Further evidence for this position can be found in other phenomena, including auxiliary selection in French, Italian, and German, and the genitive of negation in Russian (Pesetsky 1982).

I noted above that the stranding theory of floating quantification restricts the set of source structures for quantifier float to those that contain a full [Q DP] phrase. From the evidence above I conclude that one possible position for such a phrase is the complement position of passives and unaccusatives. Thus a structure like (8a) underlies the sentence in (8b).

- (8) a.            have been arrested [DP all the suspects].  
          ↑
- b. [DP All the suspects] have been arrested t.

Unergatives, on the other hand, do not contain a post-verbal DP position, and are derived as in (9). This derivation maintains the assumption of a VP-internal subject position, as with the transitive sentences from the last chapter.



- (9) a.  $\overbrace{\text{have}}^{\text{VP}} [\text{DP all the contestants}] \text{ sung}$ .  
 b.  $[\text{DP All the contestants}] \text{ have } [\text{VP t sung}]$ .

Given the existence the derivation in (8), we should expect derivations that follow the schema in (10a) to lead to post-verbal floating quantifiers in passives and unaccusatives. Unergatives, on the other hand, will behave differently and only allow preverbal FQs, as in (10b).

- (10) a.  $\text{Subject ... } [\text{VP } V_{\text{passive/unaccusative}} [\text{DP Q t}]]$   
 b.  $\text{Subject ... } [\text{VP } [\text{DP Q t}] V_{\text{unergative}}]$

It is surprising, then, given the prediction of variation among intransitives, that the distribution of FQs in English intransitive sentences is invariant. We see in (11) that post-verbal FQs are uniformly impossible in these cases.

- (11) a. \*The suspects have been arrested all. (Passive)  
 b. The suspects have all been arrested.  
 c. \*The students have arrived all. (Unaccusative)  
 d. The students have all arrived.  
 e. \*The finalists have danced all. (Unergative)  
 f. The finalists have all danced.

Though we would expect FQs to be impossible after unergative verbs (11e), the same behavior in passives (11a) and unaccusatives (11c) presents a strong challenge to the strand-

ing theory. We will see in chapter 3 that Japanese floating numeral quantifiers do show the expected differences in distribution across intransitive sentence types. The contrast between English on the one hand and Japanese on the other lends further weight to this argument.

French also famously shows sensitivity to the passive/unaccusative vs. unergative distinction. The auxiliary *être* ‘be’ is used with the former while *avoir* ‘have’ is used with the latter, as in (12).

- (12) a. Jean va être/\*avoir vu.  
           J is-going to-be/\*to-have seen  
           ‘Jean is going to be seen.’ (Passive)
- b. Jean est/\*a arrivé.  
           J is/\*has arrived  
           ‘Jean arrived.’ (Unaccusative)
- c. Jean a/\*est dansé.  
           J has/\*is danced  
           ‘Jean danced.’ (Unergative)

Assuming that passives and unaccusatives contain post-verbal complement positions, as we concluded for other languages, we would again expect to see differences in the behavior of FQs across these intransitive sentence-types. But, as in English, the behavior of French FQs like *tous* ‘all’ does not support the stranding theory. Sportiche (1988) reports that post-verbal *tous* is possible with passives (13a) and unaccusatives (13b); however, post-verbal subject-oriented *tous* is also possible with unergatives (13c). In fact, floating *tous* can even appear sentence-finally in transitives (13d).

- (13) a. Les enfants ont été vus ?tous/presque tous.  
 the children have been seen ?all/almost all  
 ‘The children have all been seen.’ (Passive)
- b. Les enfants sont venus ?tous/presque tous.  
 the children are come ?all/almost all  
 ‘The children have all come.’ (Unaccusative)
- c. Les enfants ont dormi ?tous/presque tous.  
 the children have slept ?all/almost all  
 ‘The children have all slept.’ (Unergative)
- d. Les enfants ont vu ce film ?tous/presque tous.  
 the children have seen the film ?all/almost all  
 ‘The children have all seen the film.’ (Transitive)

There is a further complication with this data. Contrary to Sportiche’s (1988) reported judgments, many speakers reject sentence-final *tous* (see, for example, Déprez 1989 and Bošković 2004), though acceptability often improves (uniformly) if the sentence-final element is prosodically heavier, as with *presque tous* ‘almost all’ or *tous les deux* ‘both (all the two)’. Regardless of these complications, what is important is the lack of variation across sentence-types. The stranding theory clearly predicts a difference that is not observed.

## 2.2.2 Low Argument Positions

While the invariant behavior of English and French FQs in post-verbal position is a compelling argument against a stranding analysis of these elements, one might wonder whether some other effect explains their behavior in this position. After all, something is clearly at play in allowing sentence-final *tous* across sentence types in French (at least when *tous* is “heavy enough”). Surely an independent factor could lead to the uniform exclusion of post-verbal *all* in English, and thus mask the expected variation.

In this section I turn away from post-predicate positions and show that FQs are not acceptable in any of the lowest argument positions in a clause.<sup>1</sup> This is unexpected, given the stranding theory (but see Bošković 2004).

First, note that when as many as four auxiliary elements are included in a sentence, FQ *all* can appear only in the highest three positions (14) (cf. Bobaljik 1995).

- (14)
- a. The vegetables all will have been being roasted for an hour by the time you arrive.
  - b. The vegetables will all have been being roasted for an hour by the time you arrive.
  - c. The vegetables will have all been being roasted for an hour by the time you arrive.
  - d. ?\*The vegetables will have been all being roasted for an hour by the time you arrive.
  - e. \*The vegetables will have been being all roasted for an hour by the time you arrive.

The acceptability of (14a-c) is unproblematic under either an adverbial theory or a theory that allows for successive-cyclic A-movement (Déprez 1989; Takahashi 1994). But if argument DPs are in fact moved from positions that are structurally very local to their predicates, the degraded status of (14d-e) is quite surprising, under the stranding approach.

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<sup>1</sup>The judgments of unacceptability that are given here represent the judgments of most of my informants. David Pesetsky (p.c.) notes that many of the possibilities that I mark here as ‘\*’ or ‘?\*’ are fully acceptable to him. As I analyze these FQs as adverbials with a certain distribution, it is possible that speakers whose judgments differ from those given here allow a wider (or at least distinct) distribution for these adverbials.

Examples like (14d-e) and (15) also show that the results from post-intransitive position that were discussed in the last section are not specific to post-predicate FQs. Pre-predicate FQs in low argument positions are also degraded (14d-e), (15a).

- (15) a. ?\*The students could have been all intelligent.  
b. The students could have all been intelligent.

The stranding account therefore fails here on distributional evidence. These FQs are impossible in base argument positions (“theta-positions”), whether pre- or post-verbal.<sup>2</sup>

### 2.2.3 Comparison with Adverbs

What, then, can account for the distribution of English FQs? The fact that English FQs have the same distribution as certain uncontroversial adverbs (Bobaljik 1995; Brisson 2000) suggests that the explanation for FQ distribution lies with the explanation for the distribution of these adverbs. We see in Table 2.1 that FQ *all* patterns with modal *easily* in its distribution.<sup>3</sup>

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<sup>2</sup>Bošković (2004) argues that FQs cannot appear in these low theta-positions for independent reasons. He follows Chomsky (1986) (who credits Kyle Johnson (p.c.)) in stipulating that adjuncts “interfere with theta-role assignment,” and therefore cannot be adjoined to an argument in theta-position. If an element like *all* is an adjunct, this stipulation bars *all* from theta positions.

I believe empirical arguments go against this approach. Notice, for example, that FQs are not just impossible in the lowest position (theta position, presumably), but are also degraded for most speakers below *been* but above *being* (14). Thus one would need to rule out not only theta positions for stranding of *all*, but higher positions as well.

<sup>3</sup>The modal reading of *easily* should be distinguished from the manner reading of *easily*. Examples of each are given in (16).

- (16) a. That bird could easily be a bald eagle, judging by its size. (Modal *easily*)  
b. You could make this shot easily if you would just concentrate. (Manner *easily* preferred)

**Table 2.1**

	The students					reprimanded...			
	The veggies					roasted...			
	__	will	__	have	__	been	__	being	__
<i>allegedly</i> (SpkrOr)	OK	OK	?*	*	*				
<i>willingly</i> (SubjOr)	?*	OK	OK	?*	*				
<i>easily</i> (Modal)	OK	OK	OK	?*	*				
<b>all (FQ)</b>	OK	OK	OK	?*	*				
<i>quietly</i> (Manner)	*	*	?	OK	OK				
<i>completely</i> (Compl.)	*	*	*	?*	OK				

Given that FQs have adverbial distribution, we might expect them to interact with adverbs much as other adverbs do. An adverb A that is interpreted at a given “level” (e.g., a speaker-oriented adverb or a modal adverb) allows to its right (i.e., following A) only adverbs of the same or lower level. Conversely, A allows to its left (i.e., preceding A) only adverbs of the same or higher level.

For example, both the speaker-oriented adverb *allegedly* and the subject-oriented adverb *willingly* can appear between the auxiliaries *have* and *been* (17).<sup>4</sup>

- (17) a. The students have **willingly** been being reprimanded.  
 b. The students have **allegedly** been being reprimanded.

Since speaker-oriented *allegedly* is of a higher type than subject-oriented *willingly*, how-

<sup>4</sup>David Pesetsky (p.c.) notes that his judgments differ on the placement of these adverbs as well. This lends further credence to the idea that speakers can differ on the distribution allowed to particular adverbs or classes of adverbs.

ever, *willingly* can only follow *allegedly*, as in (18a); it cannot precede it, as in (18b).

- (18) a. The students have **allegedly willingly** been being yelled at.  
b. \*The students have **willingly allegedly** been being yelled at.

In the same way, FQs can limit adverb distribution. For example, the adverb *bravely* is ambiguous in a sentence like *The gladiators bravely fought the lions* (cf. Brisson 2000). It has both a subject-oriented and a manner reading (19).

- (19) Two readings for *bravely*:
- a. Subject-Oriented: It was brave of X to do Y. (The manner in which X did Y might have been cowardly, but it was brave to choose to do it.)
- b. Manner: X did Y bravely. (The choice to do Y might have been cowardly (e.g., the easy way out), but the actions were brave (e.g., no flinching or cowering))

Both readings are possible in a sentence like (20), where the FQ *all* precedes *bravely*.

- (20) The gladiators **all** bravely fought the lions.  
(*bravely*: Subject-Oriented, Manner)

Here the gladiators might have been brave in deciding to fight the lions, though the fighting was not brave (the gladiators ran and tried to hide in the arena). On the other hand, the decision to fight may not have been very brave (say it was much less brave than choosing

some other option, like fighting the great white shark that was riding on the back of an elephant, just trampling and eating everything in its path), but the fighting was quite brave (the gladiators did not flinch or run away, etc.). In contrast, only the subject-oriented reading (the first of these possibilities) is available when FQ *all* follows *bravely* (21).

(21) The gladiators bravely **all** fought the lions.

(*bravely*: Subject-Oriented, \***Manner**)

As we saw in table 2.1, subject-oriented adverbs and manner adverbs do not overlap in distribution. On the other hand, the distribution of FQs and speaker-oriented adverbs do overlap. In (21a) *all* precedes *bravely*, and so *bravely* can either appear in its subject-oriented position (which overlaps with FQ *all*) or in its manner position below *all*. When *all* follows *bravely*, however, *bravely* must appear at or above the level of the FQ. Since the manner position is below the FQ, *bravely* must have a subject-oriented reading.

All of this distributional evidence is at least consistent with the view that these FQs are adverbial elements. Since English FQs in fact seem to have the same distribution as one class of adverbs, this could even be taken as fairly strong support of this position.

One must be careful in understanding this proposal, however. I have not (yet) suggested that these FQs belong to the *adverb* word class.<sup>5</sup> Instead, I propose that they appear in adjoined positions that are available to many types of adverbial adjuncts, including some adverbs. Elements of a variety of syntactic categories can appear in adjunct positions,

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<sup>5</sup>It is perhaps noteworthy that “de-quantificational adverbs” like *mostly* show a similar distributional pattern to that of FQs like *all*. The quantifier *most* cannot appear as an FQ, but it appears that by changing category, it can have a similar syntactic and semantic effect. I will discuss *mostly* again in chapter 5.



including adverbs (22a), DPs (22b), PPs (22c), and clausal phrases (22d).

- (22)
- a. The team won the game **easily**.
  - b. The team will play **the day after tomorrow**.
  - c. The team will play **in the evening**.
  - d. The athletes will play **when they have passed a drug screening**.

The proposal that the distribution of FQs is restricted in the same way as is the distribution of modal adverbs suggests that whatever explains this type of distribution applies not only to adverbs, but to other adjuncts, like FQs. I do not provide a theory of what explains these distributional restrictions, though much past and current work addresses this issue (e.g., Cinque 1999). In chapter 5, I will consider the idea that these FQs do in fact share some structural property with adverbs.

Along with this important distinction between the adverb word-class and adverbial syntactic distribution comes an important semantic point. I do not propose here that adverbial FQs share semantic traits with adverbs. For example, I do not propose that these are pure VP-modifiers, in the sense that they would provide some sort of event quantification or modification. The claim that these elements are adverbial is a purely distributional claim. I will present an explicit proposal regarding the semantics of adverbial FQs below.

#### **2.2.4 Iteration of FQs**

If FQs in English and French are adverbial, adjoined elements, not adnominal elements that are stranded by movement of their associated nominal, we predict two further distributional

facts. First, there should be no direct syntactic connection between the appearance of an FQ and the appearance of a pre-nominal quantificational element. That is, unless ruled out by some independent factor, we would expect that FQs like *all*, *both*, and *each* may appear within a DP (25a), in floating position (25b), or both (26).<sup>6</sup>

- (25) a. [All the students] have arrived.  
b. [The students] have all arrived.
- (26) a. [All the students] have each been asked to fill out the form in pencil.  
b. [Both of the boxers] have each been asked to make it a clean fight.  
c. [Both of the teams] have all been asked to turn their projects in tomorrow.

For examples like (26) to be acceptable, a plausible meaning and context must be imaginable. The pairing of *all* and *each* in (26a) is perfectly acceptable as asserting that every single individual in the relevant set of students was asked individually (rather than in a mass announcement to the whole group) to fill out the form in pencil. When such interpretations are available, these examples become completely acceptable.

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<sup>6</sup>Repetition of the same quantificational element may also be possible, as in (23).

- (23) [All the students] have all arrived.

The use of *almost all* eliminates the awkward redundancy in (23). (24) can be interpreted meaningfully if the speaker has some notion of the number required to qualify as *almost all*. (My thanks to David Pesetsky for providing this example.)

- (24) Almost all the students have all arrived.

The last example (26c) deserves some discussion. *All* in this case could presumably be simply redundant with *both*, which has a meaning of something like ‘all two’. Given that *team* provides a group, however, the preferred reading is that all members of both teams have been asked to turn their projects in tomorrow. (Imagine a competition in which each member of a team does their own project.) In this case floating *all* somehow contributes the meaning it would have in (27).

(27) The wrestling team has all been weighed in.

We see with these examples that the first prediction, that FQs should be compatible with non-floating quantifiers, is true. The second prediction comes from the iterability of adverbial elements. We know independently that multiple adverbials can appear in a sentence, as in (28).

(28) John **probably easily completely** finished that huge bowl of ice cream **yesterday**.

Though again considerations of semantic and pragmatic plausibility could come into effect, we predict that multiple FQs should be possible in a single clause. Again, when examples are carefully constructed and contexts considered, this prediction is borne out, as we see in (29)-(31).

(29) a. The students both will have each received their degree by the summer.

b. The students will both have each received their degree by the summer.

(30) a. The students all will have each received their degree by the summer.

- b. The students will all have each received their degree by the summer.
- (31)
- a. The students each will have all received their degree by the summer.
  - b. The students will each have all received their degree by the summer.

The possibility of cooccurrence between FQs and non-FQ elements, and the iterability of FQs certainly supports the contention that these FQs are adverbial in nature, and not syntactically related to prenominal quantifiers. If all floating quantifiers are in fact prenominal quantifiers, it should be possible to combine any pair of FQ and associate DP into a single DP. As Bobaljik (1995) notes, however, FQ-associate pairs often can not appear together in non-floated constructions. See, for example, the pairs in (32) and (33).

- (32)
- a. \*[All (of) some (of the) students] might have left in one car.
  - b. [Some (of the) students] might all have left in one car.
- (33)
- a. ?\*[All (of) Seth, Pilar, and Diana] have left in one car.
  - b. [Seth, Pilar, and Diana] have all left in one car.

The same argument holds for the iterated FQ and FQ-with-non-FQ examples that were introduced above. (34)-(36) show attempts to combine the FQ in these examples with their DP associate.

- (34)
- a. ??[Each (of) all the students] have been asked to fill out the form in pencil.
  - b. [All the students] have each been asked to fill out the form in pencil.
- (35)
- a. ??[Each (of) both of the boxers] have been asked to make it a clean fight.

- b. [Both of the boxers] have each been asked to make it a clean fight.
- (36) a. ?[All (of) both of the teams] have been asked to turn their projects in tomorrow.
- b. [Both of the teams] have all been asked to turn their projects in tomorrow.

If it is impossible to construct a source DP that contains both the quantificational element that is to be stranded and the nominal associate-to-be, this suggests that such a DP is not the source of floating quantification.<sup>7</sup> If no stranding is involved in these cases, it is unlikely that stranding is involved in more run-of-the-mill cases of quantifier float either.

One last example of this sort involves the co-occurrence of wh-phrases with floating *all* in (“standard”) English (37a). In this case, no composite wh-phrase is possible (37b).<sup>8</sup> Compare the impossibility of *which students all* with *who all* in (37c).

- (37) a. [Which students] have all turned in their homework?
- b. \*[Which students all] does John teach?

Again, since (37b) is impossible, it is unlikely that stranding is the source of floating *all* in (37a).

---

<sup>7</sup>It is, of course, possible that though a DP like *all some of the students* is unacceptable, movement of *some of the students* creates a configuration that is acceptable. Perhaps, for example, *some of the students* is semantically not of the type required by *all*, while the trace that is created by movement of *some of the student* is of the right type. My thanks to Danny Fox for discussion of this possibility.

<sup>8</sup>The degraded status of *who-all* split along the lines of (37a) (e.g., ?\**Who has all turned in their homework?*) is irrelevant. *Who* is generally singular, and so it conflicts with *all*, which requires a plural in this case.

## 2.3 French *Tous* as an Adverbial

I noted at the beginning of this chapter that both English and French FQs are to be analyzed as adverbials. Having focused up to this point on the behavior of English FQs like *all*, I turn now to French *tous* ‘all’.

The distribution of floating *tous* provides further evidence for the adverbial nature of some floating quantifiers. As with English *all*, evidence suggests that French *tous* cannot appear in a theta position. That is, it cannot appear in the lowest expected argument position in a clause.

One argument for this position comes from the distribution of *tous* with respect to uncontroversial adverbs. Sportiche (1988) observes that, in ordering a speaker-oriented adverb like *probablement* ‘probably’, a subject-oriented adverb like *intelligemment* ‘intelligently’, a floating quantifier, and a manner adverb like *soigneusement* ‘carefully’, only one of the  $4! = 24$  orders is possible (38).

- (38) a. Les enfants ont *probablement intelligemment tous soigneusement* formulé  
the children have probably intelligently all carefully worded  
leur demande.  
their request  
‘The children probably have intelligently all carefully worded their request.’  
(Sportiche 1988:432)
- b. \*Les enfants ont *probablement intelligemment soigneusement tous* formulé  
the children have probably intelligently carefully all worded  
leur demande.  
their request

If we assume that *soigneusement* appears above the lowest position of the subject, then

the inability of *tous* to appear below it, as in (38b), is telling. If *soigneusement* occupies a position above the lowest subject position, and *tous* cannot appear below *soigneusement*, then *tous* can certainly not appear in the lowest subject position (39).

- (39) a. Les enfants ont tous *soigneusement* formulé leur demande.  
 the children have all carefully worded their request
- b. \*Les enfants ont *soigneusement* tous formulé leur demande.  
 the children have carefully all worded their request

This behavior of *tous* is very much like the inability of English floating *all* to appear below manner *bravely* in (21).

Further evidence for this conclusion comes from the distribution of floating *tous* with respect to participles. Evidence seems to show that the surface position of French participles need not be the base position (Pollock 1989). In (40), for example, we see that the adverbial *à peine* ‘hardly’ can appear between the participle and the object.

- (40) Pierre a vu **à peine** Isabelle.  
 P has seen hardly I  
 ‘Pierre has hardly seen Isabelle.’ (Bošković 2004:688)

Given this fact, we can conclude that the participle has risen over this adverbial, as in (41).

- (41) [TP Pierre a [XP vu [VP à peine [VP t Isabelle]]]]
- 

Assuming that *à peine* appears above the base subject position, the participle will have moved across the lower subject position as well, as in (42).

(42) [TP Pierre a [XP vu [VP à peine [VP t t Isabelle]]]]

If this is so, then, as Bošković (2004) notes, we would expect post-participial floating *tous* to be possible, as in (43).

(43) [TP [DP Les étudiants] ont [XP vu [VP [DP tous t] [t Isabelle]]]]

Such examples, however, are completely unacceptable, as we see in (45).<sup>9</sup>

(45) \*Les enfants ont vu tous ce film.  
 the children have seen all this film  
 Intended: 'The children have all seen this film.' (Sportiche 1988:427)

These two pieces of evidence—ordering restrictions between FQ *tous* and adverbs and the ordering of *tous* and participles—lead us to the same conclusion for *tous* that we reached for English *all*: *Tous* cannot be stranded in certain DP positions. Again, this calls into question a theory under which floating quantifiers are stranded in DP positions.<sup>10</sup>

<sup>9</sup>*Tous* can appear after a finite verb, as in (44). Pollock (1989) argues, however, that the position of the moved finite verb is higher than the position of a shifted participle.

(44) Les étudiants risent tous.  
 the students laugh all  
 'The students are all laughing.'

<sup>10</sup>Bobaljik (1998:3) notes that a difference in the distribution of English and French FQs lends further credence to the idea that these are adverbial elements. Just as English and French differ in the possible positions of adverbs like *often/souvent* (46), they differ in the possible positions of *all/tous* (47).

(46) a. John (often) kisses (\*often) Mary.  
 b. Jean (\*souvent) embrasse (souvent) Marie.  
 J (\*often) kisses (often) M  
 'Jean often kisses Marie.'



### 2.3.1 Leftward *Tous*-Float (*L-tous*)

So far we have seen that, in its failure to appear in low argument positions, floating *tous* behaves much like English floating *all*. But French *tous* also participates in a phenomenon not found in English. While, just as in English, *tous* can appear following its nominal associate at some distance, it can also precede this element. This phenomenon is called leftward *tous*-float, or *L-tous* (Kayne 1975). In (50), for example, *tous* is associated with a pronoun to its right (an object clitic in (50a), a subject in (50b)).

- (50) a. J'ai tous voulu [les] lire.  
 I-have all-PL wanted [them] to-read  
 'I wanted to read them all.' (French Object)
- b. ?Il a tous fallu qu'[ils] viennent.  
 it has all must that-[they] come

- 
- (47) a. My friends (all) love (\*all) Mary.  
 b. Mes amis (\*tous) aiment (tous) Marie.  
 my friends (\*all) love (all) M  
 'My friends all love Marie.' (Pollock 1989)

Pollock (1989), following Emonds (1978), uses these differences to argue for a difference in verb movement between these languages. The verb in English remains VP-internal, and therefore to the right of VP-external adverbs, while the French finite verb raises out of the VP and over such adverbs. That French and English adverbs pattern with FQs is consistent with FQs having adverbial distribution.

This argument is weakened, however, by the fact that a stranding theory also predicts these differences. Under the assumption that verb raising crosses the low subject position, the English and French derivations would proceed as in (48) and (49).

- (48) a. [TP John [VP often [VP t kisses Mary]]].  
 ↑  
 b. [TP [My friends] [VP [all t] love Mary]].  
 ↑
- (49) a. [TP Jean embrasse [VP souvent [VP t t Marie]]].  
 ↑     ↑  
 b. [TP [Mes amis] aiment [VP [tous t] t Marie]].  
 ↑     ↑

'They all had to come.'

(French Subject)

It is clear that a simple stranding approach to *L-tous* is impossible, under a general ban on downward movement. The stranding theory posits movement of a constituent-mate NP/DP away from a quantificational element (52a). But *L-tous* would require movement of this element to the right, as in (52b).<sup>11</sup>

(52) a. [DP Les étudiants] ont [DP tous t ] dansé.

'The students have all danced.'

b. J'ai [[DP tous t ] [voulu [les lire]]].

'I wanted to read them all.'

Even approaches to movement that argue against explicit bans on rightward or downward movement (Nunes 2004; Richards 2004) would not allow the rightward movement that would be necessary to account for all cases of *L-tous*. An analysis in which *tous* is adjoined to a covertly moved phrase (Fox and Nissenbaum 1999) is also imaginable. However, Fox and Nissenbaum's (1999) analysis requires quantifier raising. Since the clitic in this case is not a quantifier, some other motivation for covert movement would need to be produced.

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<sup>11</sup>Sportiche (1988) avoids this problem by assuming that *L-tous* should not be treated together with *R-tous*, or English-type *tous* (51).

(51) Les étudiants ont tous dansé.  
the students have all danced

I follow (Doetjes 1997) in treating all cases of floated *tous* in a unified fashion.

One could also imagine a derivation under which *les* strands *tous*, as in (53a) and either *tous* or the remnant DP that contains *tous* moves to its surface position to the left of *voulu*, as in (53b).

- (53) a. Movement of *les*: J'ai voulu les lire [DP tous t].  
↑  
└──────────────────┘
- b. Remnant movement: J'ai [DP tous t<sub>1</sub>] voulu les<sub>1</sub> lire t.  
↑  
└──────────────────┘

This derivation seems to lack convincing independent evidence, however. Neither *tous les* (a collocation that is independently impossible) nor a full DP like *les livres* ‘the books’ can occur in the pre-*voulu* position, as we see in (54).

- (54) a. \*J'ai [tous les] voulu lire.  
 I-have all them wanted to.read  
 Intended: ‘I wanted to read them all.’
- b. \*J'ai [les livres] voulu lire.  
 I-have the books wanted to.read  
 Intended: ‘I wanted to read the books.’

Given that a required step for the derivation in (53) is impossible on its own, this analysis lacks independent support.<sup>12</sup>

The behavior of *L-tous* will be a fruitful area for the development and testing of an explicit analysis of adverbial quantifier float at the end of this chapter. Before we take up this analysis, I first must turn to another property of adverbial FQs—the restriction of their nominal associate to A-movement.

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<sup>12</sup>Of course lack of independent support should not be interpreted as the existence of independent arguments against. One would simply like to have evidence of some sort for these derivational steps.

## 2.4 A-Movement

I have argued in this chapter that FQs in English and French show properties that either contradict the predictions of the stranding approach or else strongly suggest an adverbial analysis. In this section I tie this observation together with the proposed structure of adverbial FQs that was sketched in chapter 1. Prominent among the properties that were discussed there was the A-movement restriction imposed by adverbial FQs on their DP associate. In chapter 1, I adopted Doetjes's (1997) proposal that adverbial FQs contain a null *pro*-form that is coindexed with the associated NP/DP. We will return to the precise nature of this *pro* in chapter 5, but for the moment we will take it to be a pronoun like *them*, as in (55).

(55) [<sub>DP</sub> The students]<sub>1</sub> will have [<sub>VP</sub> [<sub>all</sub> *pro=them*] [<sub>VP</sub> t<sub>1</sub> had lunch]]

In general, A'-movement of a phrase that binds *them* cannot cross *all of them*. We see this explicitly in (56), where the indicated interpretation ('for which students is it the case that all of those students saw themselves?') is quite impossible.

(56) \*Which students<sub>1</sub> did [all of them<sub>1</sub>] see t<sub>1</sub>?

The impossibility of (56) is due to whatever principle or effect explains so-called *cross-over* effects. Generally, cross-over effects are divided into strong cross-over (SCO) and weak cross-over (WCO), so named for the difference in severity of unacceptability found by many speakers.

- (57) a. \*\*Who<sub>1</sub> did he<sub>1</sub> see t<sub>1</sub>? (SCO)  
 b. \*Who<sub>1</sub> did [his<sub>1</sub> mother] see t<sub>1</sub>? (WCO)

While I do not personally find a remarkable difference between the unacceptability of these two cases (both seem pretty awful), it is notable that, for those who do find a difference, (56) patterns with (57a). That is, A'-movement across *all of them*, with bound *them* (56), is a case of strong cross-over. This poses a puzzle for the analysis of cross-over and the structure of phrases like *all of them*. For our purposes, however, it is enough to note the existence of this effect.

Assuming that the same restriction that results in SCO in (56) applies to null pronouns, we predict that the displacement of the subject in (55), repeated as (58), must be of the A-movement variety, as A'-movement would lead to a cross-over effect.

- (58) [DP The students]<sub>1</sub> will have [VP [all pro<sub>1</sub>] [VP t had lunch]]  
 ↑  
 A-movement/\*A'-movement

Indeed, it has long been noted that FQs of the English variety are incompatible with A'-movement (Déprez 1989). Floated *all*, even when it appears in a pre-verbal position where it can be observed independently, cannot appear related to an A'-moved element in a wh-question (59a), in a relative clause (59b), or related to a topicalized element (59c).

- (59) a. \*[What] did John all buy? (Wh-question)  
 b. \*[The students] [that John has all met] are quite smart. (Rel. Cl.)  
 c. \*[These students], John has all met. (Topicalization)

Given that *all* can appear in a VP-adjoined position, this fact is surprising. The relationship between the adjoined [all *pro*] in (60a) and the subject seems quite similar to that of [all *pro*] and the object in (60b).

- (60) a. [<sub>DP</sub> The students]<sub>1</sub> will have [<sub>VP</sub> [all *pro*<sub>1</sub>] [<sub>VP</sub> t<sub>1</sub> had lunch]].  
b. \* [<sub>DP</sub> Which students]<sub>1</sub> did John [<sub>VP</sub> [all *pro*<sub>1</sub>] [<sub>VP</sub> see t<sub>1</sub>]]?

The importance of the pattern in (59) is diminished by the fact that non-moved versions of these sentences are also impossible (61).

- (61) a. \*John all bought [the books/them].  
b. \*John has all met [the students/them].

This A/A' effect also arises with French FQs, though there we face different confounds. Once these confounds are controlled for, however, the French case shows more conclusively than in English the conflict between adverbial floating quantifiers and A'-movement. I turn to these arguments next.

#### 2.4.1 *Tous/Toutes* in French Relative Clauses

Sportiche (1988) reports that floating *tous* is generally much more acceptable in appositive relatives (62a) than in restrictive relatives (62b).

- (62) a. Les livres, [que j'ai tous lu avant la classe], sont sur la table.  
the books [the I-have all read before the class] are on the table  
'The books, all of which I read before class, are on the table.'

- b. ?\*Les livres [que j'ai tous acheté] sont sur la table.  
 the books that [I-have all bought] are on the table  
 Intended: 'The books that I bought all of are on the table.'

Though speakers do tend to find appositive relatives readily acceptable, one can create examples of restrictive relatives that are also fully grammatical. As with the examples of iterated FQs that were introduced above, this may once again be a case where semantic or pragmatic plausibility must be accounted for when constructing examples. (63) shows one acceptable example.

- (63) J'ai vendu les livres [que j'ai chacun lu au moins trois fois].  
 I-have sold the books [that I-have each read at-the least 3 times]  
 'I sold each of the books that I have read at least three times.'

The possibility of floating *chacun* 'each' in (63) shows that there is not a blanket ban on floating quantifiers that are related to relativized arguments. On the surface, this appears to be a clear counterexample to the claim that adverbial FQs are incompatible with A'-movement. Moreover, some explanation is required to account for the difference between the acceptable French example in (63) and the English equivalent in (64), which is quite awful.<sup>13</sup>

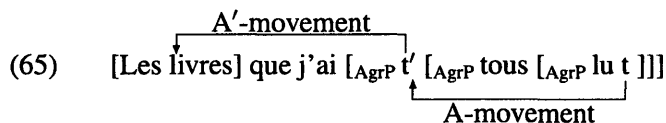
- (64) \*I sold the books that I (each) read (each) at least three times.

---

<sup>13</sup>In evaluating (64), one must be careful to avoid inserting a pause between *read* and *each*. Such a pause allows an acceptable parse in which *each* is part of [at least three times]. See Bowers (1993) and Bobaljik (1995), among others, on positions of FQs in these sorts of constituents.

What could explain this cross-linguistic difference? One would hope that the difference lies in some independently known difference between French and English.

Though (63) seems to pair floating *chacun* with A'-movement, I suggest that there is more than meets the eye in such examples. I propose that speakers allow a derivation for these examples in which the relativized phrase or wh-phrase first moves by A-movement across the FQ to the specifier of a participial agreement phrase (the head of which is occupied by the participle *lu*), as in (65), and is then followed by subsequent A'-movement.<sup>14</sup>



This sort of intermediate A-movement in French was independently proposed by Kayne (1989) to account for participle agreement with moved elements, as in (66).

- (66) a. les chaises que Paul a repeintes...  
the chairs.FEM that P has repainted-FEM  
'The chairs that Paul repainted...' (Rel. Clause)
- b. Je me demande [combien de tables Paul a repeintes].  
I me ask [how.many of tables.FEM P has repainted-FEM]  
'I wonder how many tables Paul repainted.' (Question)

Déprez (1989:477ff.) and Shlonsky (1991:176–177) also note that this type of movement might explain the French pattern. Here I develop these ideas further by providing independent arguments for a connection between participle agreement and the possibility of A'-movement in the presence of an FQ.

<sup>14</sup>I show a promotion analysis of relativization here in which the head of the relative moves from within the clause. Nothing hinges on this decision here except for expositional clarity.



If intermediate A-movement results in participle agreement, and is also responsible for the acceptability of examples that pair FQs with A'-movement, then we predict that in all cases of relativization (or wh-questions, etc.) where an FQ is acceptable, participle agreement is mandatory.<sup>15</sup> This prediction is borne out, as we see in (67). Absent the FQ *toutes* 'all (fem.)' (pronounced [tut]), both agreeing *dite* 'said (fem.)' and non-agreeing *dit* 'said (masc.)' can be found (67a), though the latter is degraded for some speakers. When floating quantifier *toutes* is present, however, agreement on the participle is mandatory. That is, even for those who find non-agreeing *dit* in (67a) degraded, there is a clear contrast between *dit* in (67a), which may be degraded, and the same non-agreeing *dit* in (67b), which is completely impossible.<sup>16</sup>

- (67) a. les femmes qu'on a dites/??dit belles...  
the women that-one has said-FEM/said-MASC pretty  
'the woman that was said to be pretty...'
- b. les femmes qu'on a toutes dites/\*dit belles...  
the women that-one has all-FEM said-FEM/said-MASC pretty  
'the women that were all said to be pretty...'

This correlation is quite striking, but it should perhaps be taken with a grain of salt. Participle agreement in French is the subject of intense prescriptive scrutiny, which could clearly have an influence on judgments of this sort. Because of this influence, judgments of illformedness in examples of A'-movement without accompanying participial agreement

<sup>15</sup>In order to test this prediction, we must choose examples of participles whose masculine and feminine forms differ phonologically (e.g., *dit* 'said (masc.)' [di] vs. *dite* 'said (fem.)' [dit]).

<sup>16</sup>The English glosses for these examples are grammatical. This does not show that English allows crossing of an FQ by A'-movement. Instead, these examples contain A-movement of the passive subject to Spec-TP, with subsequent A'-movement. These examples allow an A-movement escape hatch, much as in the French examples of participle agreement. For further discussion of derivations that involve serial ordering of A- and A'-movement, see chapter 6.

(68) are suspect.

(68) ??les femmes qu'on a dit belles...  
the women that-one has said-MASC pretty  
'the women that were said to be pretty...'

This being said, I believe that the clear distinction between lack of participle agreement in examples without an FQ, which are slightly degraded, and those that lack participle agreement in the presence of an FQ, which are completely unacceptable, is quite telling, and likely goes beyond prescriptive grammar.

A related argument that perhaps avoids the prescriptive confound comes from the inability of floating *tous/toutes* to appear in certain higher clauses. Participle agreement, though possible and even preferred in the clause from which the relativized phrase originates, is impossible in higher clauses (Branigan 1992), as we see in (69).

(69) la lettre [qu'il a dit(\*e) [que Claire lui a envoyée]]...  
the.FEM letter.FEM [that.he has said(\*FEM) [that Claire him has sent]]  
'the letter that he said that Claire sent him...'

This fact fits with the idea that participle agreement arises from A-movement. Such movement would only be possible in the lowest clause. Successive cyclic movement through higher clauses would involve A'-movement, and so could not result in agreement.

As Bobaljik (1998:5) notes, this same pattern arises with floating *tous/toutes*. These FQs cannot appear in higher clauses within relative clauses (70).

- (70) a. \*les femmes [que Jean a toutes pensé(es) [qu'on a dîtes  
the women [that J has all-FEM.PL thought(-fem.pl) [that.one has  
dites belles]]...  
said-FEM.PL beautiful.FEM.PL]]  
Intended: 'the women that Jean though were said to be all beautiful...'
- b. \*\*les femmes [que Jean pense toutes [qu'on a dîtes  
the women [that J thinks all-FEM.PL [that.one has said-FEM.PL  
belles.FEM.PL]]...  
beautiful]]  
Intended: 'the women that John thinks were said to be all beautiful...'

Thus *tous* can appear in relative clauses, contrary to the expected incompatibility with A'-movement, only when an A-movement escape hatch exists. No A-movement across the FQ is possible in these examples, and so the presence of the FQ in these positions is impossible.<sup>17</sup>

In this section, we have seen that French FQs are incompatible with A'-movement. That is, a given FQ's nominal associate cannot cross that FQ directly by A'-movement (71).

- (71) DP<sub>1</sub> ... [ tous ... [ t ] ]  
          └──────────┘  
          \*A'

In English, demonstration of this restriction is hampered by the unacceptability of examples without A'-movement. In French, once we control for intermediate A-movement, we find clearer evidence. In (72), which lacks participle agreement, we know that there is no intermediate A-movement, and relativization leads to ungrammaticality.

- (72) \*\*les femme qu'on a toutes dit belles...  
the women that-one has all-FEM said-MASC pretty  
'the women that were said to all be pretty...'

<sup>17</sup>Bobaljik (1998) notes that this last argument extends to Dutch and German as well.

In (73), where successive cyclic movement can presumably only arise by A'-movement, an FQ is equally impossible.

- (73) \*\*les femmes [que Jean pense toutes [qu'on a dites  
the women [that J thinks all-FEM.PL [that.one has said-FEM.PL  
belles.FEM.PL]]...  
beautiful]]  
Intended: 'the women that John thinks were said to be all beautiful...'

Therefore, I conclude that French adverbial FQs are incompatible with crossing A'-movement of their DP associate.

## 2.4.2 Hebrew Floating *kol*

This A-movement restriction is not limited to French or even to Indo-European. Hebrew *kol* 'all' also imposes a ban on direct A'-movement of its nominal associate (Shlonsky 1991). While floating *kol* may be associated with a subject wh-phrase (74a), the same is impossible with an object wh-phrase (74b).

- (74) a. ?eize kita ?avra ?et ha-mivxan kul-a?  
which class passed ACC the-exam all-it(3.SING.FEM)  
'Which class all passed the exam?'  
b. \*?eize tapu?axalta ?et kul-o?  
which apple you-ate ACC all-it(3.SING.MASC)  
Intended: 'Which apple did you eat all of?'

This pattern can be explained by the same mechanisms that were observed in French: the subject may move by A-movement to a higher subject position before undergoing wh-

movement. The object, on the other hand, does not have the option of short A-movement and must move directly by wh-movement. I will discuss Hebrew floating *kol* again in section 2.5.2.

In the next sections, I turn to other properties of adverbial FQs and show how the proposal under consideration provides an account for these properties.

## 2.5 Other Properties of Adverbial FQs

In this section I provide a more detailed proposal regarding the structure of adverbial FQs and show how this proposal accounts for various important properties of these FQs. Some of these properties are related to the floating quantifier puzzles introduced in chapter 1 (e.g., the A-movement restriction, discussed in the preceding section). Others did not find a place in those puzzles but are crucial facts that must be accounted for under any theory of floating quantifiers. Specifically, I discuss here agreement patterns in FQs, the possibility of overt pronouns in these FQs, locality effects between FQs and their nominal associates, and the difference in acceptability in certain cases of full DPs vs. pronominal FQ-associates.

### 2.5.1 Agreement in Adverbial FQs

In chapter 1 I noted that, when a language shows agreement on its quantifiers within a DP or an NP, this same agreement appears on floated quantifiers. We see this in French in (75) and (76).

- (75) a. [Tous            les étudiants] sont arrivés.  
         [all-MASC.PL the students] are arrived

'All the students arrived.'

- b. \*[Toutes les étudiants] sont arrivés.  
[all-FEM.PL the students] are arrived  
Intended: 'All the students arrived.'
  - c. [Les étudiants] sont tous arrivés.  
[the students.MASC] are all.MASC.PL arrived  
'The students all arrived.'
  - d. \*[Les étudiants] sont toutes arrivés.  
[the students.MASC] are all.FEM.PL arrived  
Intended: 'The students all arrived.'
- (76)
- a. [Toutes les filles] sont arrivées.  
[all-FEM.PL the girls] are arrived  
'All the girls arrived.'
  - b. \*[Tous les filles] sont arrivées.  
[all-MASC.PL the girls] are arrived  
Intended: 'All the girls arrived.'
  - c. [Les filles] sont toutes arrivées.  
[the girls] are all.FEM.PL arrived  
'The girls all arrived.'
  - d. \*[Les filles] sont tous arrivées.  
[the girls] are all.MASC.PL arrived  
Intended: 'The girls all arrived.'

Under the assumption that agreement of the sort seen in (75a) and (76a) can only arise within a DP, this fact calls into questions any analysis of floating quantification that does not posit a syntactic link between an FQ and its nominal associate. It is simply not true, however, that agreement of this sort only arises DP-internally. Agreement in number, gender, and even case can be observed between elements that are not related syntactically, at least under some analyses.<sup>18</sup>

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<sup>18</sup>My thanks to Jonathan Bobaljik (p.c.) for discussion of this point.

For example, bound pronouns, and pronouns in general, routinely agree with their binder or antecedent in number and gender. Examples from Spanish are given in (77).

- (77) a. [Ninguna de las mujeres]<sub>1</sub> cree que **ella**<sub>1/2</sub>/**él**<sub>2/\*1</sub> esté culpable.  
 none-FEM of the-FEM women thinks that she/\*he is guilty  
 ‘None of the women<sub>1</sub> thinks that she<sub>1</sub> is guilty.’
- b. [Las mujeres]<sub>1</sub> creen que **ellas**<sub>1/2</sub>/**ellos**<sub>2/\*1</sub> van a llegar tarde.  
 the-FEM women think that they-FEM/\*MASC are going to arrive late  
 ‘The women<sub>1</sub> think that they<sub>1</sub> will arrive late.’

Secondary predicates can also agree in number and gender, as in the Spanish examples in (78).

- (78) a. Ella llegó **borracha**/**\*o**/**\*as**/**\*os**.  
 she arrived drunk-FEM.SG/\*MASC.SG/\*FEM.PL/\*MASC.PL  
 ‘She arrived drunk.’
- b. Ellas llegaron **borrachas**/**\*os**.  
 they-FEM arrived drunk-FEM.PL/\*MASC.PL  
 ‘They(fem.) arrived drunk.’

When a language has a rich enough case system, case agreement can also be observed in secondary predicates. For example, Russian depictives can agree in case with the associated argument, as in (80).<sup>19</sup>

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<sup>19</sup>These secondary predicates can also appear in the instrumental case. Richardson (2001) argues that these cases involve an extra event argument, which is reflected in meaning differences between, e.g., (80a) and (79).

- (79) Vadim vernulsja iz bol'nicy **zdrovym**.  
 V-NOM returned from hospital healthy-INSTR  
 ‘Vadim returned from the hospital cured.’

- (80) a. Vadim vernulsja iz bol'nicy **zdoroviy**.  
 V-NOM returned from hospital healthy-NOM  
 'Vadim returned from the hospital healthy.'
- b. Ja zakazala rybu-ACC **syruju**.  
 I ordered fish raw-ACC  
 'I ordered the fish raw.'

Given the proliferation of agreement in these examples, Merchant's (1996) claim that agreement in floating quantifiers is a strong argument against a non-transformational view of FQs holds less water. Clearly, at least under many widely-held views of secondary predicates and pronouns, agreement can arise between elements that are never constituent mates.<sup>20</sup>

I conclude that the adverbial approach taken here to English and French FQs does not suffer from a direct challenge from agreement patterns. We might still wonder, however, why agreement should arise at all on FQs. What makes these elements subject to agreement? One possible answer lies in the presence of the null *pro*-form inside these FQs (81).

- (81) [Les étudiants]<sub>1</sub> sont [<sub>VP</sub> [tous *pro*<sub>1</sub>] [<sub>VP</sub> arrivés]]  
 [the students] are [<sub>VP</sub> [all ] [<sub>VP</sub> arrived]]  
 'The students have all arrived.'

As we will see below, this pronominal element contributes a coreference-like relationship to the nominal associate. I suggest that this pronominal is the source of the observed agreement.

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<sup>20</sup>Analyses do exist that connect pronouns with their antecedents by transformation (Kayne 2004).



## 2.5.2 Overt Pronouns in Adverbial FQs

If some FQs, such as those in English and French, contain null pronominals, we might wonder whether these elements could ever have overt phonological form. In fact, some languages require a pronoun-like form to be pronounced along with a floating quantifier. For example, Hebrew (Shlonsky 1991) requires the presence of a pronominal clitic with floating *kol* ‘all’ (82).<sup>21</sup>

- (82) a. Ha-yeladim yašnu kul-am.  
the-children slept all-3.MASC.PL  
‘The children all slept.’
- b. \*Ha-yeladim yašnu kol.  
the-children slept all

When it appears in non-floated position, no such pronominal is required, or, in fact, allowed (83).<sup>22</sup>

- (83) a. Katafti ?et kol ha-praxim bi-zhirut.  
I-picked ACC all the-flowers with-care  
‘I picked all of the flowers carefully.’
- b. \*Katafti ?et kul-am ha-praxim bi-zhirut.  
I-picked ACC all-3.MASC.PL the-flowers with-care  
Intended: ‘I picked all of the flowers carefully.’

---

<sup>21</sup>The vowel change between *kul-am* and *kol* is not relevant here. Due to stress shift, if *kul-am* were to appear floated without the pronominal clitic, it would be expected to surface with an *o*.

<sup>22</sup>Shlonsky (1991) argues that these FQs are stranded by movement of their associate DP. Crucially, however, this movement must proceed via the specifier of the quantifier. This movement allows, and in fact forces, agreement between the DP and the Q, which is expressed in the form of a clitic. I suggest here that, though this analysis is quite convincing on the face of it, we should consider the possibility that Hebrew floating *kol* is an adjoined phrase (that is, not stranded by movement). Benmamoun (1999) makes exactly this argument with respect to Arabic *kull* ‘all’.

Greek also allows the presence of an overt pronominal clitic with floating *olus* 'all' (Vina Tsakali, p.c.) (84).

- (84) Tus idha olus tus.  
 MASC.PL.ACC I-saw all.MASC.PL.ACC MASC.PL.GEN  
 'I saw all of them(masc.)'

Several factors distinguish the Greek pattern from Hebrew (and Arabic; see Benmamoun (1999)). First, this pronominal has the invariant masculine plural genitive form *tus* (85).

- (85) a. Tis idha oles tus/\*tis.  
 FEM.PL.ACC I-saw all.FEM.PL.ACC MASC.PL.GEN/\*FEM.PL.GEN  
 'I saw all of them(fem.)'
- b. Ta idha ola tus/\*ta.  
 NEUT.PL.ACC I-saw all.NEUT.PL.ACC MASC.PL.GEN/\*NEUT.PL.GEN  
 'I saw all of them(neut.)'

Clitic pronouns in Hebrew (86) (and Arabic) FQs, on the other hand, always show agreement for person, number, and gender with the nominal associate (Shlonsky 1991; Benmamoun 1999).

Second, while a pronoun must appear in Hebrew and Arabic FQs, this element is optional in Greek (86).

- (86) a. Tus idha olus.  
 MASC.PL.ACC I-saw all.MASC.PL.ACC  
 'I saw all of them(masc.)'
- b. Tis idha oles.  
 FEM.PL.ACC I-saw all.FEM.PL.ACC  
 'I saw all of them(fem.)'

- c. Ta idha ola.  
 NEUT.PL.ACC I-saw all.NEUT.PL.ACC  
 'I saw all of them(neut.)'

While all of these patterns clearly beg for explanation, I do not provide an explicit analysis here. Instead, I suggest that each pattern reflects language-specific effects that are linked to the presence of a pronominal within adverbial FQs.<sup>23</sup>

### 2.5.3 Locality Effects

FQs and their nominal associates are governed by locality restrictions that appear to be very similar to those that govern anaphors (Belletti 1982; Kayne 1984). For example, we see in (87) that the nominal associate of *all* cannot appear outside of the finite clause that immediately contains the FQ.

- (87) \*[The students] said [that John has all come].

Here *John*, being singular, could not serve as an associate of *all*, but nevertheless *the students* is unable to serve in this role.

We also find in (88) that the nominal associate must c-command the FQ, and cannot be contained within a c-commanding phrase.

- (88) \*[A friend of [<sub>DP</sub> the students]<sub>1</sub>] has all<sub>1</sub> arrived.

Intended: 'A friend of all of the students has arrived.'

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<sup>23</sup>Analyses exist under which some of these elements are not pronouns, but agreement markers. Because of these alternative analyses and the complications that arise in the study of pronouns and clitics, the evidence raised in this section can only be taken as consistent with or perhaps suggestive of the present analysis.

Both of these observations have been used to argue that some sort of transformational relationship exists between an FQ and its associated DP. I will demonstrate that the adverbial account that I have been developing also accounts for these restrictions. In order to show that this is true, we must develop more clearly a theory of the semantic composition of FQs and the restrictions that follow from this semantic behavior.

I have proposed, following Doetjes (1997), that adverbial FQs contain a (possibly null) pronominal, as in (89).

(89) [The students] have [all *pro*] arrived.

This proposal has provided explanations for observed agreement patterns and the existence of overt pronominals in some languages, as well as the A-movement restriction that was discussed above. We might now wonder how this analysis accounts for some of the major properties of FQs that were highlighted in chapter 1. For example, how does this structure explain the seemingly invariant meaning of floated and non-floated quantifiers? How does [all *pro*], when adjoined near the VP, contribute the same meaning as *all* within a DP?

I propose that [all *pro*] behaves essentially like a full quantifier phrase. That is, [all *pro*] is very much like *all of them* in its semantics. If this is true, then [all *pro*] must bind a variable over which it can quantify. When [all *pro*] binds this variable, this creates a connection to the FQ's nominal associate, as in (90).

(90) [The students] have [<sub>VP</sub> [all *pro*]<sub>1</sub> [<sub>VP</sub> arrived *t*<sub>1</sub>]].

To compose semantically with its sister, the adjoined quantificational phrase requires predicate abstraction to create an open formula, as in (91).

(91)  $\lambda x. [\text{arrived } x] ([\text{all } pro])$

(91) will result in a saturated sentence in which the argument is maximal and contains a pronominal, as in (92).

(92)  $\text{arrived}(\max([\text{pro}]))$

When we reach the level of the surface subject, this subject triggers abstraction once again and provides a binder for the pronominal, as in (93).

(93)  $\lambda x_2. [\text{arrived}(\max([\text{pro}_2]))] ([\text{The students}])$

The entire derivation can be viewed schematically in (94).

(94)  $[_{DP} \text{The students}] \lambda_1 \text{ will have } [_{VP} [\text{all } pro_1] \lambda_2 [_{VP} t_2 \text{ had lunch}]]$

This series of abstractions leads to precisely the meaning that would be obtained in a non-floating context. This approach does raise questions regarding the generalizability of the required operations. For example, should a moved DP like *the students* be allowed to be robbed of the binding of its trace by an intervening binder? How does this possibility interact with a general theory of the interpretation of movement?

The intuition behind this approach to the semantic composition of FQ sentences is that some principle requires local binding of a variable. Since  $t_1$  can be bound in (94) by [all *pro*] with roughly the same meaning as if it were bound by the subject, it must be bound in this way. What “roughly the same meaning” is must, of course, be worked out. In the case of *all* it is easy to see that the sentence with and without *all* in fact *can* be identical. Brisson (1998) argues that *all* enforces a ban on “bad covers” in the presence of the universal quantification that is provided by a definite plural (bad covers allow “exceptions” to fully universal distribution). But a definite plural could, independently, be interpreted as lacking a bad cover reading. That is, a definite plural like *the students* can have the same interpretation as *all the students*.

Though the final answers to these questions are important, I wish to note which of my assumptions are crucial to the explanatory aspects of this analysis and which are simply choices made in implementation. This allows one to focus on the central features of the analysis. It is crucial that an adverbial FQ binds a variable and that it enforces a ban on A'-movement of its associate DP across the FQ. Any implementation that has these characteristics suffices for our purposes. These characteristics, and their present implementation, are summarized in Table 2.1.

**Table 2.1**

Characteristic	Implementation
Must bind variable	FQ is a quantifier phrase composed with its sister through predicate abstraction
Incompatible w/A'-movement	FQ contains a <i>pro</i> which would induce a cross-over violation

With this semantic approach in mind, we can return to the c-command and locality restrictions introduced above. Recall that the nominal associate of an FQ can be neither too far away from the FQ (95) nor contained within a c-commanding phrase (96).

(95) \**[The students] said [that John has all come].*

Intended: 'All the students said that John has come.'

(96) \**[A friend of [<sub>DP</sub> the students]<sub>1</sub>] has all<sub>1</sub> arrived.*

Intended: 'A friend of all of the students has arrived.'

One crucial aspect of the present analysis requires that [all *pro*] bind a variable. [All *pro*] will therefore be associated with this variable, and not some phrase contained within the phrase whose movement created this variable. In (97), for example, [all *pro*] binds  $t_1$ , and therefore is associated with *a friend of the students*. Since  $t_1$  is not a trace of *the students*, *all* cannot be associated with *the students*. This results in, in effect, the c-command restriction mentioned above.

(97) \**[A friend of [the students]<sub>2</sub> ]<sub>1</sub> has [<sub>VP</sub> [all *pro*]<sub>1</sub> [<sub>VP</sub> arrived  $t_1$ ]].*

Furthermore, since the variable that is bound by the FQ is created by movement, the FQ's nominal associate must move from a position that is c-commanded by the FQ. In (98), *the students* originates in the matrix clause. No trace of *the students* exists below [all *pro*]. Therefore, *the students* cannot become the nominal associate of the FQ.

(98) \*[The students]<sub>1</sub> [<sub>VP</sub> t<sub>1</sub> said [<sub>CP</sub> that John<sub>2</sub> has [<sub>VP</sub> [all *pro*] [<sub>VP</sub> come t<sub>2</sub>]]]].

Since a trace of *John* does exist below the FQ, *John* could in principle serve as an associate of the FQ. But this is also impossible, as *John* is singular, and *all* requires a plural associate.

In this section I have developed an explicit analysis for the semantic composition of FQ sentences. This analysis helps to explain both the lack of meaning difference between floated and non-floated quantifiers and the observed locality and c-command restrictions on FQs and their associates.

#### 2.5.4 DP vs. Pronoun FQ-Associates

In this section, I turn to a final aspect of FQ-associate behavior and show how the analysis that was developed above explains this restriction. Data for this section come from French and German, as English does not allow the sorts of constructions that are needed to test for this restriction.<sup>24</sup>

I noted above that French floating *tous* can precede its DP associate (a phenomenon called 'L-*tous*'). Perhaps surprisingly, the nominal associate in an L-*tous* sentence must be

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<sup>24</sup>I do not have an explanation for this cross-linguistic difference.



a pronoun. For example, when an object over which an FQ is meant to quantify is a full DP, the sentence is unacceptable (99a). When this full DP object is swapped for an object clitic, *L-tous* is again possible (99b) (Kayne 1975).

- (99) a. \*J'ai tous voulu lire [les livres].  
 I-have all-PL wanted to-read [the books]
- b. J'ai tous voulu [les] lire.  
 I-have all-PL wanted [them] to-read  
 'I wanted to read them all.' (Doetjes 1997)

The same pattern arises with subject-related *L-tous*. Here *tous* can appear in a matrix clause and is related to a subject pronoun within a subjunctive clause (100b).<sup>25</sup> But the same is not possible if the subject is a full DP (100a).

- (100) a. \*Il a tous fallu que [les enfants] viennent.  
 it has all must that [the children] come
- b. ?Il a tous fallu qu'[ils] viennent.  
 it has all must that-[they] come  
 'They all had to come.'

This pattern is not specific to French. German also allows *alle* 'all' to occur to the left of its associate. In this configuration, the associate must be a pronoun (101) (Pafel 1996).

- (101) a. ?\*Alle hat er [diese Akten] bearbeitet.  
 all has he these files worked.on  
 Intended: 'He has worked on all of these files.'

---

<sup>25</sup>*L-tous* is not possible across an indicative sentence boundary.

- b. Alle hat er [sie] bearbeitet.  
 all has he them worked.on  
 'He has worked on all of them.' (German)

The reason for this restriction is clear under the present proposal. Adverbial FQs must bind a variable in order to be interpreted. When the associate is a full DP, no variable is available.

One might protest that the DP associate might itself have moved, and so provided a trace that could serve as a variable for the FQ. For example, in the French subjunctive clause example, repeated as (102a), *ils* has presumably moved from its lower argument position, as in (102b).

- (102) a. \*Il a tous fallu que [les enfants] viennent.  
 it has all must that [the children] come  
 'The children all had to come.'
- b. Il a tous fallu [<sub>CP</sub> que [<sub>TP</sub> [les enfants]<sub>1</sub> [<sub>VP</sub> viennent t<sub>1</sub>]]].

Despite the existence of this movement, it seems that this trace cannot serve as the required variable. A likely explanation for this fact lies again with the DP. Since the full DP lies between the FQ and the trace, no binding is possible. This phenomenon seems very much like an intervention or locality effect, in this case operative in the realm of binding.

## 2.6 The Impossibility of a Movement Analysis


We are led in this chapter to an analysis of certain FQs as adjoined adverbials. But does this conclusion eliminate the possibility of a transformational relationship between the FQ

and its associate? I examine the possibility of movement analyses here and conclude that such an analysis is untenable for the FQs under consideration in this chapter.

Some reasons to eschew a transformational relationship between the FQ and its associate in favor of a null pronominal have already been given. The existence of overt pronominals in some cases and the possibility of *L-tous*, for example, are quite suggestive of a null pronominal analysis. Even putting such phenomena aside, I argue that a movement analysis does not get off the ground.


One could imagine that an FQ could be stranded by movement even were it to occupy an adjoined position, as in (103).

(103) [DP The students] have [VP [DP all t] [VP arrived]].



Such an account does not allow for the FQ-associate to occupy its argument role, however. By hypothesis, this role can only be assigned from an argument/theta position, as in (104).

(104) [DP The students] have [VP arrived t].




A last possibility is that the FQ-associate can simultaneously strand the FQ and leave its argument position by across-the-board movement, as in (105).

(105) [DP The students]<sub>1</sub> have [VP [DP all t<sub>1</sub>] [VP arrived t<sub>1</sub>]].

Independent factors eliminate this whole line of possibilities, however. Extraction from

within adjuncts is generally quite degraded (106).

(106) ?\*Who did John buy a book [after seeing t]  


Across-the-board movement does nothing to ameliorate this effect, as we see in (107).

(107) ?\*Who<sub>1</sub> did [John talk to t<sub>1</sub>] and [Mary buy a book [after seeing t<sub>1</sub>]]?

Therefore, even were there not independent empirical difficulties with the movement analysis, we cannot salvage a movement-based analysis of the relationship between these FQs and their nominal associates.

## 2.7 Summary

In this chapter I have argued that at least some floating quantifiers, including English and French FQs, have the distribution of adverbial elements. That is, they do not appear in NP/DP argument positions, as would be predicted under a stranding analysis.

I then developed further the proposal from chapter 1 that adverbial FQs contain a null pronominal element (Doetjes 1997). This analysis was argued to explain not only one side of the A/A' puzzle that was discussed in chapter 1, but also a variety of other properties of adverbial FQs, including their agreement patterns and co-occurrence with overt pronominals. This analysis also explains observed locality and c-command restrictions on the nominal associate of these FQs. In the case of *L-tous* in French and German, this analysis also explains why the nominal associate must be a pronominal element that can serve as a

bound variable, and not a full DP.

Finally, I considered the possibility that the evidence marshalled here in support of an adverbial analysis could be reconciled with a stranding analysis, but concluded that such a hybrid analysis would be impossible given current theoretical assumptions and a wealth of empirical problems.



## Chapter 3

# A'-Stranded Quantifiers

### 3.1 Introduction

In this chapter, I argue that numeral quantifiers like Japanese *san-nin* '3-CL(assifier)' can become floating quantifiers through stranding. That is, I claim that this type of FQ instantiates something like the stranding analysis of floating quantification that was discussed in chapter 2 (Sportiche 1988; Miyagawa 1989; Shlonsky 1991; Merchant 1996; Bošković 2004; Miyagawa and Arikawa 2005). My treatment of quantifier stranding differs from these previous approaches, however. I argue that quantifier stranding can only arise through A'-movement, as in (1).<sup>1</sup>

- (1) [NP *gakusei-ga*] ... [NP *t san-nin*]  
          ↑  
          A'-movement

---

<sup>1</sup>I systematically neglect questions that surround the scrambling of numeral quantifiers themselves. See Yamashita (2003) and references cited therein for some discussion of these issues.

The bulk of this chapter is dedicated to the empirical demonstration of this fact in Japanese and Korean. Many lines of argumentation will be marshalled in support of this A' restriction, including data from anaphor binding, weak cross-over, quantifier scope, and case-marking. Further empirical arguments for this departure from previous stranding analyses can be found in chapter 4.

In the previous chapter we saw that adverbial FQs are linked to A-movement. The A' restriction that is discussed here addresses the other half of the “movement puzzle” from chapter 1. The series of puzzles that was developed there is repeated here in Table 3.1.

**Table 3.1**

Trace indicator?	No	Yes
Movement Correlation	A-movement	<b>A'-movement</b>
Extraction Restrictions?	No	Yes
Semantics	Exhaustive	Non-exhaustive

The movement puzzle, and the A'-movement half of the equation, connects the study of FQs directly to larger questions regarding differences and interaction among types of movement. Beyond the demonstration of the A' restriction, some attention will also be paid to the behavior of these FQs as good trace indicators.

## **3.2 Locality Constraints across Movement Types**

The study of Japanese floating numeral quantifiers (FNQs) provides clear empirical support for the analysis of stranded adnominal quantificational elements that was outlined in



chapter 1. There I argued that FQ stranding can arise only through A'-movement, as in (2).

- (2) DP ... [XP ... [ FQ t ] ... ]  
 ↑  
 A'-movement/\*A-movement

We saw in chapter 2 that adverbial FQs only allow A-movement of their associated nominal. This fact links adverbial FQs directly with A-movement. But while the analysis developed there explains the lack of A'-movement with adverbial FQs, it does not extend to the restriction in (2). If quantifier stranding is in principle possible, why should stranding not proceed through A-movement?

In pursuit of an explanatory theory of this restriction in quantifier stranding, I take the strong stand that extraction of an NP/DP from within another NP/DP is strictly impossible under A-movement. Thus cases like (3) are universally impossible.

- (3) \*<sub>[DP The mayor]</sub> arrived <sub>[DP a friend (of) t ]</sub>.  
 ↑  
 A-movement

One could object that, since the DP *a friend of...* does not appear in Spec-TP in this example, it does not receive case. Therefore, case assignment, rather than locality, is responsible for the unacceptability of this example. Moreover, some examples exist that appear to be counterexamples to the general ban on sub-phrasal extraction by A-movement. (4) shows an apparently passive verb and a surface subject that appears to be an argument of the post-verbal phrase *a fool of*.

- (4) John was made [a fool of].

We seem to find an active version of (4) in (5).

(5) The teacher made a fool of John.

We might suspect, then, that (4) is derived as in (6).

(6) [DP John] was [VP made [DP a fool of t ]].  
└──────────────────────────────────┘

Several considerations lead me to reject this possibility. First, as in (3), one would like to know how case assignment works in such a derivation. It is thought that passivization removes the possibility of accusative case marking (Wurmbrand 2003). Assuming that *John* occupies Spec-TP and is marked nominative, no case is available to *a fool of*. Still, (6) has intuitive appeal, and one would ideally have an argument for the rejection of the derivation in (6) that does not rest on case assignment alone.

One worry regarding (6) stems from the small set of phrases that can participate in this construction. Only *a fool of* and *an example of* are possible with *make*, while one can also *take advantage of* someone. Other phrases that one might imagine could fit into this general schema are impossible (7).

- (7) a. \*John was made a whipping-boy of.  
b. \*John was made a fall-guy of.  
c. \*John was made a chump of.

Furthermore, and perhaps more importantly, the phrases *a fool* and *an example* do not behave like DPs that contain the phrase *of John*. First, *John* does not seem fill a transparent argument role in the DP. Examples like (4) can be paraphrased as in (8).

- (8) a. John was made a fool of. ⇒ John was made to look/seem like a fool.  
 b. John was made an example of. ⇒ John was treated in a particular (unpleasant) way as an example to others.

If *John* were an argument of the noun, as in (9), one expects an entirely different sort of paraphrase. In this case, the argument relation between *John* and the noun is quite transparent.

- (9) Mary made [a painting of John]. ⇒ Mary made a painting that contained a likeness of John.

These semantic considerations suggest that, even if *John* does undergo movement in examples like (4), it does not move from an argument position of the noun *fool*. Instead, this movement might be more akin to that seen in pseudo-passives like (10). (Here we would expect that *the table* can receive case from the preposition *on*. Therefore, it should not have to move to Spec-TP to receive case.)

- (10) [The table] was sat on t.  
 ↑  
 └──────────┘

That *fool* is not a run-of-the-mill noun in these examples is supported by several other considerations. First, ordinary nouns (or noun projections) can generally undergo *one-*

replacement, as in (11).

(11) Bill made [a picture of Mary] and Sue made [one of Tom].

But this is degraded or impossible with *a fool of* and *an example of* (12).

(12) a. ??Bill made a fool of Mary and Sue made one of Tom.

b. ??Bill made an example of Mary and Sue made one of Tom.

This effect only worsens in more relevant passive examples, like (13).

(13) a. \*Bill was made a fool of and Sue was made one (of), too.

b. \*Bill was made an example of and Sue was made one (of), too.

The degraded nature of passivized *fool* (14a) might also support the contention that this is not a straight-forward nominal argument of the verb. This conclusion is weakened, however, as passivized *example* seems fairly acceptable (14b), as does passivized *advantage* in (15).

(14) a. ?\*A fool was made of John.

b. An example was made of John.

(15) a. They took advantage of John.

b. John was taken advantage of.

c. ?Advantage was taken of John.

Further extraction tests show that *fool...* does not play a straight-forward DP role. For example, a *how much* wh-question is impossible in (16a) (cf. (16b), where *John* is an argument of *picture*).

- (16) a. \*How much of a fool of John did you make?  
b. How many pictures of John did you take?

Despite some unclarity with respect to the proper analysis of these examples, I conclude that the passivized subject is not extracted from a larger DP. Instead, I propose that *fool* and *example* are part of complex predicates in (17) not unlike the resultative predicate *flat* in (18).

- (17) a. John was made a fool of.  
b. John was made an example of.

- (18) The metal was hammered flat.

Thus *John* will, in some sense, be an argument of *make*, or perhaps *make (into) a fool*, as in the paraphrase in (19).

- (19) They made John (seem like) a fool.

Importantly for the matter at hand, this analysis means that examples like *John was made a fool of* do not show A-movement of a DP from within another DP. On the other hand, while A-movement is unable to extract one DP from within another, sub-phrasal

extraction is quite commonplace in the case of A'-movement (20).

(20) [DP Which student] did you see [DP a picture of \_\_\_ ]?  

 A horizontal line with an arrow pointing left is drawn under the phrase 'a picture of \_\_\_'. A vertical line extends upwards from the left end of this horizontal line to the word 'student' in the phrase 'Which student'.

I propose that this distinction between the extraction possibilities for A- and A'-movement is tied to fundamental differences in locality conditions on these types of movement. These locality conditions are likely to be intimately connected with the mechanisms that underlie each type of movement.

While A'-movement seems to be able to ignore categorial features, it is generally sensitive to other features. A typical example of A'-movement is the wh-movement in (20). Here a [+wh] phrase or head is picked out for movement, regardless of its status as a DP within a DP. A-movement, on the other hand, simply fills a structural role. If a category requires a specifier, the closest available phrase is moved to this position, as in (21).

(21) DP is [t happy].  

 A horizontal line with an arrow pointing left is drawn under the trace 't'. A vertical line extends upwards from the left end of this horizontal line to the word 'happy' in the phrase 'happy]'.

The types of “search” that I have alluded to here are therefore very different. A'-movement is feature-dependent. A-movement is structure-dependent. The latter leads to much stricter locality conditions.<sup>2</sup>

One other aspect of the analysis from chapter 1 is important here. As I will argue in the next section, Japanese FNQs have the distribution of nominal, rather than adverbial elements. This matches the stranding analysis well. However, given the existence of adverbial

<sup>2</sup>I allude to locality conditions of the relativize minimality sort (Rizzi 1990). Domain-based locality (islands, phases, etc.) would presumably have a roughly equal impact on both types of movement.



ments float under which mechanism. I return to this question in chapters 4 and 5, where it will be argued that certain semantic patterns and their syntactic corollaries determine a given floating element's adverbial or adnominal nature. We will see there that some Japanese FQs are indeed adverbial, and that the adverbial/adnominal split in Japanese, and cross-linguistically, is not semantically or syntactically arbitrary.

### 3.3 FNQs Appear in NP Positions

I argued in chapter 2 that English FQs *all*, *both*, and *each* are adverbial in distribution. Part of the evidence for this conclusion came from the invariant distribution of these FQs in intransitive sentences. Different classes of verbs behave differently in, e.g., existential constructions (24). This suggests that surface subjects in passives and unaccusatives are underlyingly objects (complements of the verb), while unergative subjects are external arguments and do not originate in verbal-complement position.

- (24) a. There were arrested over five-hundred protesters. (Passive)  
 b. There arrived a letter for you today. (Unaccusative)  
 c. \*There danced many students on the floor. (Unergative)

In contrast to this pattern, FQs are impossible in post-verbal position in all cases (25).

- (25) a. \*The suspects have been arrested all. (Passive)  
 b. The suspects have all been arrested.  
 c. \*The students have arrived all. (Unaccusative)



- d. The students have all arrived.
- e. \*The finalists have danced all. (Unergative)
- f. The finalists have all danced.

Under the stranding analysis of English FQs (Sportiche 1988), this is quite surprising. I concluded from this and other tests that English FQs are in fact adverbial in distribution, and not stranded by movement.

When this same test is applied to Japanese FNQs, we see quite different results. The passive/unaccusative vs. unergative asymmetry from (24) is exactly reproduced in (26) (from Miyagawa 1989).

- (26) a. [Gakusei-ga] ano otoko-ni huta-ri korosareta.  
[student-NOM] that man-by 2-CL were.killed  
'Two students were killed by that man.' (Passive)
- b. [Gakusei-ga] ofisu-ni huta-ri kita.  
[student-NOM] office-to 2-CL came  
'Two students came to the office.' (Unaccusative)
- c. \*[Gakusei-ga] geragerato huta-ri waratta.  
[student-NOM] loudly 2-CL laughed  
Intended: 'Two students laughed loudly.' (Unergative)

Following Miyagawa (1989), I interpret these examples as showing that Japanese subject-related FNQs can appear very low in the structure just in case this subject is derived from a verbal complement, as in passives (26a) and unaccusatives (26b).<sup>3</sup> The unergative subject in (26c) cannot be related to a low FNQ because this subject does not originate below the manner adjunct *geragerato* 'loudly'.

<sup>3</sup>See also Kuroda (1983) for similar arguments related to object-FNQs and object scrambling.

The ungrammaticality of (26c) is not due to some general prohibition on unergative-subject-related FNQs. As Ko (2005) shows, adverbs that attach higher in the structure (such as the temporal adverb *kyoo* ‘yesterday’) can intervene between an unergative subject and its FNQ (27).

- (27) [Gakusei-ga] kyoo huta-ri waratta.  
 [student-NOM] yesterday 2-CL laughed  
 ‘Two students laughed yesterday.’ (Unergative)

Taken in a cross-linguistic context, the behavior of Japanese FNQs in intransitive contexts strongly supports the view that these elements appear in NP positions. If these elements were adverbial in distribution, we might expect invariant behavior, as in the English and French cases from chapter 2.<sup>4</sup>

Japanese FNQs also differ from uncontroversially adverbial elements like *asita* ‘tomorrow’ in their distribution outside of the clause in which they originate. Adverbs cannot appear outside of the clause in which they originate, as we see in (28b).

- (28) a. Taroo-ga Jiroo-ni [<sub>CP</sub> Hanako-ga **asita** hon-o kau-daroo to]  
 Taroo-NOM Jiroo-DAT [<sub>CP</sub> Hanako-NOM tomorrow book-ACC buy-will C]  
 itta.  
 said  
 ‘Taroo told Jiroo that Hanako would buy the book the following day.’
- b. \*Taroo-ga **asita** Jiroo-ni [<sub>CP</sub> Hanako-ga t hon-o kau-daroo  
 Taroo-NOM tomorrow Jiroo-DAT [<sub>CP</sub> Hanako-NOM t book-ACC buy-will  
 to] itta.  
 C] said

---

<sup>4</sup>The data and conclusions discussed here are not uncontroversial. At the end of the current chapter I will discuss some challenges and counterexamples that have arisen to this analysis.

Intended: ‘Taroo told Jiroo that Hanako would buy the book the following day.’

In contrast, FNQs can appear outside of their clause. For example, *san-satu* ‘3-CL’ in (29) is associated with the sentence-initial *hon-o* ‘book-ACC’. These elements form the object of the most deeply embedded clause.<sup>5</sup>

- (29) [CP Hon-o John-ga [CP san-satu Mary-ga [CP gakusei-ga yonda to] itta  
 [CP book-ACC John-NOM [CP 3-CL Mary-NOM [CP student-NOM read C] said  
 to] omotteiru].  
 C] thinks]  
 ‘John thinks that Mary said the students read three books.’

I propose that examples like this result from a derivation like that in (30). Here the phrase *hon-o san-satu* is scrambled (perhaps successive-cyclically, though this is not shown here) to the intermediate CP level (30a). From here, *hon-o* moves to the highest CP level, stranding the numeral quantifier (30b).

- (30) a. [CP John-ga [CP [[hon-o san-satu] Mary-ga [CP gakusei-ga t yonda to] itta to]  
 omotteiru].  
 b. [CP Hon-o John-ga [CP [ t san-satu] Mary-ga [CP gakusei-ga yonda to] itta to]  
 omotteiru].

<sup>5</sup>Note that this example is best read with a pause between *san-satu* and *Mary*. A pause between *John-ga* and *san-satu* is unacceptable to some speakers.

This derivation is very much like the one that produces West Ulster English examples like (31) (McCloskey 2000a).

(31) [CP What did he say [CP all that [TP he wanted t]]]?

From their distribution beyond their CP of origin, we can conclude that Japanese FNQs are not adverbials.

### 3.4 Anaphor Binding

In the next four sections, I will present arguments that, although both A- and A'-movement are in principle possible in many places in Japanese (Saito 1992; Tada 1993), the presence of an FNQ eliminates the possibility of A-movement. I begin these arguments with an XP that may in principle move by A- or A'-movement, as in (32a). I then show that, when an XP-related FNQ is included, the movement of XP has only A' properties (32b).

- (32) a. XP ... ZP ... t ... Verb  
└──────────┘  
A or A'
- b. XP ... ZP ... t FNQ ... Verb  
└──────────┘  
A'

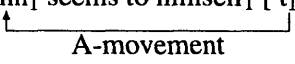
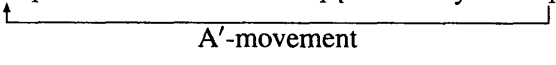
Some of these arguments can also be interpreted as showing that movement of XP in (32b) does not involve movement of the same sort of element as in (32a). That is, while (32a) involves movement of a full NP or DP, the movement in (32b) involves splitting of an NP/DP, with movement of only a sub-part. Though either one of these interpretations

would support the stranding analysis that I am advancing, I will try (when possible) to tease these two possibilities apart.

Turning to the first of these arguments, we start with the observation that the Japanese reciprocal *otagai* must be locally bound. Lack of binding is impossible in (33a), while binding by a subject (33b) or scrambled object (33c) is perfectly acceptable.

- (33) a. \*[Otagai<sub>1</sub>-no sensei]-ga [gakusei-o]<sub>1</sub> sikatta.  
 [each.other-GEN teacher]-NOM [student-ACC] scolded  
 Intended: 'Each other<sub>1</sub>'s teacher scolded [the students]<sub>1</sub>.'
- b. [Sensei-ga]<sub>1</sub> [otagai<sub>1</sub>-no gakusei]-o sikatta.  
 [teacher-NOM] [each.other-GEN student]-ACC scolded  
 'The teachers<sub>1</sub> scolded each other<sub>1</sub>'s students.'
- c. [Gakusei-o]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga sikatta.  
 [student-ACC] [each.other-GEN teacher]-NOM scolded  
 'Each other<sub>1</sub>'s teacher scolded [the students]<sub>1</sub>.'

Focusing in particular on (33c), we see that object scrambling can in principle create a new binding relation. We know independently that anaphors can only be bound from A-positions. Without defining what an A-position is, we can simply take this as a test for A-movement: If movement of XP allows XP to enter into a new binding relation, A-movement is involved. We see the difference in behavior of A- and A'-movement with respect to binding in the English examples in (34).

- (34) a. John<sub>1</sub> seems to himself<sub>1</sub> [ t<sub>1</sub> to be intelligent].  
  
 A-movement
- b. \*Who<sub>1</sub> does it seem to himself<sub>1</sub> [ that Mary likes t<sub>1</sub> ]?  
  
 A'-movement

Although these examples seem to contain quite similar structures (i.e., a DP that has moved from below an anaphor c-commands that anaphor and could in principle bind it) only the A-moved DP in (34a) is an eligible binder.

The lack of binding possibilities in (34b) is not due (only) to the intervening expletive *it* in the raising clause. In (35), which also shows a lack of binding by an A'-moved DP, no such intervener exists.

- (35) \* $[[\text{Which two students}]_1 \text{ did each other}_1\text{'s teachers scold } t_1\text{?}]$   
↑  
└──┘  
A'-movement

From these cross-linguistic patterns that connect the A/A' distinction with binding possibilities, I conclude that the object scrambling in Japanese example (33c), repeated in (36), is a case of A-movement.

- (36) [Gakusei-o]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga sikatta.  
 [student-ACC] [each.other-GEN teacher]-NOM scolded  
 'Each other<sub>1</sub>'s teacher scolded [the students]<sub>1</sub>.'

These same binding possibilities exist when the object contains a numeral quantifier, as in (37a). Surprisingly, however, no binding is possible in (37b) (Bošković and Takahashi 1998), where an object-related FNQ is placed low in the structure.

- (37) a. [Gakusei-o huta-ri]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga sikatta.  
 [student-ACC 2-CL] [each.other-GEN teacher]-NOM scolded  
 'Each other<sub>1</sub>'s teacher scolded [the two students]<sub>1</sub>.'
- b. \* $[[\text{Gakusei-o}]_1 \text{ [otagai}_1\text{-no sensei]-ga } \underline{\text{huta-ri}} \text{ sikatta.}]$   
 [student-ACC] [each.other-GEN teacher]-NOM two-CL scolded  
 Intended: 'Each other<sub>1</sub>'s teacher scolded [the two students]<sub>1</sub>.'

Compare (37b) to (38), where quantifier float is again possible absent the need for binding.

- (38) [Gakusei-o]<sub>1</sub> sensei-ga huta-ri sikatta.  
 [student-ACC] teacher-NOM two-CL scolded  
 ‘The teacher scolded [the two students]<sub>1</sub>.’

The same pattern arises for many speakers with the subject-oriented reflexive *zibun*. Here, as expected, *zibun* must be bound, and so cannot appear as in (39a). Movement of the subject to a position from which it binds *zibun* ameliorates this effect. Again, I interpret this as showing the A-movement capacity of the subject. We see in (39c), however, that stranding of the subject-FNQ eliminates the possibility of binding.<sup>6</sup>

- (39) a. \*[Zibun<sub>1</sub>/otagai<sub>1</sub>-no sensei]-ni [gakusei-ga huta-ri]<sub>1</sub> sikarareta.  
 [self-GEN teacher]-by [student-NOM 2-CL] were.scolded  
 Intended: ‘Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.’
- b. [Gakusei-ga huta-ri]<sub>1</sub> [zibun<sub>1</sub>/otagai<sub>1</sub>-no sensei]-ni sikarareta.  
 [student-NOM 2-CL] [self-GEN teacher]-by were.scolded  
 ‘Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.’
- c. \*[Gakusei-ga]<sub>1</sub> [zibun<sub>1</sub>/otagai<sub>1</sub>-no sensei]-ni huta-ri sikarareta.  
 [student-NOM] [self-GEN teacher]-by 2-CL were.scolded  
 Intended: ‘Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.’

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<sup>6</sup>Some speakers find binding of *zibun* in (39c) to be better than binding of *otagai* (37b). Though I do not know what underlies this difference, it is at least plausible that *zibun* binding relates to that element’s “subject-orientedness”. That is, the conditions on binding and interpretation of *zibun* are known to be different from those for *otagai*. (On subject-orientedness, see Giorgi (1984). On logophoricity and other aspects of *zibun*, see Sells (1987) and Kuno (1987).) If those who accept *zibun*-binding in these examples allow binding by the A’-moved fronted object (as opposed to some other source for this interpretation), this does show that *zibun*-binding need not be from an A-position, or from Spec-TP.

The correlation between FNQ stranding and the lack of anaphor binding can be interpreted in two ways, both of which support the analysis argued for here. First, this pattern could mean that, although A-movement of subjects and objects is in principle possible in Japanese, stranding of FNQs requires A'-movement. Since phrases cannot create new binding relations through A'-movement, binding is impossible in these cases.<sup>7</sup>

Another possible interpretation of these facts is that FNQ-stranding requires a sort of NP/DP-split that eliminates the possibility of binding. That is, in dividing a phrase to allow movement of one part (the associate) and stranding of the other (the numeral quantifier), the part that is moved to a potential binding position is not the sort of thing that can bind. Perhaps, being a sub-NP constituent, it is not the sort of thing that “corefers.”

The first of these explanations seems correct in this case. If the case particle *ga* can in general appear attached only to NPs, we are forced to conclude that the potential binders in cases of NP-split are also NPs. Furthermore, the ban on binding from an A'-position is needed independently to explain the pattern in (40).

- (40) a.  $John_1$  seems to himself<sub>1</sub> [  $t_1$  to be intelligent].  
↑  
A-movement
- b.  $Who_1$  does it seem to himself<sub>1</sub> [ that Mary likes  $t_1$  ]?  
↑  
A'-movement

In the end, however, both interpretations support the general point. This pattern reveals that Japanese FNQs are stranded through A'-movement.

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<sup>7</sup>This effect could also be due to obligatory reconstruction under A' movement (Saito 1989).



### 3.5 Weak Cross-Over

In this section I show, using weak cross-over effects, that FNQ stranding arises only under A'-movement. The shape of this argument is much like the argument from anaphor binding.

First, recall that weak cross-over (WCO) effects arise only under A'-movement, as in (41). Here the interpretation cannot be a question of the sort: For which X did X's mother see X?

(41) \*Who<sub>1</sub> did his<sub>1</sub> mother see t<sub>1</sub>?

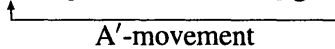
In contrast, A-movement in cases with superficially identical binding structures are perfect, as seen in (42).

(42) John<sub>1</sub> seems to his<sub>1</sub> mother [t<sub>1</sub> to be smart].

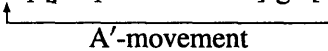
Given this background, consider the fact that Japanese shows WCO effects (Saito and Hoji 1983) in in-situ questions such as (43).

(43) \*[*pro*<sub>1</sub> osieta sensei]-ga dare<sub>1</sub>-o yatou no?  
[*pro* taught teacher]-NOM who-ACC hire Q  
Intended: 'Who<sub>1</sub> will the teacher who taught (him<sub>1</sub>) hire next year?'

The relationship between this example and cases of WCO in English such as (41) is not transparent. If, however, Japanese wh-in-situ questions in fact require covert A'-movement of the wh-phrase, as in (44), this relationship becomes clearer.

(44) dare-o<sub>1</sub> [*pro*<sub>1</sub> osieta sensei]-ga t<sub>1</sub> yatou no?  


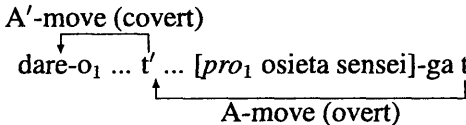
It has also been suggested that these wh-in-situ questions involve movement of an element other than the wh-phrase (Watanabe 1992; Hagstrom 1998). This movement might in fact be overt, as in (45).

(45) WH<sub>1</sub> [*pro*<sub>1</sub> osieta sensei]-ga [t<sub>1</sub> dare-o] yatou no?  


Regardless of the correct analysis of wh-in-situ in Japanese, we can now make sense of the fact that scrambling of the wh-phrase can eliminate WCO, as in (46) (Saito and Hoji 1983; Déprez 1989; Mahajan 1990).

(46) Dare<sub>1</sub>-o rainen [*pro*<sub>1</sub> osieta sensei]-ga t<sub>1</sub> yatou no?  
 who-ACC next-year [*pro* taught teacher]-NOM *t* hire Q  
 'Who<sub>1</sub> will the teacher who taught (him<sub>1</sub>) hire next year?'

Here once again the possibility of A-scrambling becomes important. If the wh-phrase must move covertly by A'-movement, or some possibly null element must move by A'-movement from the position of the wh-phrase, overt A-scrambling of the wh-phrase eliminates the need for this A'-movement to cross over the bound variable in the subject.

(47) A'-move (covert)  
  
 dare-o<sub>1</sub> ... t' ... [*pro*<sub>1</sub> osieta sensei]-ga t yatou no?

Turning to FNQs again, we can create the same paradigm of WCO (48a) and WCO-obviation (48b) in sentences with numeral quantifiers that are related to the wh-phrase.

These wh-phrases mean something like ‘which three students’ or ‘which group of three students’.

- (48) a. \*Rainen [*pro*<sub>1</sub> osieta sensei]-ga [donna gakusei-o san-nin]<sub>1</sub> yatou no?  
 next.year [*pro* taught teacher] [which student-ACC 3-CL] hire Q  
 Intended: ‘Which three students<sub>1</sub> will the teacher who taught them<sub>1</sub> hire next year?’
- b. [Donna gakusei-o san-nin]<sub>1</sub> rainen [*pro*<sub>1</sub> osieta sensei]-ga *t*<sub>1</sub>  
 [which student-ACC 3-CL] next.year [*pro* taught teacher]-NOM *t*  
 yatou no?  
 will-hire Q  
 ‘Which three students<sub>1</sub> will the teacher who taught them<sub>1</sub> hire next year?’

Here WCO arises with wh-in-situ (49a) but is obviated by object scrambling (48b).

Things go awry, however, when the numeral quantifier appears floated, as in (49). Here the WCO effect from (48a) returns, despite the fact that (part of) the object has moved across the subject.<sup>8</sup>

- (49) \*?[Donna gakusei-o]<sub>1</sub> rainen [*pro*<sub>1</sub> osieta sensei]-ga *t*<sub>1</sub> san-nin yatou no?  
 [which student-ACC] next-year [*pro* taught teacher]-NOM *t* 3-CL hire Q  
 Intended: ‘Which three students<sub>1</sub> will the teacher who taught them<sub>1</sub> hire next year?’

<sup>8</sup>Some speakers report that examples like (49) are degraded when compared to the perfectly acceptable (48b), but slightly better than (48a). (Other speakers find both quite awful.) This is puzzling at first if, as I claim, both are WCO violations. To the extent that these differences in severity are real, an explanation is required. I suggest that the slight improvement for some speakers in the WCO effect in FNQ-stranding sentences is due to a processing effect. Examples like (49) appear during processing to be acceptable up until the point at which the FNQ must be incorporated into the structure. Thus for (49) one can maintain the hypothesis that the initial wh-phrase was A-moved to this position until quite late in the sentence. When the FNQ is reached, the person who is processing the sentence realizes the problem, but not before a perfectly acceptable representation without the FNQ has been given long consideration. In other words, a speaker can be subject to something of a garden path lack-of-WCO effect. I wish to thank Shigeru Miyagawa for discussion of these factors.

As in the cases of anaphor binding discussed above, it appears that object fronting could in principle be a case of A-movement, since object fronting obviates WCO. FNQ stranding eliminates the possibility of WCO obviation through object fronting. It appears that FNQ stranding forces A'-movement and this A'-movement then results in a WCO violation.

Looking more closely at this case, two interpretations again arise. Under one interpretation, A'-movement is again to blame. Under the other, NP-splitting is at fault. In this latter interpretation, what has moved in (49) may well have been fronted by A-movement. However, since this phrase is not the complete NP, but only a part of a complete NP, this is not enough to obviate WCO. Perhaps the rest of the NP (the FNQ, in this case) is still forced to move (covertly) by A'-movement, thus accounting for the WCO effect.

Again, the first interpretation seems more promising. Case particles in Japanese can appear only on NP and higher phrases, not on sub-NP constituents. The accusative case particle *o* can appear quite happily with the fronted element in the present examples of quantifier float, suggesting that this is not some sort of pseudo-NP.

If A'-movement of the FNQ's NP associate were not the source of this phenomenon, some other A'-movement would have to be present. Perhaps, as mentioned above, after reconstruction of the fronted NP, the entire NP undergoes quantifier raising. This approach fails on empirical grounds. It is well-known that FNQs take scope in their surface position, and so there is very little to support the idea that the FNQ (with or without reconstruction of the fronted NP) must move covertly.

### 3.5.1 Subject-Related FNQs

So far we have seen examples of object-related FNQs and WCO that is caused by binding of a pronoun within the subject. I now move on to other types of movement and FNQ stranding. I focus here on unaccusative and passive sentences. These examples not only support the main thrust of the argument above, but lead to interesting issues in the analysis of movement within passives and unaccusatives which will be discussed below and in chapter 6.

Much as we saw with transitive sentences, WCO arises in Japanese when an in-situ subject is interpreted as binding a pronoun in a c-commanding NI-phrase, as in (50a).

- (50) \* $[pro_1$  osieta sensei]-ni [donna gakusei-ga san-nin] $_1$  sikarareru no?  
 [*pro* taught teacher]-DAT [which student-NOM 3-CL] scold.PASS Q  
 Intended: ‘Which three students $_1$  were scolded by the teacher who taught them $_1$ ?’

Again, this could be due to either covert movement of the subject across the *ni*-phrase (51a) or overt movement of a null element (51b).

- (51) a. [donna gakusei-ga san-nin] $_1$  [ $pro_1$  osieta sensei]-ni t sikarareru no?  
↑  
└──────────────────────────┘  
A'-movement
- b. WH $_1$  [ $pro_1$  osieta sensei]-ni [ t [donna gakusei-ga san-nin] ] $_1$  sikarareru no?  
↑  
└──────────────────────────┘  
A'-movement

As before, the WCO effect is obviated by (A-)movement of the subject (52).

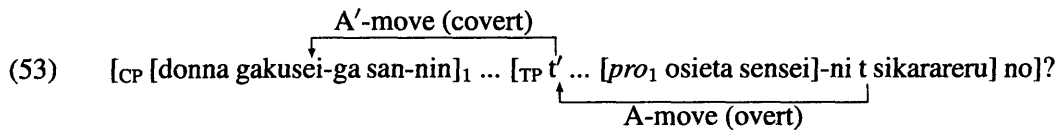
- (52) [Donna gakusei-ga san-nin] $_1$  asita [ $pro_1$  osieta sensei]-ni sikarareru  
 [which student-NOM 3-CL] tomorrow [*pro* taught teacher]-DAT scold.PASS

no?

Q

'Which 3 students<sub>1</sub> will be scolded by the teacher who taught them<sub>1</sub>?

Again, this can be explained if A-movement allows subsequent A'-movement to avoid crossing the bound pronoun, as in (53).



Much as in the object case above, however, the WCO effect returns if the passive subject strands its FNQ, as in (54).

(54) \*?[Donna gakusei-ga]<sub>1</sub> asita [*pro*<sub>1</sub> osieta sensei]-ni san-nin sikarareru  
[which student-NOM] tomorrow [*pro* taught teacher]-DAT 3-CL scold.PASS  
no?

Q

Intended: 'Which 3 students<sub>1</sub> will be scolded by the teacher who taught them<sub>1</sub>?

The same sort of pattern also arises with FNQs that are related to the subject of an unaccusative. These cases again include a *ni*-marked adjunct that contains a bound pronoun. Here WCO arises in [*ni* S V] order (55a) and is obviated in [S *ni* V] order (55b), as expected. The WCO effect returns, however, if the subject-oriented FNQ is stranded in [S *ni* FNQ V] order (55c).

(55) a. \*?[*pro*<sub>1</sub> katta hito]-ni [donna booru<sub>1</sub>-ga mit-tu]<sub>1</sub> atatta no?  
[*pro* bought person]-DAT [which ball 3-CL] hit Q  
Intended: 'Which three balls<sub>1</sub> hit the person who bought them<sub>1</sub>?'

- b. [Donna booru-ga mit-tu]<sub>1</sub> [*pro*<sub>1</sub> katta hito]-ni atatta no?  
 [which ball-NOM 3-CL] [*pro* bought person]-DAT hit Q  
 ‘Which three balls<sub>1</sub> hit the person who bought them<sub>1</sub>?’
- c. \*?[Donna booru-ga]<sub>1</sub> [*pro*<sub>1</sub> katta hito]-ni mit-tu atatta no?  
 [which ball-NOM] [*pro* bought person]-DAT 3-CL hit Q  
 Intended: ‘Which three balls<sub>1</sub> hit the person who bought them<sub>1</sub>?’

We have seen in this section that WCO effects in passives and unaccusatives support the conclusion that FNQ stranding forces A'-movement of the associated NP, regardless of the grammatical function of the phrase in question.

This effect is quite surprising, since it suggests that passive subjects may be fronted to what appears to be “subject position” by A'-movement rather than the more usual A-movement. In fact, when an FNQ is stranded, this option seems to be required.

Previous movement analyses of passives and unaccusatives in Japanese, such as Miyagawa 1989, assumed that this displacement was due to A-movement. It should be noted, though, that these arguments usually focused not on the type of movement involved, but on the existence of movement in the first place. That is, this work argued that passive and unaccusative subjects occupy a position in the clause lower than the canonical surface subject position. Therefore, the conclusion of this chapter that movement in some cases is A'-, rather than A-movement, is not in conflict with previous work, but rather adds to and refines these results. I will discuss how such direct A'-movement is possible in Japanese below and in chapter 6.

### 3.6 *Ga* and *No* Marking in Kumamoto Japanese

Miyagawa (1997, 2001) argues that OSV order can arise in two ways in Japanese. First, the object can be fronted by A-scrambling to the specifier of TP, as in (56a). The assumption here is that in Japanese, something must occupy Spec-TP, though this element need not be the external argument.<sup>9</sup> Of course the subject *can* move to Spec-TP, as in (56b). If the subject occupies Spec-TP, the object can move across the moved subject to the left periphery of the clause by A'-scrambling to create OSV order, as in (56c).

- (56) a.  $[_{TP} \text{Object } [_{VP} \text{Subject } t \text{ V } ] \text{ T } ]$  (OSV)  
└──────────────────┘  
A-movement
- b.  $[_{TP} \text{Subject } [_{VP} t \text{ Object } \text{ V } ] \text{ T } ]$  (SOV)  
└──────────┘  
A-movement
- c.  $[_{CP} \text{Object } [_{TP} \text{Subject } [_{VP} t \text{ V } ] \text{ T } ] \text{ C } ]$  (OSV)  
└──────────┘  
└──────────┘  
A'-movement

The ambiguity in OSV sentences shown in (56a) and (56b) represents one theoretical instantiation of the A/A' ambiguity long noted for Japanese “middle”-scrambling (as opposed to short and long scrambling). The argument in this section and the next exploits the existence of this ambiguity to argue once again that FNQs can be stranded only under A'-movement. I will demonstrate the existence of some phenomena that reveal the ambiguity, and then show that the addition of an FNQ disambiguates the structure in favor of an A' derivation for the NP that is associated to the FNQ.

<sup>9</sup>See Alexiadou and Anagnostopoulou (1998) for similar ideas about Romance and Greek, and Bailyn (2004) for application of this idea to Russian.



In the Kumamoto dialect of Japanese (spoken on the island of Kyushu), subjects can be marked with either *ga* or *no*. The choice of case-marker is not free, however. Kato (2004) argues that *vP*-internal subjects are marked with *no* (57a), while subjects that have moved outside of the *vP* are marked with *ga* (57b).

- (57) a. [TP ... [<sub>vP</sub> Subject-**no** ... V ] T ]  
 b. [TP Subject-**ga** [<sub>vP</sub> t ... V ] T ]

As with standard Japanese, Kumamoto Japanese requires that some phrase occupy Spec-TP. Therefore, since a sentence-initial subject cannot have remained *vP*-internal, the subject in (58) must be *ga*-marked.<sup>10</sup>

- (58) Taroo-*ga*/\**no* tyuugokugo-*ba* hanasasitabai.  
 Taroo-NOM/\*GEN Chinese-ACC spoke  
 ‘Taroo spoke Chinese.’

If, however, the accusative object appears in sentence-initial position, the subject can be marked with either *ga* or *no* (59).

- (59) Tyuugokugo-*ba* Taroo-*ga*/*no* hanasasitabai.  
 Chinese-acc Taroo-NOM/GEN spoke  
 ‘Taroo spoke Chinese.’

Given Kato’s (2004) theory of *ga*- and *no*-marking in Kumamoto Japanese, the difference between (58) and (59) can be explained based on Miyagawa’s (2001) theory of

<sup>10</sup>I will continue to gloss *no* as ‘GEN(itive)’, though this clearly obfuscates the situation a bit. Note that Kumamoto uses the particle *ba* as an accusative marker in the same contexts where standard Japanese uses *o*.

EPP-triggered A-scrambling in Japanese. (58) can only have been derived as in (60), with movement of the subject out of the *vP*.

(60) [TP Taro<sub>o</sub>-ga [<sub>vP</sub> t tyuugokugo-ba hanasasitabai ]]

(59), on the other hand, could be derived as in (61a), with a *vP*-internal subject and A-scrambling of the object to Spec-TP, or as in (61b), with A-scrambling of the subject to Spec-TP and long scrambling of the object to sentence-initial position.

(61) a. [TP Tyuugokugo-ba [<sub>vP</sub> Taro<sub>o</sub>-no t hanasasitabai ]]

A-movement

b. [<sub>CP</sub> Tyuugokugo-ba [TP Taro<sub>o</sub>-ga [<sub>vP</sub> t t hanasasitabai ]]]

A'-movement

Assuming that this analysis is correct, it is striking that Kumamoto speakers reject *no*-marking (61a) in cases with a stranded object FNQ, as in (62).<sup>11</sup>

(62) Manga-ba Taro<sub>o</sub>-ga/\*no san-satu koota.  
 comic.book-ACC T-NOM/\*GEN 3-CL bought  
 ‘Taro<sub>o</sub> bought three comic books.’

I interpret this fact as confirming the contention that Japanese FNQs (even in the Kumamoto dialect) can be stranded only by A'-movement. If this is true, then an object that strands an FNQ cannot move to Spec-TP. (Movement to Spec-TP can only proceed through A-movement.) Instead, the object must move to a left-peripheral position through

<sup>11</sup>Many thanks to Sachiko Kato (p.c.) for gathering this data for me from native Kumamoto speakers.

A'-movement. Given that something must appear in Spec-TP, this role is left to the subject. Since the subject is forced to occupy Spec-TP, it is forced to be *ga*-marked, as in (61b).

### 3.7 The Scope of *Zen'in* and Negation

This same system of ambiguity in OSV sentences predicts ambiguity in the scope of the subject with respect to negation (Miyagawa 2001). In (63a) the in-situ subject is predicted to take scope below sentential negation. If the subject moves to Spec-TP, as in (63b), the subject should take scope above negation. This is true even if Japanese contains overt rightward verb raising, as Ishihara (2003) argues. Negation will take scope below or at T.

- (63) a. [TP Object [VP Subject t V-NEG ] T ] (NEG > subject)  
└──────────────────┘  
A-movement
- b. [CP Object [TP Subject [VP t t V-NEG ] T ] C ] (subject > NEG)  
└──────────────────┘  
└──────────┘  
A'-movement

We see in (64) (cf. Miyagawa 2001) that the scope of a universal subject *zen'in* 'all' is ambiguous with respect to negation in OSV-NEG order. Though populations of speakers exist for whom *zen'in* 'all' has invariant scope no matter its position, many Japanese speakers with whom I have consulted show the pattern of judgments reported here.<sup>12</sup>

- (64) [Hon-o san-satu] zen'in-ga kawanakatta yo.  
 book-ACC 3-CL all-NOM buy.NEG.PAST EXCL  
 'All didn't buy three books.' (∀ > NEG, NEG > ∀)

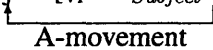

<sup>12</sup>For those speakers who show invariant scope of *zen'in*, I have found that other tests in this chapter, such as the anaphor-binding and WCO tests, still hold true.

One of these readings, which I note as  $\forall > \text{NEG}$ , could be paraphrased as ‘No one bought three books.’ The other, noted as  $\text{NEG} > \forall$ , shows *partial negation*, and could be paraphrased as ‘Not everyone bought three books... (some bought more, some bought less).’

Yamashita (2001) notes, however, that in OSV sentences FNQ stranding eliminates one of these scopal possibilities. In (65), the subject *zen'in* must take scope above negation. The partial negation reading is impossible and the sentence must be interpreted as ‘no one bought three books’.

- (65) [Hon-o] zen'in-ga san-satu kawanakatta yo.  
 [book-ACC] all-NOM 3-CL buy.NEG.PAST EXCL  
 ‘All didn’t buy three books.’ ( $\forall > \text{NEG}$ , \* $\text{NEG} > \forall$ )

Given our hypothesis regarding the origin of scope ambiguity in OSV sentences, this means that, while (66b) is a possible derivation in this case, (66a), with an in-situ subject, is impossible.

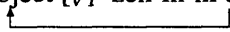
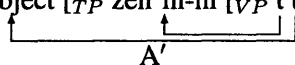
- (66) a.  $*[\text{TP Object } [\text{VP All}_{\text{Subject}} \text{ t FNQ V-NEG } ] \text{ T } ] (\text{NEG} > \forall)$   
  
 b.  $[\text{CP Object } [\text{TP All}_{\text{Subject}} [\text{VP t t V-NEG } ] \text{ T } ] \text{ C } ] (\forall > \text{NEG})$   


This phenomenon has much in common with the case-marking restriction we just saw in Kumamoto Japanese. In this case, we see that, when an object-FNQ is stranded in an OSV sentence, the subject must occupy Spec-TP. Since FNQ stranding can only apply through A'-movement of the object, we know that the object cannot appear in Spec-TP. Since something must occupy this position, the subject does, and so it takes wide scope.

One would, of course, like to connect this scope data with the case-marking data from the Kumamoto dialect. I have not yet been able to pursue this line of inquiry.

### 3.7.1 Subject-Related FNQs

From object-related FNQs in transitive contexts I turn once again to passive and unaccusative sentences. Here phrases will hold different roles than they did above, but the argument has the same form and results. We assume that something must fill the Spec-TP role, but that at least the two derivations in (67) satisfy this requirement.

- (67) a.  $[_{TP} \text{ Subject } [_{VP} \text{ zen'in-ni } t \text{ V-NEG } ] \text{ T } ] (\text{NEG} > \text{ni-phrase})$   
  
 b.  $[_{CP} \text{ Subject } [_{TP} \text{ zen'in-ni } [_{VP} t \text{ V-NEG } ] \text{ T } ] \text{ C } ] (\text{ni-phrase} > \text{NEG})$   


The *ni*-phrase will fill the role played by the subject above, and the passive subject will play the role of the object. Given this change, we might expect that a *ni*-phrase can remain below the TP level, as in (67a) and leave the subject to move to Spec-TP. Another possibility, analogous to what we saw above with OSV sentences, is that the *ni*-phrase moves to Spec-TP (“subject position”), as in (67b), while the subject *A'*-moves to the left periphery. Since there is no requirement in Japanese that the external argument occupy Spec-TP, this is a legitimate derivation. Again, this derivational ambiguity predicts scopal ambiguity.

Again, this ambiguity does arise, as in (68). Here the sentence can be understood with a high-scope universal ( $\forall > \text{NEG}$ ), as in ‘Three balls didn’t hit anyone.’ Or a partial negation reading ( $\text{NEG} > \forall$ ) is possible, as in ‘Not everyone was hit by three balls.’

- (68) [Booru-ga mit-tu] zen'in-ni ataranakatta yo.  
 ball-NOM 3-CL all-DAT hit.NEG.PAST EXCL  
 'Three balls didn't hit all.' ( $\forall > \text{NEG}$ ,  $\text{NEG} > \forall$ )

It is quite striking, then, that floating of the subject-oriented numeral quantifier, as in (69), eliminates this latter, partial negation reading. That is, FNQ stranding eliminates the low scope universal reading (69).

- (69) [Booru-ga] zen'in-ni mit-tu ataranakatta yo.  
 ball-NOM all-DAT 3-CL hit.NEG.PAST EXCL  
 'Three balls didn't hit all.' ( $\forall > \text{NEG}$ , \*NEG >  $\forall$ )

Again, this same effect arises with the passive sentences in (70). Both a high-scope universal ('The three theories were approved by no one.') and the low scope reading ('Not everyone approved the three theories') are possible in (70a), but stranding of the FNQ eliminates this latter reading in (70b).

- (70) a. [Teiri-ga mit-tu] zen'in-ni syoomeisarenakatta yo.  
 theory-NOM 3-CL all-DAT approve.PASS.NEG.PAST EXCL  
 'Three theories were not approved by all.' ( $\forall > \text{NEG}$ ,  $\text{NEG} > \forall$ )
- b. [Teiri-ga] zen'in-ni mit-tu syoomeisarenakatta yo.  
 theory-NOM all-DAT 3-CL approve.PASS.NEG.PAST EXCL  
 'Three theories were not approved by all.' ( $\forall > \text{NEG}$ , \*NEG >  $\forall$ )

Both the unaccusative and the passive examples show that, when the subject strands an FNQ, it cannot A-move to Spec-TP position. FNQ-stranding arises only under A'-movement, and so the subject must move to the left periphery. Since in Japanese some phrase must occupy Spec-TP, the *ni*-phrases in these cases must move to this position, and

so the *ni*-phrase must take high scope.

### 3.8 Direct A'-Movement in Japanese

Taken in its strongest form, the hypothesis that quantifier standing can only arise through A'-movement predicts certain cases of A'-movement where other assumptions would have led us to expect A-movement. As we noted above when investigating the behavior of passive and unaccusative sentences with FNQs, Japanese provides good examples of this phenomenon. Following well-known arguments that Japanese passive and unaccusative subjects originate as low objects (Miyagawa 1989), one might expect these phrases to move as in (71) on analogy with passivization in other languages.

(71)  $[_{TP} \text{ Subject } \dots [_{VP} [t \#] V ]]$   
└──────────┘  
A-movement

The present arguments suggest, however, that, at least when stranding an FNQ, these subject move by A'-movement (72). Assuming that movement to Spec-TP is always A-movement, this operation must involve movement beyond TP.

(72)  $[_{CP} \text{ Subject } \dots [_{TP} \dots [_{VP} [t \#] V ]]]$   
└──────────┘  
A'-movement

Under the assumption that something must occupy the Spec-TP position (Miyagawa 2001; Bailyn 2004), however, we are left with a puzzle. If the subject cannot move to Spec-TP in stranding an FNQ, and Japanese requires Spec-TP to be filled, what occupies this position? Arguments from the scope of *zen'in* 'all' with respect to negation showed

that, at least in certain cases, a non-subject element can fill the Spec-TP position, as in (73).

(73) [CP Subject ... [TP *non-subject* ... [vP [t #] V ]]]  
↑  
A'-movement

Since Japanese allows non-subjects in Spec-TP, this possibility removes the technical question of how a subject may skip the Spec-TP position when stranding a quantifier. What does a derivation look like, however, in which no other overt element is available to fill Spec-TP? Miyagawa and Babyonyshev (2004) argue that, at least in certain cases, Japanese allows Spec-TP to remain empty. This predicts that subjects of intransitives will be able to stay in their *vP*-internal position, and not move above negation. For example, (74) shows that *zen'in* 'all' within the subject of the verb *aru* 'be' can have low scope. The same is true for the nominative resultative subject *zen'in* in (74b). *Zen'in* as the bare subject of an unaccusative can also have low scope with respect to negation, as in (75).

- (74) a. [Zen'in-no hon]-ga arimasen.  
 [all-GEN book]-NOM be-NEG  
 'There aren't everyone's books (here).' (NEG > ∀, ∀ > NEG)
- b. Zen'in-ga yonde arimasen.  
 all-NOM invite is-NEG  
 'All have not been invited' (NEG > ∀, ∀ > NEG)

- (75) Zen'in-ga sini-masen-desita.  
 all-NOM die-NEG-PAST  
 'All didn't die.' (NEG > ∀, ∀ > NEG)

This suggests either that T does not always require a specifier in Japanese (i.e., that T does not always have the EPP property), or that some null element can fill this position



in (75) and (74). I will return to these questions in chapter 6 when I discuss direct A'-movement in other languages.

### 3.9 Korean Floating Numeral Quantifiers

In this section I argue, using the anaphor-binding and weak cross-over arguments from above, that, much like their Japanese counterparts, Korean floating numeral quantifiers like that shown in (76) float only under A'-movement of their associated NP.

- (76) Haksayngtul-ul John-i twu-myeng kkucwunhayssta  
 student-ACC John-NOM 2-CL scolded  
 'Students, John scolded two (students)'

Just as with anaphor binding in Japanese (section 4.4), short scrambling can in principle create new binding relations in Korean. The reciprocal *sero* is not bound in (77a), but scrambling of the object *haksayngtul-ul* 'students-ACC' provides a binder (77b).

- (77) a. \*Sero-uy sensayngnim-i haksayngtul-ul kkucwunghayssta.  
 each.other-GEN teacher-NOM students-ACC scolded  
 'Each other's teachers scolded students.'
- b. Haksayngtul-ul sero-uy sensayngnim-i kkucwunghayssta  
 students-ACC each.other-GEN teacher-NOM scolded  
 'Students, each other's teachers scolded.'

If an object-related FNQ is added, however, binding by the scrambled object is not possible (78).

- (78) \*Haksayngtul-ul sero-uy                    sensayngnim-i twu-myeng kkucwunghayssta  
 students-ACC each.other-GEN teacher-NOM 2-CL                    scolded  
 ‘Students, each other’s teachers scolded two (students).’

As in the Japanese case, I interpret these facts as supporting the view that a numeral quantifier can only float through A'-movement of the associated nominal.

The weak cross-over pattern noted above for Japanese also holds for Korean FNQs. Scrambling can in principle eliminate WCO (79a,b).

- (79) a. \*Kutul-ul kaluch-in sensayngnim-i etten haksayng-(tul)-ul sey-myeng  
 they-ACC teach-RC teacher-NOM which student-(PL)-ACC 3-CL  
 koyonghal-kka?  
 hire-Q
- b. ?Etten haksayng-(tuk)-ul sey-myeng kutul-ul kaluch-in sensayngnim-i  
 which student-(PL)-ACC 3-CL                    they-ACC teach-RC teacher-NOM  
 koyonghal-kka?  
 hire-Q

Again, I interpret this as a demonstration that an object can in principle be fronted through A-movement. The addition of an FNQ leads to the return of the WCO effect in (80).

- (80) \*Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i sey-myeng  
 which student-(PL)-ACC they-ACC teach-RC teacher-NOM 3-CL  
 koyonghal-kka?  
 hire-Q  
 ‘Which three students<sub>1</sub> would the teachers who taught them<sub>1</sub> hire?’

This pattern supports the view that, as in Japanese, Korean FNQs can only be stranded through A'-movement.

### 3.10 The Adverbial Challenge

The analysis of Japanese and Korean floating numeral quantifiers as stranded adnominal elements is not uncontroversial. Many researchers have suggested that these elements are instead adverbials. Arguments for this position come from at least two sets of facts.

First, it has been noted that there are exceptions to the pattern of FNQ float that Miyagawa (1989) and others discuss. Asymmetries in the distribution of subject- and object-oriented FNQs are interpreted in Miyagawa's (1989) system, and the present proposal, as evidence for a stranding account. Others have noted, however, that certain exceptions to these asymmetries exist (see Alam 1997, Takami 1998, and many other sources. Nakanishi (2006) provides a good review of this literature).

One asymmetry between subject- and object-oriented FNQs is shown in (81) for Japanese and (82) for Korean. Here an object cannot separate a subject and its FNQ (Saito 1985). (Compare this to earlier examples with O-S-#<sub>obj</sub>-V order, which are completely acceptable.)<sup>13</sup>

(81) \*Gakusei-ga sake-o san-nin nonda.  
student-NOM sake-ACC 3-CL drank  
Intended: 'Three students drank sake.'

(82) \*Haksayng-i photocwu-lul sey-myeng masiessta.  
student-NOM wine-ACC 3-CL drank  
Intended: 'Three students drank wine.'

The examples in (83) are cited in Miyagawa (2005) as cases that do not show this

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<sup>13</sup>I will discuss in chapter 5 Ko's (2005) analysis of these ordering restrictions and how they interact with the present proposals.

ordering restriction.

- (83) a. ?Gakusei-ga sake-o imamadeni san-nin nonda.  
student-NOM sake-ACC so.far 3-CL drank  
'Three students drank sake so far.' (Gunji and Hasida 1998:57)
- b. Gakusei-ga [watasi-no hon]-o huta-ri-sika kawanakatta.  
student-NOM [my-gen book]-ACC 2-CL-only buy-NEG-PAST  
'Only two students bought my book.' (Takami 1998:92)

Examples of FNQs with unergatives have also been brought forward as counterexamples to the unergative vs. passive/unaccusative asymmetry that was discussed above. (84) is cited in Nakanishi (2006) as an example of this exceptional behavior.<sup>14</sup>

- (84) Kodomo-ga butai-de zyuu-nin odotta.  
children-NOM stage-at 10-CL danced  
'Ten children danced at the stage.' (Takami 2001:129)

As Nakanishi (2006) notes, however, the existence of this challenge certainly does not directly contradict Miyagawa's (1989) original argument. In fact, the contrasts that Miyagawa (1989) notes, including the differences between unaccusatives/passives and unergatives in (85), continue to hold.

- (85) a. [Gakusei-ga] ano otoko-ni huta-ri korosareta.  
[student-NOM] that man-by 2-CL were.killed  
'Two students were killed by that man.' (Passive)
- b. [Gakusei-ga] ofisu-ni huta-ri kita.  
[student-NOM] office-to 2-CL came

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<sup>14</sup>In order to establish this example as a true counterexample, one would have to be sure that the *de*-phrase here is sufficiently low in the structure. High adjuncts such as *kinoo* 'yesterday' can freely intervene between unergative subjects and their FNQs (Ko 2005).

‘Two students came to the office.’ (Unaccusative)

- c. \*[Gakusei-ga] geragerato huta-ri waratta.  
[student-NOM] loudly 2-CL laughed  
Intended: ‘Two students laughed loudly.’ (Unergative)

Researchers have discovered places where Miyagawa’s patterns break down, but they have not challenged the existence of the basic asymmetries that provided some of the motivation for a stranding theory of FNQs. The proper treatment of these facts therefore requires one to answer both questions in (86).

- (86) a. Why do ordering restrictions hold, when they hold?  
b. Why do ordering restrictions fail to hold, when they fail to hold?

I have followed Miyagawa and others in answering the first question (86a) with a stranding analysis. This analysis need not be abandoned in answering the second question (86b). Several non-adverbial proposals are available that seek to explain these exceptional cases, while taking the stranding theory to account for the basic pattern. These approaches generally focus on the fact that exceptional examples (i.e., those that bring up question (86b)) contain something special semantically that sets them apart from examples of the basic pattern (i.e., those examples that bring up question (86a)). For example, Miyagawa and Arikawa (2005) suggest an account of the exceptions in which focus elements or stress shift can rescue otherwise impossible examples. Miyamoto and Sugimura (2005), who take a different approach from that of Miyagawa and Arikawa (2005), suggest that numeral quantifiers in exceptional cases are not floating at all. Instead, the overt *ga*-marked subject is a “major subject” that is not transformationally related to the thematic subject. The FNQ

appears next to a null thematic subject. This subject need not be null, however, as we see in (87) (Miyamoto and Sugimura 2005).

- (87) Gakusei-ga sake-o imamadeni yonkaisei-ga san-nin nonda.  
student-NOM sake-ACC so.far senior-NOM 3-CL drank  
'Three senior students drank sake so far.'

Given these possible alternative explanations, this first challenge does not lead me to reject the stranding analysis in favor of an adverbial approach to Japanese FNQs.

The second challenge to the stranding approach comes from certain semantic restrictions on numeral quantifier float. FNQs are generally degraded in individual-level sentences (88a), though they are acceptable in with stage-level predicates (88b). (These examples are cited in Nakanishi (2006). See also Miyamoto (1996).)

- (88) a. [Uti-no doobutuen]-de-wa kaba-ga mada san-too genki-da.  
[my-GEN zoo]-at-TOP hippo-NOM still three-CL healthy  
'Three hippos at my zoo are still healthy.'
- b. \*[Uti-no doobutuen]-de-wa kaba-ga zannentakotoni san-too osu-da.  
[my-GEN zoo]-at-TOP hippo-NOM unfortunately three-CL male  
Intended: 'In my zoo, unfortunately, three hippos are male.' (Mihara 1998)

Nakanishi (2004) notes that FNQs are also dispreferred with collective predicates. For example, (89a) can only be interpreted distributively as 'each student took a turn in hitting Peter.' That is, Peter was not hit by all three students at once. (89b) shows the same effect, since no (non-zombie) distributive reading is available for *kill*, (89b) is degraded.

- (89) a. Gakusei-ga kinoo san-nin Peter-o tatai-ta.  
 student-NOM yesterday 3-CL Peter-ACC hit-PAST  
 ‘Yesterday three students hit Peter.’ (Distributive, \*Collective)
- b. ??Gakusei-ga kinoo san-nin Peter-o korosi-ta.  
 student-NOM yesterday 3-CL Peter-ACC kill-PAST  
 Intended: ‘Yesterday three students killed Peter.’

Both of these facts have been taken to suggest that FNQs are adverbial. The idea is that an FNQ is an adverb somehow related to the event argument in a distributive or stage-level predicate.<sup>15</sup> (Individual-level predicates are assumed to have no event argument.)

This argument has a major flaw, however. Rather than showing completely different behavior, floating and non-floating numerals overlap in their possible meanings. In fact, all of the conditions that allow for the presence of FNQs also allow for the presence of non-floating numerals. The set of possible meanings for FNQs is a subset of the possible meanings for non-floated numerals.

While an FNQ can appear with a distributive predicate, the quantifier need not be floating in order to produce a distributive reading. Non-floating quantifiers are also compatible with distributivity, as we see in (90) (cf. (89a)).

- (90) [San-nin-no gakusei]-ga kinoo Peter-o tatai-ta.  
 [3-CL student]-NOM yesterday Peter-ACC hit-PAST  
 ‘Yesterday three students hit Peter.’ (Distributive, Collective)

Since distributive readings are available with non-floating numerals, it cannot be argued that an adnominal quantifier cannot be present in such sentences. Nor can it be argued that

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<sup>15</sup>Nakanishi (2003) argues that these adverbial FNQs are connected to both the event argument and the nominal. She notes that these FNQs do not mean something like *three times*. Instead, they are still connected to the cardinality of the nominal.

an adverbial FNQ is needed to produce a distributive reading, since no such adverbial is apparent in (90). Therefore, the presence of distributivity does not rule out the idea that (89a) is derived through stranding. In fact, if (89a) is derived through stranding, the source of distributivity could conceivably be the same as that found in (90). Thus the stranding theory has the advantage of providing a uniform explanation for numeral quantification in distributive contexts. The adverbial approach to FNQs would need to provide one mechanism for non-floating numerals and another for floating numerals.

One would, of course, like an explanation for why the range of possible meanings in FNQ contexts is smaller than the range of meanings in non-floating examples. Crucially, however, the stranding analysis does not predict that the meanings of FNQ sentences should be exactly those that are possible in non-floating contexts. (All else being equal, we would certainly expect overlap, and this is exactly what we find.) Though an adverbial analysis might provide one possible explanation for the fact that FNQ sentences appear in a subset of the contexts in which non-floating numerals can appear, other explanations are also possible. For example, it may be that whatever structure produces stranding must contain a distributive head.<sup>16</sup> I will not develop this idea fully here, but rather use it as a proof of concept: Semantic restrictions on the availability of numeral quantifier float are not incompatible with the stranding approach.

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<sup>16</sup>Presumably a distributive head would require the presence of an event argument. Therefore, FNQs would also be impossible in individual-level contexts, which presumably lack an event argument.



### 3.11 Summary

I have argued in this chapter, following arguments by Miyagawa (1989) and others, that Japanese floating numeral quantifiers are adnominal elements that initially form a constituent with their associated nominal. FNQs appear separated from this nominal because the nominal moves away from the FNQ and strands it in nominal position.

While I adopt the form of the stranding analysis, I further refine the analysis by arguing for an A'-restriction on quantifier stranding. Several lines of evidence support the conclusion that this FNQ-stranding can only arise through A'-movement. We saw that both anaphor binding and weak cross-over effects reveal the possibility of A-scrambling in Japanese. In the same contexts where A-movement was possible without an FNQ, the addition of an FNQ eliminates this A-movement possibility and allows only A'-movement. Case-marking in Kumamoto Japanese and facts regarding the scope of *zen'in* 'all' and negation also support the view that FNQ stranding can only arise through A'-movement of the associated NP.

These results show that Japanese FNQs have all of the properties argued in chapter 1 to be characteristic of stranded FQs. I argued here that deep differences between the locality conditions that govern A- and A'-movement explain the connection between stranded FQs and A'-movement.

I also argued that Korean FNQs behave much like their Japanese counterparts. Using anaphor binding and weak cross-over tests, I argued that Korean FNQs can only be stranded under A'-movement.

Since this approach adopts a stranding analysis for Japanese and Korean FNQs, I then

addressed certain problems and counter-examples that have been raised in the literature to argue these FNQs are in fact adverbials. I argued that none of these arguments are decisive and that the stranding analysis can accommodate these data.

Some surprising results also arose with respect to the types of movement that are possible in passive and unaccusative sentences. In some cases where displacement was assumed to be of the A-movement variety, these tests showed that A'-movement is in fact present. I suggested some ways in which the grammar of Japanese makes this possible. In chapter 6, I will address more general theoretical issues that arise from this type of direct A'-movement.

# Chapter 4

## (Non-)Exhaustivity

### 4.1 Introduction

In the last two chapters I argued extensively for the existence of two types of floating quantifiers (FQs). First, I showed that English and French FQs like *all* and *tous* do not fit the predictions of the Sportiche-style stranded-quantifier analysis (Sportiche 1988; Miyagawa 1989; Shlonsky 1991; Merchant 1996; Bošković 2004; Miyagawa and Arikawa 2005). Instead, these FQs have the distribution of adverbial elements (Bobaljik 1995; Brisson 1998). I adopted Doetjes's (1997) proposal that adverbial FQs contain a null pronominal and applied this idea to several new areas of FQ behavior. For example, I showed how this pronominal could help explain FQ agreement patterns and the link between adverbial FQs and A-movement.

After showing that some floating quantifiers do not result from sub-phrasal extraction, I argued that other floating quantifiers do. I took the position that Japanese and Korean floating numerals quantifiers (FNQs) are stranded by movement of their associated nom-

inal. This contention is at the core of previous stranding analyses. My analysis conflicts with many previous proposals along one dimension: I propose that quantifier stranding can only arise through A'-movement. I showed, using a variety of arguments, that floating numeral quantifiers in Japanese and Korean force movement of their associated NP to have A' properties. The impossibility of stranding by A-movement in such cases (*contra* Sportiche (1988)) is due to differences in the locality constraints that govern these two types of movement. I suggested that sub-phrasal A-movement extraction of a DP from within another DP is generally impossible.

These results provide a new look at the cross-linguistic landscape of floating quantification. A debate has raged in the literature about the correct treatment of floating quantification. Some have argued for the stranding approach, and others for an adverbial approach. These arguments were generally based on a single language or a group of historically or typologically related languages. A broad cross-linguistic view shows that, in some sense, both sides of this debate were correct. Some FQs are adverbial, and some arise through stranding.

Given what we have seen so far, the landscape looks fairly arbitrary. In comparing English, French, Japanese, and Korean FQs (as well as a brief look at Hebrew, German, and Russian), it might look as if a given language may have any type of FQ and that a given quantifier may float in any manner that is made available by the language. I now wish to argue that there is no such arbitrariness in floating quantification. Instead, the adverbial or stranded nature of a given FQ is linked to other factors, including the semantic properties of the quantifier.

Importantly, all of the examples of adverbial floating quantification that we have seen

so far have involved what I will call *exhaustive* quantifiers (that is, quantifiers that are universal or maximal). The stranded adnominal quantifiers that we have seen have been *non-exhaustive* (existential or non-maximal).<sup>1</sup>

**Table 4.1**

Adverbial FQs	Adnominal FQs
<i>all, both, each</i>	numerals
<i>tous</i> ‘all’, <i>chacun</i> ‘each’	(e.g., <i>san</i> ‘three’)

Is this semantic regularity just an accident? Is it perhaps linked to the languages under consideration? Perhaps Japanese, for example, only allows stranded, A'-related floating quantifiers, while English has some idiosyncrasy that limits it to adverbial FQs. I will argue here that this is not the case. (Non-)exhaustivity, rather than language choice, governs the adverbial or adnominal nature of an FQ.

I turn first to Japanese and Korean and show that exhaustive quantifiers can float in these languages. Perhaps more importantly, when these exhaustive elements do appear, they have adverbial, A-movement properties.

I then turn to Russian, a language whose floating quantifiers were introduced in chapter 1. I review a series of arguments, in many cases different from those leveraged in chapters 2 and 3, that both kinds of FQs exist in the language and that the split between FQ-type follows the exhaustive/non-exhaustive split. These examples provide strong evidence that the exhaustive/non-exhaustive split is real and interacts with the syntax of floating quantifi-

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<sup>1</sup>I will elaborate on this difference in chapter 5 and attempt to construct a more exact theory of this difference. There this will be linked to the syntax of partitivity.

cation.<sup>2</sup>

Finally, I turn to some examples that seem to challenge the exhaustivity connection. First, I discuss the two types of *all*-float in West Ulster English. I then turn to case-marked FNQs in Korean, which differ from their non-case-marked counterparts in ways that seem to mirror differences along the adverbial/stranded-adnominal dimension.

## 4.2 Japanese and Korean Exhaustive FQs

Having seen the behavior of FQs like *all* in English, one wonders about the existence of similar elements in Japanese and Korean.<sup>3</sup> If Japanese quantifiers like *minna* ‘all’ and *zen’in* ‘all’ can float, will they behave like other Japanese floating quantifiers, like *san*

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<sup>2</sup>In chapter 5, I show that this distinction, along with certain syntactic considerations, helps explain the lack of floating *some*, *every*, etc. in English.

<sup>3</sup>Unfortunately, bare floating numerals are impossible in English (1).

- (1) \*The students have three left.

Full “floating” phrases like *three of them* and *most of them* seem much better in this position.

- (2) a. The students have three of them made the honor roll.  
b. The students have most of them made the honor roll.

Note, though, that these examples require (slight) parenthetical intonation. Evidence that this type of parenthetical is not the same as floating quantification comes from the failure of these elements to appear in pre-auxiliary position (3b).

- (3) a. The students all have gone home for the weekend.  
b. \*The students all three of them have gone home for the weekend.

(3b) can only be improved by a major pause on either side of *three of them* (4).

- (4) The students # (all) three of them # have gone home for the weekend.

‘three’, or like English FQs like *all*? The same questions can be posed for Korean exhaustive quantifiers. I show in this section that exhaustive elements can float in Japanese and Korean and that these elements behave like English FQs, rather than Japanese/Korean floating numeral quantifiers. I focus especially on the A-movement-related behavior of these elements.

#### 4.2.1 Anaphor Binding in Japanese

Recall that Japanese allows for binding of a reciprocal within a subject by fronting of an object binder (5a), but that this possibility disappears in the presence of an object-related FNQ (5b).

- (5) a. [Gakusei-o huta-ri]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga sikatta.  
 [student-ACC 2-CL] [each.other-GEN teacher]-NOM scolded  
 ‘Each other<sub>1</sub>’s teacher scolded [the two students]<sub>1</sub>.’
- b. \*[Gakusei-o]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga huta-ri sikatta.  
 [student-ACC] [each.other-GEN teacher]-NOM two-CL scolded  
 Intended: ‘Each other<sub>1</sub>’s teacher scolded [the two students]<sub>1</sub>.’

The same pattern arises with the reflexive *zibun*, for many speakers: Binding by a passive subject is possible (6a), but is degraded with the addition of a subject-related FNQ (6b).

- (6) a. [Gakusei-ga huta-ri]<sub>1</sub> [zibun<sub>1</sub>-no sensei]-ni sikarareta.  
 [student-NOM 2-CL] [self-GEN teacher]-by were.scolded  
 ‘Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.’
- b. \*[Gakusei-ga]<sub>1</sub> [zibun<sub>1</sub>-no sensei]-ni huta-ri sikarareta.  
 [student-NOM] [self-GEN teacher]-by 2-CL were.scolded

Intended: 'Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.'

In contrast, Japanese floating *zen'in* and *minna* 'all' do not interfere with reciprocal or reflexive binding. Object-related *minna* or *zen'in* can appear low in the structure of an OSV sentence (7a) in which the fronted object binds a reciprocal inside the subject. Similarly, subject-related *minna* and *zen'in* can appear low in the structure of an S-*ni*-V passive sentence in which the subject binds a reflexive within the *ni*-phrase (7b).

- (7) a. [Gakusei-o]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ga minna/?zen'in sikatta.  
student-ACC [each.other-GEN teacher]-NOM all/?all scolded  
Intended: 'Each other<sub>1</sub>'s teacher scolded all the students<sub>1</sub>.'
- b. [Gakusei-ga]<sub>1</sub> [zibun<sub>1</sub>-no sensei]-ni minna/?zen'in sikarareta.  
[student-NOM] [self-GEN teacher]-by all/?all were.scolded  
'All the students were scolded by their teachers.'

This fact could be interpreted in at least two ways. First, we could conclude that floating *minna* and *zen'in* do not force A'-movement of their associated NP. Since the NP can move by A-movement, it can bind an anaphor. We could also take this behavior as evidence that these examples of quantifier float do not contain NP-splitting. That is, the FQ and its related NP do not form a constituent that is split by movement. Therefore, the NP remains whole and able to bind an anaphor. Under either interpretation, these FQs are more like the English adverbial FQs from chapter 2 than they are like Japanese floating numerals.

Note that, unlike Japanese FNQs, floating *minna* does not show variation in acceptability across intransitive sentence types. Floating *minna* in unergatives (8c) is just as acceptable as floating *minna* in unaccusatives (8b) and passives (8a).



- (8) a. [Gakusei-ga] ano otoko-ni minna korosareta.  
 [student-NOM] that man-by all were.killed  
 ‘All the students were killed by that man.’ (Passive)
- b. [Gakusei-ga] ofisu-ni minna kita.  
 [student-NOM] office-to all came  
 ‘All the students came to the office.’ (Unaccusative)
- c. [Gakusei-ga] geragerato minna waratta.  
 [student-NOM] loudly all laughed  
 ‘All the students laughed loudly.’ (Unergative)

Compare this to the pattern of floating numerals in (9), where FNQs are possible in low position only in passives and unaccusatives.

- (9) a. [Gakusei-ga] ano otoko-ni huta-ri korosareta.  
 [student-NOM] that man-by 2-CL were.killed  
 ‘Two students were killed by that man.’ (Passive)
- b. [Gakusei-ga] ofisu-ni huta-ri kita.  
 [student-NOM] office-to 2-CL came  
 ‘Two students came to the office.’ (Unaccusative)
- c. \*[Gakusei-ga] geragerato huta-ri waratta.  
 [student-NOM] loudly 2-CL laughed  
 Intended: ‘Two students laughed loudly.’ (Unergative)

As we will see in section 4.5 with respect to Korean, the lack of ordering restrictions in minna-type FQs is indicative of adverbial elements under Ko’s (2005) analysis of these restrictions.

I conclude from the evidence presented in this section that Japanese has two types of FQs: adnominal, stranded floating numeral quantifiers, and adverbial exhaustive quantifiers.

#### 4.2.2 Weak Cross-Over in Korean

The same two types of FQs exist in Korean. The two patterns of behavior that were discussed above with respect to anaphoric binding can be replicated in Korean. Furthermore, Korean shows the same ordering restrictions with FNQs and the lack of ordering restrictions with floating *motwu* 'all'.

Recall that Korean FNQs, like Japanese FNQs, force weak cross-over (WCO) in certain cases. I interpreted examples like (10c) as showing that the stranding of an FNQ requires A'-movement. The A-movement that applies in (10b) is not available here, and so (10c) shows WCO.

- (10) a. \*Kutul-ul kaluch-in sensayngnim-i etten haksayng-(tul)-ul twu-myeng  
they-ACC teach-RC teacher-NOM which student-(PL)-ACC 2-CL  
koyonghal-kka?  
hire-Q  
Intended: 'Which two students would the teachers who taught them hire?'
- b. ?Haksayng-(tul)-ul twu-myeng kutul-ul kaluch-in sensayngnim-i  
which student-(PL)-ACC 2-CL they-ACC teach-RC  
etten koyonghal-kka?  
teacher-NOM hire-Q  
'Which two students would the teachers who taught them hire?'
- c. \*Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i twu-myeng  
which student-(PL)-ACC they-ACC teach-RC teacher-NOM 2-CL  
koyonghal-kka?  
hire-Q  
Intended: 'Which two students would the teachers who taught them hire?'

When this same pattern is replicated with floating *motwu* 'all', however, no such effect is observed. Floating *motwu* (11c) is just as acceptable as fronted *motwu* (11b).

- (11) a. \*Kutul-ul kaluch-in sensayngnim-i etten haksayng-(tul)-ul motwu  
 they-ACC teach-RC teacher-NOM which student-(PL)-ACC all  
 koyonghal-kka?  
 hire-Q  
 Intended: ‘Which all students would the teachers who taught them hire?’
- b. ?Haksayng-(tul)-ul motwu kutul-ul kaluch-in sensayngnim-i  
 which student-(PL)-ACC all they-ACC teach-RC  
 etten koyonghal-kka?  
 teacher-NOM hire-Q  
 ‘Which all students would the teachers who taught them hire?’
- c. ?Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i motwu  
 which student-(PL)-ACC they-ACC teach-RC teacher-NOM all  
 koyonghal-kka?  
 hire-Q  
 Intended: ‘Which all students would the teachers who taught them hire?’

Therefore, though Korean floating numerals differ markedly from English floating *all*, Korean *motwu* behaves more like the English *all*. Rather than applying the stranded, A'-related pattern to all floating quantification, Korean shows multiple patterns that follow the exhaustive/non-exhaustive distinction.

### 4.3 Russian (Non-)Agreeing FQs

We saw in the preceding sections that Japanese and Korean have two types of floating quantifiers. These FQs differ in their behavior on the tests that were used in previous chapters to argue for a difference between A- and A'-related FQs, and in their distribution. I now turn to Russian, which I argue also contains two type of FQs. Here we will use a variety of tests that differ from those that were applied to Japanese and Korean. These tests provide additional support both for the analyses of FQ-types that have been advanced here

and for the importance of quantifier (non-)exhaustivity in determining FQ-type.

Russian displays two patterns of agreement in quantifier phrases.<sup>4</sup> In some cases the NP that is quantified over agrees with the quantifier and has the case that one would expect of the relevant argument (12a). In others, this NP appears in a non-agreeing genitive plural form (12b).

- (12) a. Prišli vse deti.  
came-PL all-NOM.PL children-NOM  
'All the children came.' (AQ)
- b. Prišlo malo detej.  
came-NEUT.SG few children-GEN  
'A few children came.' (NQ)

Both agreeing quantifiers (AQs) and non-agreeing quantifiers (NQs) can appear separated from their NP-associate, as in (13) (Madariaga 2005).<sup>5</sup>

- (13) a. Deti prišli vse.  
children-NOM came-PL all-NOM.PL  
'The children all came.' (Floating AQ)
- b. Detej prišlo malo.  
children-GEN came-NEUT.SG few  
'Children, there came a few of them.' (Floating NQ)

Interestingly, the agreeing/non-agreeing split seems to be defined along exhaustive/non-exhaustive lines. Agreeing quantifiers (14a) have exhaustive semantics, while non-agreeing

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<sup>4</sup>Again, I do not use *quantifier phrase* as a technical term, but rather as a blanket category for phrases that contain quantifiers or quantifier-like elements. Some of these elements could be adjuncts, adjectives, etc.

<sup>5</sup>I wish to thank Nerea Madariaga for bringing many of the phenomena discussed here to my attention. This section owes much to her work on these constructions. Though our analyses differ in details, the essential insight that Russian contains two types of floating quantifiers is hers.

quantifiers (14b) have non-exhaustive semantics.<sup>6</sup>

- (14) a. Agreeing Quantifiers (AQs): *vse* ‘all’, *oba*, ‘both’, *odin* ‘one (alone)’.
- b. Non-Agreeing Quantifiers (NQs): *para* ‘a pair’; *kuča* ‘a lot’, *kot naplakal* ‘very few’ (lit. ‘a cat cried’); *s gul’kin nos* ‘very few’ (lit. ‘as the pigeon’s nose’), *malo* ‘a little/a few’; *neskol’ko* ‘some’; numerals >1.

Based on this observation and the dichotomy of floating quantifiers that was developed above, we should expect these two sets of quantifiers to differ not only in their agreement patterns, but in other types of behavior. More specifically, the hypothesis that floating quantifiers can be either adverbial and A-related or stranded adnominals that are A'-related should map directly onto this distinction. Agreeing quantifiers, which have exhaustive semantics, should behave like adverbial, A-related FQs. Non-agreeing quantifiers, which have non-exhaustive semantics, should behave like adnominal elements that are stranded by A'-movement.

I now turn to several tests that show that these predictions are correct.

### 4.3.1 Adverbial vs. Nominal Distribution

We saw in earlier chapters that English FQs like *all* and Japanese FNQs like *san* ‘three’ differ in their distribution. English FQs show adverbial distribution, while Japanese floating numerals behave like argument NPs. Given the predicted difference between agreeing and

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<sup>6</sup>Recall that *odin* ‘one’, which is non-exhaustive in non-floating contexts, takes on an exhaustive meaning when floated that I gloss as ‘alone’.

non-agreeing quantifiers, we should expect a similar difference in distribution to arise in Russian.

We see in (15) that floating AQs may occur in a variety of positions throughout a clause, while floating NQs appear in a more limited set of positions.

- (15) a. Komnaty (vse) dolžny byt' (vse) provetreny (vse).  
rooms-NOM (all) due to-be (all) aired (all)  
'The rooms must all be ventilated.' (Floating AQ)
- b. Komnat (\*malo) bylo (\*malo) provetreno (malo).  
rooms-GEN (\*few) was-NEUT.SG (\*few) aired (few)  
'There were a few rooms ventilated.' (Floating NQ)

I propose that this distributional difference can be explained if *vse* is an adverbial FQ like English *all*, while *malo* is a stranded adnominal quantifier. Under this assumption, the fairly free placement of *vse* in (15a) derives from the range of possible adjunct positions that are available to these adverbial FQs. Adnominal FQs, on the other hand, can only appear in NP positions, which are more limited in scope.

### 4.3.2 Subject Condition Effects

If the AQ/NQ split parallels the adverbial/adnominal split, we would expect NQs to show extraction effects. For example, since floating NQs are derived by stranding, but floating AQs are not transformationally related to their associate NP, only the former will show sensitivity to island effects.

One extraction constraint that can allow us to test this prediction is the *subject condition*. In English, for example, a *wh*-phrase can be extracted from an object (16a), but not from a

subject (16b).

- (16) a. Who did you see [a picture of \_\_\_]?  
b. \*Who did [a friend of \_\_\_] see at the movies?

Madariaga (2005) shows that AQs and NQs show a subject-object asymmetry. Floating AQs can be related to a transitive subject (17a), while floating NQs cannot (17b).

- (17) a. Studenty ljubjat prepodavatelja vse.  
students-NOM love teacher all-NOM  
'The students all love the teacher.' (Floating AQ)
- b. \*Studentov kupilo ètu knigu mnogo.  
students-GEN bought this book a-lot  
Intended: 'A lot of students bought this book.' (Floating NQ)

This subject-object split also appears in other split constructions in Russian. For example, while adjective-noun split can apply to an object (18), it is degraded in transitive subjects (19).<sup>7</sup>

- (18) a. Mašinu ja kupil krasnuju.  
car I bought red  
'I bought the red car.'
- b. Krasnuju ja kupil mašinu.  
red I bought car  
'I bought the red car.'

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<sup>7</sup>The subject condition is not uniformly apparent cross-linguistically (Stepanov 2003). However, it appears to hold at least in these cases in Russian.

- (19) a. \*Djevočka pričesivala svoi volosy krasivaja.  
 girl combed her hair beautiful  
 Intended: 'The beautiful girl combed her hair.'
- b. \*Krasivaja pričesivala svoi volosy djevočka.  
 beautiful combed her hair girl  
 Intended: 'The beautiful girl combed her hair.'

Adj-Noun split is also possible from subjects of existentials (20), which are arguably not subject to the subject condition.

- (20) Krasivaja žila na svete djevočka.  
 beautiful live in world girl  
 'There lived in the world a beautiful girl.'

In a manner similar to that seen in the existential subject, floating NQs can also be related to passive subjects, as in (21).

- (21) Vozmožnostej bylo predloženo pjat'.  
 possibilities was proposed five  
 'Five possibilities were proposed.'

Thus it appears that NQs can be stranded by their associate only in object position, where 'object position' is interpreted as including the base position of passive and existential subjects.

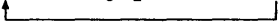

If we are dealing with a ban on extraction from non-object positions, then extraction should not only be bad in the case of base subject positions, but from derived subject positions. That is, extraction might be impossible in anything other than a low object position. In (22) we see that, though a floating NQ in deep object position can be related to



a passive subject (21), the NQ cannot appear in a higher position.

- (22) \*Vozmožnostej (pjat') bylo (pjat') predloženo.  
possibilities (five) was (five) proposed  
Intended: 'Five possibilities were proposed.'

If floating NQs are stranded by movement, then these examples could be derived only by movement of the object to a derived position, followed by movement of the NP to strand the quantifier (23). This latter operation violates the subject condition.

- (23) a. bylo [pjat' vozmožnostej] predloženo t.  
  
b. Vozmožnostej bylo [pjat' t ] predloženo t.  


I have shown in this section that something like the subject condition, which was shown to be operative in other split constructions in Russian, governs floating NQs but not floating AQs. This distinction supports the proposal that only floating NQs are derived by stranding.

### 4.3.3 A'-movement Effects with Stranded NQs

Madariaga (2005) suggests that floating NQs only arise in context in which their nominal associate has undergone A'-movement. For example, she argues that *komnat* 'rooms' has undergone topicalization in (24).

- (24) Komnat bylo provetreno malo.  
rooms-GEN was-NEUT.SG aired few  
'There were a few rooms ventilated.'  
(Floating NQ)

In support of this contention, note that floating NQs show reconstruction effects, while floating AQs do not. In (25a), the reflexive *sviox* that occurs inside of the sentence-initial phrase *sviox deneg* ‘self’s money’ can be bound by *u menja* under reconstruction. No reconstruction is possible with floated *vse* in (25b).

- (25) a. [Sviox<sub>i</sub> deneg] u menja<sub>i</sub> s soboj [tol’ko polovina  
[self’s-GEN.PL money-GEN.PL] near me with self<sub>i</sub> only half  
\_\_\_].  
‘I will only have half of my (own) money with myself.’ (Floating NQ)
- b.??\*[Svoi<sub>i</sub> den’gi] u menja<sub>i</sub> s soboj vse.  
[self’s-NOM.PL money-NOM.PL] near me with self all-nom.pl  
Intended: ‘I have all my money with me.’ (Floating AQ)

If reconstruction for condition A is an A’ phenomenon, then floating NQs are related to A’-movement, while floating AQs are not.

#### 4.3.4 Verbal Agreement

Patterns of verbal agreement in floating contexts also support the proposal that NQs are stranded by A’-movement of their associate, while AQs are related to A-moved phrases.

Verbs agree with AQ phrases in non-floating (26a) and floating (26b) contexts.

- (26) a. Prišli vse deti.  
came-PL all-NOM.PL children-NOM  
‘All the children came.’ (AQ)
- b. Deti prišli vse.  
children-NOM came-PL all-NOM.PL  
‘The children all came.’ (Floating AQ)

In non-floating contexts, verbs may also agree, optionally, with preverbal NQ phrases

(27) (Pesetsky 1982:76).

- (27) [Pjat' detej] opozdalo/opozdali.  
[five children] arrived.late-NEUT.SG/MASC.PL  
'(The) five children arrived late.'

Pesetsky (1982) notes that NQs that agree with the verb more naturally occur preceding the verb. Whether or not the subject can appear post-verbally under agreement is less clear.<sup>8</sup>

- (28) Opozdalo/??opozdali [pjat' detej].  
arrived.late-NEUT.SG/??MASC.PL [five children]  
'(The) five children arrived late.'

Given this pattern of agreement, it is surprising that, when an NQ appears in floated position, agreement is no longer an option (29).

- (29) Detej opozdalo/\*opozdali pjat'.  
children arrived.late-NEUT.SG/\*MASC.PL five  
'Five children arrived late.'

This pattern of agreement can be accounted for, however, if verbs agree with phrases that undergo A-movement to Spec-TP. Under this approach, fronting of *pjat' detej* in (28) may proceed through A-movement to Spec-TP (thus showing agreement) or by A'-movement to some left-peripheral position (thus showing no agreement). The unavailability of subject-verb agreement in (29) suggests that *detej* may not move to a position in

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<sup>8</sup>Note, also, that a post-verbal position of the subject is preferred in non-agreeing contexts.

which it can trigger agreement on the verb. Instead, it seems reasonable that it has undergone A'-movement to a position above Spec-TP. This interpretation supports the idea that NQs can be stranded only by A'-movement, as Madariaga (2005) suggests.

### 4.3.5 Complex FQs

Finally, one more piece of evidence suggests that the AQ/NQ split does map onto the adverbial/adnominal FQ split that we have been developing. NQs can appear with adjectives, as in (30a). This presumably arises from the splitting of a phrase like *malo ispanskix učěnyx* 'few Spanish scientists'. Complex floating AQs like that in (30b) are not possible, however.<sup>9</sup>

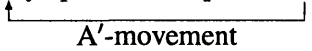
- (30) a. ?Učěnyx prišlo [malo ispanskix].  
           scientists came [few Spanish]  
           'There came a few Spanish scientists.'
- b. \*Učěnye prišli [vse ispanskije].  
           scientists came [all Spanish]  
           Intended: 'All the Spanish scientists came.'

A potential source for (30b) is a phrase like *vse ispanskije učěnyx* 'all the Spanish scientists'. Since stranding of an exhaustive quantifier seems to be impossible, however, this phrase is correctly ruled out as a source of *vse ispanskije* float. Furthermore, it seems that an independent complex adverbial FQ *vse ispanskije* does not exist.

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<sup>9</sup>This sentence does have an interpretation, but it is not the interpretation that is expected were *vse ispanskije učěnye* 'all Spanish scientists' to be interpreted together. Instead, (30b) can mean something like 'all who came were Spanish scientists' or 'scientists came, (in fact) it was all of the Spanish ones, (a few of the German ones, many of the French, ...)'. Neither meaning supports a stranding or FQ analysis.

Having ruled out these two possibilities, we might wonder whether the derivation in (31) would be a possible source for (30b).

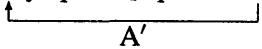
(31) \*Učěnye prišli vse [ispanskije t].  


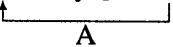
I suggested above that adjective-noun split arises only through A'-movement. Thus the stranding of *ispanskije* would have to involve the A'-movement of *učěnye* over the adverbial FQ *vse*. Assuming that Russian floating *vse* 'all' contains a null *pro*, just as with English and French, such A'-movement is ruled out. Movement of the noun *učěnye* across *vse* would lead to a cross-over violation.

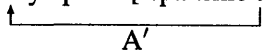
This last explanation raises the prediction that if *ispanskije učěnye* can cross *vse* by A-movement before splitting, or in some way avoid cross-over, the derivation should be acceptable. This prediction is also borne out, as we see in (32).

(32) Učěnye prišli ispanskije vse.  
 scientists came Spanish all  
 'All the Spanish scientists came.'

In this case *ispanskije učěnye* either originates above *vse* (33) or A-moves across *vse* (34).

(33) Učěnye prišli [ispanskije t] vse.  


(34) a. prišli [ispanskije učěnye] vse t.  


b. Učěnye prišli [ispanskije t] vse t.  


In either case, no cross-over violation arises, as *učěnye* never crosses *vse* by A'-movement.

### 4.3.6 Summary

In this section I have argued that the split in Russian between agreeing (AQ) and non-agreeing (NQ) floating quantifiers parallels the adverbial/stranded split that we have developed here. Floating AQs do not show extraction effects and have A-movement properties. Floating NQs, on the other hand, show extraction effects and A'-properties. Furthermore, the division of these elements into agreeing and non-agreeing patterns seems to follow very closely the exhaustive/non-exhaustive split. The phenomena discussed here are summarized in table 4.2.

**Table 4.1**

	Floating AQs	Floating NQs
Agreement	Yes	No
Distribution	Broad	Limited
Subject Condition	No	Yes
Reconstruction	No	Yes
Moves to Spec-TP?	Yes	No
Complex Elements?	No	Yes

Along with differences between English FQs and Japanese/Korean FNQs, and differences between Japanese/Korean FNQs and exhaustive FQs, this is good evidence for a link between (non-)exhaustivity and FQ behavior.

## 4.4 West Ulster *All*

In this chapter I have argued that differences in the syntax of floating quantifiers are paralleled by differences in the semantics of these elements. I have argued for a broad classification of FQs into exhaustive and non-exhaustive groups, where the former behave like English *all* and the latter like Japanese *san*. I now turn to two languages that pose challenges to this neat dichotomy. I first discuss floating *all* in West Ulster English (McCloskey 2000a). In the next section I discuss Korean case-marked floating numerals.

The dual pattern of floating quantification in West Ulster English (WUE) fits nicely into the present analysis. Recall that WUE allows both the “general English” pattern familiar from chapter 2 (35) and a West Ulster-only pattern of *wh-all* split (36).

- (35) a. All the suspects have been arrested.  
b. \*The suspects have been arrested all.  
c. The suspects have all been arrested.
- (36) a. What all did he say that he wanted?  
b. What did he say that he wanted all? [\*other dialects]  
c. What did he say all that he wanted? [\*other dialects]

The first pattern is to be analyzed along the lines developed in chapter 2: These are adverbial FQs. According to the semantic connections discussed here, these are expected to be exhaustive. The second pattern, on the other hand, has all the hallmarks of stranded adnominals (A'-relatedness, DP distribution, etc.) and are expected to be non-exhaustive

in meaning. But here a problem arises. How can a single element, floating *all*, be both exhaustive and non-exhaustive? We must either abandon the idea that WUE shows both kinds of FQ and try to assimilate the two patterns into one, or else abandon the idea that these are the same element. I take the latter tack here.

Though on the face of it we might assume that *all* is uniformly exhaustive, there is evidence to suggest that this is not true. Instead, *all* in the general English pattern is exhaustive. *All* in West Ulster wh-*all* split, on the other hand, will be analyzed as a semantic pluralizer.

The exhaustivity of the general English floating *all* can be demonstrated as follows. If a teacher claims that *the fifth-graders are in gym class*, the teacher is not lying if he or she knows that two of the fifth-graders are actually at the nurse's office sick. As Brisson (1998) shows, definite plurals allow for exceptions in the right circumstances. If the same teacher says that *all of the fifth-graders are in gym class* and knows that two are at the nurse's, this is a lie. The addition of *all* eliminates the possibility of exceptions.

Many dialects of English, including my own, allow non-split wh-*all* constructions. Though this has not been tested extensively, Jim McCloskey (p.c.) suggests that split wh-*all* in WUE does not differ in meaning with the meaning of non-split wh-*all* in other dialects. With this in mind, I will use non-split wh-*all* in tests for interrogative exhaustivity.

In order to determine whether *all* in wh-*all* split is exhaustive, we must ask what exhaustivity is in questions. The notion used for declaratives cannot be imported directly to interrogatives. The term *exhaustivity* has been used extensively as a way to talk about the set of answers that is provided by a question (Groenendijk and Stokhof 1984; Beck and Rullman 1999; Sharvit 2002; Guerzoni and Sharvit 2004) or included in a question's deno-



tation. As this notion is intuitively related to other forms of exhaustivity, we will take this up first.

Interrogative exhaustivity comes in at least two flavors. A question that is interpreted as *strongly exhaustive* requires complete knowledge of true and false propositions. Under this reading, if both (37a) and (37b) are true, then (37c) will be true. Groenendejk and Stokhof (1984) argue that (37c) does follow from (37a-b), and therefore that *know* embeds strongly exhaustive questions.

- (37) a. John knows **who came to the party**.  
b. Mary did not come to the party.  
c. John knows that Mary did not come to the party.

*Weakly exhaustive questions* will not pass this test. Such questions only include true answers. Guerzoni and Sharvit (2004) argue that the verb *surprise* (38a) embeds only weakly exhaustive questions. The fact that (38b) is odd supports this view. Bill's failing to leave cannot contribute to John's surprise at who left. John surprise is only about who did leave, not about those who failed to leave.

- (38) a. It surprised John **who left**.  
b. #Although John correctly expected Sam and Fred – the ones who left – to leave, it still surprised him **who left**, because he had also expected Bill, who didn't leave, to leave. (Guerzoni and Sharvit 2004:(25))

If *all* interacts with weak and strong exhaustivity, we might expect it to force strong

exhaustivity, and so to be incompatible with weak readings. However, *all* can appear in questions under both *know* and *surprise*, as in (39).

- (39) a. John knows who all left.  
b. It surprised John who all left.

Since *all* is compatible with both kinds of exhaustivity, this test tells us nothing about whether *all* is exhaustive in *wh-all* phrases. Exhaustivity arises even in the absence of *all*, and *all* does nothing to force weak or strong exhaustivity.

In some cases questions can be answered partially, as long as this answer is cooperative in context. We might suppose that the addition of *all* in such cases would force a complete answer. But again this fails to be true. A *who all* question can be answered partially, as in (40).

(40) [CONTEXT: P, Q, and R, S, and T went to the party.]

A: Who all was at the party?

B: P, Q, and R were there.

⇒ Speaker B is not being uncooperative. Therefore, *who all* does not demand exhaustivity in the answer.

One who wished to maintain that *all* in this case is still exhaustive might suggest that *all* is exhaustive within a sub-set of the people who went to the party. For example, the question could have been interpreted by B as being about the relevant people at the party (say, people who the speaker (A) knows). This analysis rejects the notion that *all* forces

a complete answer in the largest domain possible, but maintains a flavor of exhaustivity. This analysis does not jibe well with the behavior of *all* in declaratives, however. The use of *all* in (41) maximizes the set beyond just the relevant students. If the speaker wanted to restrict the set, he or she would have to be explicit about this.

- (41) [CONTEXT: Speaker B knows that some students didn't go to the party, but just wants to mention the relevant ones.]  
B: All the students went to the party.  
⇒ Speaker B is lying.

Therefore, even if *all* in *wh-all* questions forces exhaustivity within a some contextually-defined set, this *all* behaves differently than the *all* in (41).

One last possible type of interrogative might be relevant to the question of exhaustivity with *wh-all*. Groenendijk and Stokhof (1984) discuss questions that have a “mention-some” reading. These questions are not exhaustive. Rather, they allow for an answer that is simply one of the correct answers to the question. For example, in (42) it is enough for John to have told me one person who has copies of Mary's records. He would not need to tell me everyone who I could ask.

- (42) John told me **who to ask for Mary's college records**.

How does *wh-all* fare in these cases? It is fairly clear that the question in (43) cannot easily be interpreted as allowing for John to have told me just one person to ask for Mary's records.

(43) John told me **who all to ask for Mary's college records**.

Despite the impossibility of a “singular” reading, however, (43) is not interpreted as asserting that he told me *everyone* who I could ask for the relevant information. One context in which (43) would make sense is the following: No one person has all of Mary's records. Instead, I have to collect them from a variety of sources. In this case, it is enough for John to have given me a list of people from whom I could collect (partial) records and end up with a full set of records. He does not need to have told me everyone who has any of the information, including multiple people who have the same information.

Example (44) is also instructive here. This sentence can be interpreted as asserting that John told me just one place where I can buy the newspaper. An exhaustive reading here would be absurd.<sup>10</sup> John probably wouldn't tell me every place in the world, or even in town, where I could buy the paper, as there are surely many such places.

(44) John told me **where to buy the *New York Times***.

The addition of *all* to this example eliminates this interpretation. If (45) is true, John cannot have told me just one place where I can go to buy the paper.

(45) John told me **where all to buy the *New York Times***.

Another reading that is reminiscent of the college records example above is coerced in this context. This reading is also a bit absurd. It suggests that one cannot buy the

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<sup>10</sup>In fact, this reading is probably completely unavailable. See below.

entire *New York Times* in one place, but must buy some sections in one place and others in another place. In this context, John gives me a list of places I can go to assemble a full set of sections.

It also seems at least possible for (45) to be uttered if John told me a handful of places where I could buy the paper.

These two readings suggest that *all* in these cases is interpreted as a semantic pluralizer, rather than an exhaustivity marker. It is incompatible with John giving me just one option (a singular reading), but does not force John to give me a full list. Instead, it forces a plural interpretation.

What about the absurd, fully exhaustive reading? This reading requires John to have listed every place (in the area) that sells the *Times*. That (45), repeated as (46a), is not exhaustive in this way is clear from the strangeness of the objection in (46b).

- (46) a. John told me **where all to buy the *New York Times***.  
b. #No he didn't. He didn't tell you about Out of Town News.

If the speaker of (46b) had interpreted the embedded question in (46a) exhaustively, (46b) should be acceptable, however improbable the situation. The strangeness of (46a) shows that the exhaustive reading is simply absent.

Compare this fact to the equivalent response to floating *all* in a non-wh context (47). Here the objection is perfectly reasonable.

- (47) a. The students are all in the gym.  
b. No they aren't. John is in the nurse's office.

One final example demonstrates quite clearly the plurality of *wh-all*. (48a) is interpreted as asking for a list of stores where different parts of the outfit were acquired. (48b) can only be interpreted in a similar manner. This reading is unacceptable, however, as shoes are not generally bought individually. This shows that *wh-all* does not allow a singular reading.

- (48) a. Where all did you get that outfit that you're wearing?  
b. #Where all did you get those shoes that you're wearing?

While *all* contributes semantic plurality in *wh-all* questions, we must be careful to note that it does not necessarily contribute morpho-syntactic plurality in non-split (49a) or split (49b) forms. Instead, these sentences maintain singular agreement on the verb.

- (49) a. Who all was at the party?  
b. \*Who all were at the party?

Thus we must maintain a distinction between semantically interpreted plurality and morphologically active plurality.

I conclude that the two patterns of floating *all* in WUE do not pose a challenge to the syntax-semantics link that is proposed here.

## 4.5 Korean Case-Marked FNQs

Korean floating numerals behave much like their Japanese counterparts. But an additional possibility arises with these elements that, much like the multiple *alls* of West Ulster En-

glish, seems to pose a challenge to the (non-)exhaustivity claims made in this chapter.

As we also saw in Japanese, Korean floating numeral quantifiers like that in (50) float only under A-bar movement of their associated NP.

- (50) Haksayngtul-ul John-i twu-myeng kkucwunhayssta  
 student-ACC John-NOM 2-CL scolded  
 ‘Students, John scolded two (students)’

For example, though scrambling can in principle create new binding relations (51a-b), this is impossible if the scrambled object leaves an FNQ (51c).

- (51) a. \*Sero-uy sensayngnim-i haksayngtul-ul kkucwunhayssta.  
 each.other-GEN teacher-NOM students-ACC scolded  
 ‘Each other’s teachers scolded students.’
- b. Haksayngtul-ul sero-uy sensayngnim-i kkucwunhayssta  
 students-ACC each.other-GEN teacher-NOM scolded  
 ‘Students, each other’s teachers scolded.’
- c. \*Haksayngtul-ul sero-uy sensayngnim-i twu-myeng  
 students-ACC each.other-GEN teacher-NOM 2-CL  
 kkucwunhayssta  
 scolded  
 ‘Students, each other’s teachers scolded two (students).’

The weak cross-over pattern noted for Japanese also holds for Korean FNQs. Though scrambling can in principle eliminate WCO (52a-b), an FNQ forces A-bar movement, and so the WCO effect returns (52c).

- (52) a. \*Kutul-ul kaluch-in sensayngnim-i etten haksayng-(tul)-ul sey-myeng  
 they-ACC teach-RC teacher-NOM which student-(PL)-ACC 3-CL

koyonghal-kka?  
hire-Q

- b. ?Etten haksayng-(tuk)-ul sey-myeng kutul-ul kaluch-in sensayngnim-i  
which student-(PL)-ACC 3-CL they-ACC teach-RC teacher-NOM  
koyonghal-kka?  
hire-Q
- c. \*Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i sey-myeng  
which student-(PL)-ACC they-ACC teach-RC teacher-NOM 3-CL  
koyonghal-kka?  
hire-Q  
'Which three students<sub>1</sub> would the teachers who taught them<sub>1</sub> hire?'

Korean also allows for a possibility not available in Japanese. Numeral quantifiers in Korean can be marked for case. This case agrees with the case of the associated nominal. Interestingly, when case-marked, the presence of an FNQ does not trigger a WCO effect (53).<sup>11</sup>

- (54) ?Etten haksayng-(tul)-ul kutul-ul kaluch-in sensayngnim-i sey-myeng-ul  
which student-(PL)-ACC they-ACC teach-RC teacher-NOM 3-CL-ACC  
koyonghal-kka?  
hire-Q  
'Which three students<sub>i</sub> would the teachers who taught them<sub>i</sub> hire?'

Ko (2005) analyzes Korean case-less FNQs as stranded adnominals. Ko's arguments are

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<sup>11</sup>Case marking of the FNQ also improves the possibility of reciprocal binding in (53a). This example is not quite as good as (53b), however. I have no explanation for this fact.

- (53) a. ??Haksayngtul-ul sero-uy sensayngnim-i twu-myeng-ul kkucwunhayssta.  
students-ACC each.other-GEN teacher-NOM 2-CL-ACC scolded  
'Students, each other's teachers scolded two (students).'
- b. ?Haksayngtul-ul sero-uy sensayngnim-i motwu kkucwunhayssta.  
students-ACC each.other-GEN teacher-NOM all scolded  
'Students, each other's teachers scolded two (students).'



based on well-known ordering restrictions on FNQs (55). Ko argues that the combination of a stranding theory of FNQs with Fox and Pesetsky's (2004) theory of cyclic linearization can explain these puzzling restrictions.

- (55) a. Maykcwu-lul John-i sey-pyeng masiessta.  
 beer-ACC John-NOM 3-CL<sub>bottle</sub> drank  
 'John drank three bottles of beer.'
- b. \*Haksayng-tul-i maykcwu-lul sey-myeng masiessta.  
 student-PL-NOM beer-ACC 3-CL drank

Fox and Pesetsky (2004) argue that the relative linear order of constituents is established once and for all at various points throughout a derivation. Once two elements have been ordered with respect to one another, this order must be respected at each point of linearization. For example, consider (56). If B is to precede A, and  $\alpha$  and  $\beta$  are both linearization domains, then B must precede A at  $\alpha$  and  $\beta$ , as in (56a). It is not enough for B to precede A only at  $\beta$ , as in (56b).

- (56) a.  $[\beta \overbrace{B} \left[ \alpha \overbrace{B A t} \right]]$
- b.  $[\beta \overbrace{B} \left[ \alpha A t \right]]$

Ko (2005) shows that linearization constraints prohibit the ordering in (55b). No derivation exists that can produce the splitting of a subject and its quantifier by the object without producing a contradiction in linearization statements. Let us assume that  $vP$  and CP are linearization domains. If no movement applies at the  $vP$  level, the object is linearized after the numeral (57a). If the object and subject then move in a leap-frog derivation at the CP

level to produce a structure that should result in the order in (55b), as in (57b), this produces a contradiction. The object now precedes the numeral.

- (57) a. [<sub>vP</sub> [Subj #] Object V] Subj>Obj, #>Obj  
 b. [<sub>CP</sub> Subj Obj [<sub>vP</sub> [t #] t V]] Subj>Obj, #>Obj, **Obj**>#
- 

If the object moves to a *vP*-initial position, as in (58a), it is linearized before the numeral and before the subject. Later movements that might produce the order in (55b) produce another contradiction: The object now follows the subject (58b).

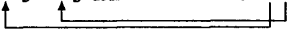
- (58) a. [<sub>vP</sub> Obj [[Subj #] t V]] **Obj**>Subj, Obj>#  
 b. [<sub>CP</sub> Subj Obj [<sub>vP</sub> t [t #] V]] Obj>Subj, Obj>#, **Subj**>Obj
- 

Ko (2005) notes that, when the FNQ is case-marked, these ordering restrictions disappear (compare (55b) and (59)).

- (59) Haksayng-tul-i maykcwu-lul sey-myeng-i masiessta.  
 student-PL-NOM beer-ACC 3-CL-NOM drank  
 ‘Three students drank beer.’

Ko (2005) argues that these case-marked FNQs are adverbials and that their adverbial status explains their lack of ordering restrictions. If case-marked FNQs are adverbial, they do not start out as constituent-mates with their nominal associate. Instead, they are inserted in their adjoined position. In (60a) *vP* is linearized. At a later stage the adverbial FNQ is added and the subject and object undergo leap-frog movements, as in (60b). All resulting

linearization statements are compatible.

- (60) a. [<sub>vP</sub> Subj Obj V] Subj>Obj  
 b. [<sub>CP</sub> Subj Obj [<sub>XP</sub> #-CASE [<sub>vP</sub> t t V]]] Subj>Obj, Subj>#, Obj>#
- 

If case-marked FNQs have the same structure as adverbial FQs in other languages, and indeed as exhaustive FQs in Korean (see above), then we expect the observed differences between these and non-case-marked FNQs. Therefore, the present results support Ko's (2005) contention that case-marked and non-case marked FNQs differ markedly in their structure. We see a remarkable convergence between Ko's analysis and the line of argumentation developed here with respect to differences between adverbial and adnominal FQs.

But, given that we have ample evidence for a distinction between types of Korean FNQs along the lines developed here, we are faced with a puzzle. If (non-)exhaustivity is a defining factor in the adverbial/adnominal split, how are we to reconcile this with the existence of two types of floating numerals in Korean? Evidence presented in this chapter would lead us to expect these FNQs to differ in exhaustivity. While non-case-marked FNQs are non-exhaustive, one would expect case-marking to correlate with exhaustive meaning. Despite efforts to find some semantic difference between these types of FNQ, I have been unable to discover such a difference in exhaustivity. For example, both types of FNQ can take an 'at least' meaning, rather than an 'exactly' reading (61).

- (61) a. Bill-i maykewu-lul ecey sey-pyeng(-ul) masiesseo  
 Bill-NOM beer-ACC yesterday three-CL(-ACC) drink-PAST-Q

‘Did Bill drink three bottles of beer yesterday?’

- b. Eo, sasil ne-pyeng(-ul) masiesseo.  
yes fact four-CL(-ACC) drink-PAST  
‘Yes, in fact he drank four.’

This shows that exhaustivity, if it does appear in case-marked FNQs, is not related to ‘exactly’ readings.

I put off developing an answer to this challenge until chapter 5. There I suggest that, though these quantificational phrases are adverbial, they do not have the same source as the adverbial FQs that we have discussed here. Instead, they are similar to adverbs like *mostly*. In other words, they do not belong to either of the two classes of floating quantifier that have been developed here.

## 4.6 Summary

I have argued here that the syntactic differences among FQ-types that were established in the preceding chapters are paralleled by a semantic difference. Exhaustive FQs are A-related adverbial elements, while non-exhaustive FQs are adnominal elements that are stranded by A'-movement.

Beyond providing evidence for this claim from English, French, Japanese, Korean, and Russian, I discussed two challenges to the universality of this claim. First, I discussed the dual patterns of *all*-float in West Ulster English and suggested that in fact two *alls* exist in these examples, one exhaustive and one a non-exhaustive plural marker. Next, I introduced the challenge of Korean case-marked FNQs. These elements differ in behavior from

their non-case-marked relatives and appear to be more like adverbial FQs. This conclusion agrees with Ko's (2005) arguments for the same conclusion based on Fox and Pesetsky's (2004) theory of linearization. I put off developing an answer to this latter challenge until chapter 5.

In chapter 5 I attempt to provide an analysis that explains the link between (non-)exhaustivity and the adverbial/adnominal distinction.



## **Chapter 5**

# **Syntactic Links to (Non-)Exhaustivity**

### **5.1 The Problem**

In chapter 4, I argued that a given floating quantifier's adverbial or adnominal nature is not arbitrary. Instead, both cross-linguistically and within a single language, this difference seems to be paralleled by the quantificational element's (non-)exhaustivity. Though this parallel between the syntactic and semantic properties of floating quantifiers seems robust and empirically motivated, it is not clear why such a link should exist. In this chapter, I will propose some possible explanations for this link.

The proposed link between FQ type and quantifier exhaustivity is summarized in table 5.1.

**Table 5.1**

	Adverbial FQ	Stranded Adnominal FQ
Exhaustive	Yes	No
Non-exhaustive	No	Yes

Given this picture, we are faced with two questions. First, given that exhaustive elements can appear in non-floated positions, why can exhaustive quantificational elements not be stranded by movement? Second, why can non-exhaustive quantificational elements not form adverbial FQs? The answers to these questions will depend on our conclusions regarding the structure of floating and non-floating structures that contain exhaustive and non-exhaustive quantifiers.

## **5.2 Why Doesn't *Every* Float?**

We can begin to answer these questions, at least in part, by addressing two exhaustive elements in English, *all* and *every*. Though both are exhaustive, only *all* can float, as we see in (1).

- (1) a. The students have **all** arrived.  
b. \*Student has **every** arrived.  
(cf. Every student has arrived.)

Clearly, then, exhaustivity is not sufficient to allow a quantifier to form an adverbial FQ. I propose that a certain type of syntax is also necessary. A quantifier that can form



an adverbial FQ must be able to appear with a full DP. *All*, *both*, and *each* satisfy this requirement (2a-c) while *every* does not (2d).<sup>1</sup>

- (2) a. All (of) [DP the students]...
- b. Both (of) [DP the students]...
- c. Each of [DP the students]...
- d. \*Every (of) [DP the students]...

*Every* can take a full DP sister only if supplemented with *one*, as in (3).<sup>2</sup>

- (3) Every one of the students...

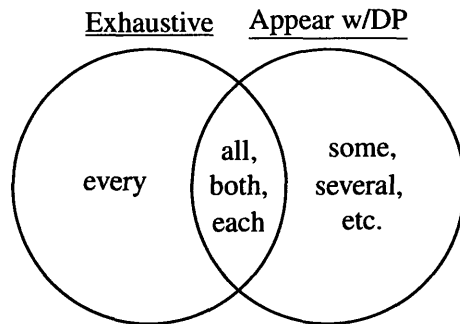
The combination of these two factors, one semantic (exhaustivity) and one syntactic (appearing with a DP), correctly picks out the set of adverbial floating quantifiers in (“standard”) English (Figure 5.1).

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<sup>1</sup>*Each* requires the presence of *of* in this case. I have no explanation for this difference between *each* and *all/both*.

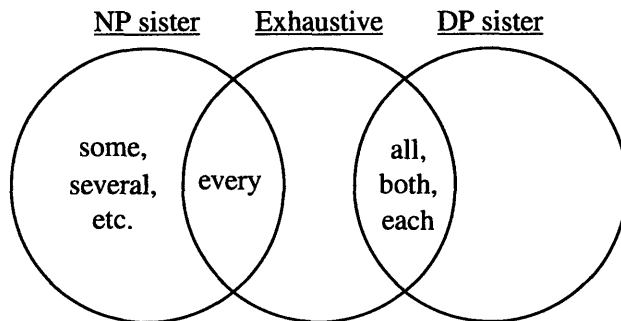
<sup>2</sup>The difference between French *chaque* ‘each’ (*chaque étudiant/\*chaque (des) étudiants*) and *chacun* ‘each’ (*chacun des étudiants/\*chacun étudiant(s)*), only the latter of which can float, may be relevant here. *Chaque* seems to be similar in syntax to English *every*. If *chacun* is *chaque+un*, one wonders whether *every* should be able to float with overt *one*, as in *The students have every one arrived*. With the right prosody, this might be possible, though the agreement does not work out quite right. Even if possible, however, this case is comparable to examples like *The students have, all fifty-six of them, gone home*, which require parenthetical prosody.

Figure 5.1



This picture is not quite accurate, however. Though examples like *several of the students* appear to show *several* with a DP/PP sister, I will argue below that *some, several, etc.* take NP sisters, even in the absence of an overt N head (Sauerland and Yatsushiro 2003). This fuller picture will look like Figure 5.2.

Figure 5.2



From these differences between *every* and *all*, I conclude that elements that can float adverbially have a different syntax than those that cannot (e.g., *every*). This syntax requires a full DP sister.

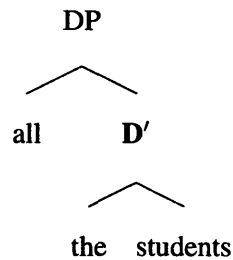
Since *all*, for example, requires a full DP sister, it seems reasonable to suggest that the sister of *all* in floated position is also a full DP. Following Doetjes (1997), I have suggested

that adverbial FQs contain a null pronominal. The combination of these arguments provides us with an initial picture of the syntax of this null pronominal: It is a full DP (4).

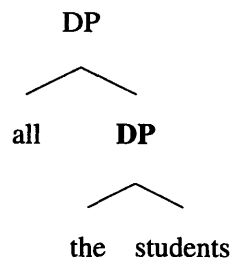
(4) The students have [all [<sub>DP</sub> *pro*]] left.

Brisson (1998) argues that *all*, *both*, and *each* are not quantifier heads at all, but are modifiers that appear in a DP as a specifier (5a). One could also analyze these modifiers as adjuncts (5b). Benmamoun (1999) argues for a similar adjoined structure for post-nominal and floating *kull* ‘all’ in Arabic.<sup>3</sup>

(5) a. Specifier Structure



b. Adjoined Structure



I adopt this assumption for adverbial floating exhaustives as well, though I will not make decisive arguments in favor of one or the other of these structures.

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<sup>3</sup>Benmamoun’s (1999) arguments also extend to Hebrew *kol* ‘all’ (Shlonsky 1991).

Given that the *pro*-form that produces adverbial FQs is not a bare NP (the sort of phrase that can serve as the sister of *every*), *every* will not be able to take this *pro*-form as its sister.

(6) \*[every [<sub>DP</sub> *pro*]]

One might object that a language could provide a null *one* which could allow *every* to take the null DP as a sister and form an FQ (7).

(7) [every *one* [<sub>DP</sub> *pro*]]

If a null *one* existed, however, we might expect this element to appear in other environments as well. For example, we would expect *every* to appear as a bare argument. While *all* can serve as a bare argument with an anaphoric meaning (8a), *every* cannot (8b), at least not without the help of overt *one* (8c).<sup>4</sup>

- (8) a. John is waiting for the students. Go tell him that **all** have arrived.  
b. \*John is waiting for the students. Go tell him that **every** has arrived.  
c. He mailed the letters after putting a stamp on **every one**.

Even ignoring such arguments, however, it is important to note that *every* would have to be able to adjoin to or form the specifier of the null DP in order to float. I have suggested here that this is not possible with English *every*. Therefore, I conclude that *every* cannot float because it cannot take the null FQ-forming element [<sub>DP</sub> *pro*] as a sister. This syntactic

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<sup>4</sup>One can distinguish between *every one*, which the anaphoric reading we are interested in here, and *everyone*, which has a different meaning, by attending to differences in their prosody. *Évery óne* has two independent stresses, while *éveryone* does not. Also, *évery óne* can be inanimate, while *éveryone* cannot.

difference between *all* and *every* will also be important in distinguishing *all* and other exhaustives from non-exhaustive quantifier structures.

### 5.3 Partitives

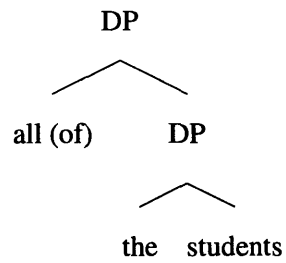
Though *every* cannot appear with a DP (or *of*-DP) sister, the same does not appear to be true for non-exhaustive quantificational elements. These elements seem to co-exist just fine with full DPs (9).

- (9)
- a. Three of [<sub>DP</sub> the students]...
  - b. Few of [<sub>DP</sub> the students]...
  - c. Several of [<sub>DP</sub> the students]...
  - d. Some of [<sub>DP</sub> the students]...

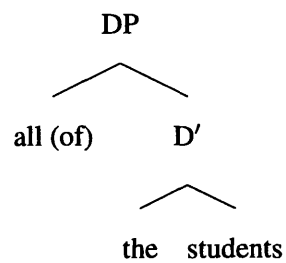
On the face of it, then, it seems that these elements should be able to form adverbial floating quantifiers. The null DP that helps exhaustive quantifiers form an FQ should do the same for non-exhaustive quantifiers. I argue here that appearances are deceiving. The syntax of *all-of*-DP and *three-of*-DP phrases is in fact quite distinct.

Phrases of the form Q-*of*-DP are often called “partitive” DPs. I will argue, however, that only some of these phrases are semantically partitive, and that these phrases have a different syntax from non-partitive Q-*of*-DP phrases. Specifically, only non-exhaustive quantifiers can appear in true partitives. Exhaustive quantifiers cannot take part in this construction. Instead, they appear in one of the structures in (5), repeated here as (10), with the possible addition of a semantically empty (or at least non-partitive) *of*.

(10) a. Adjoined Structure

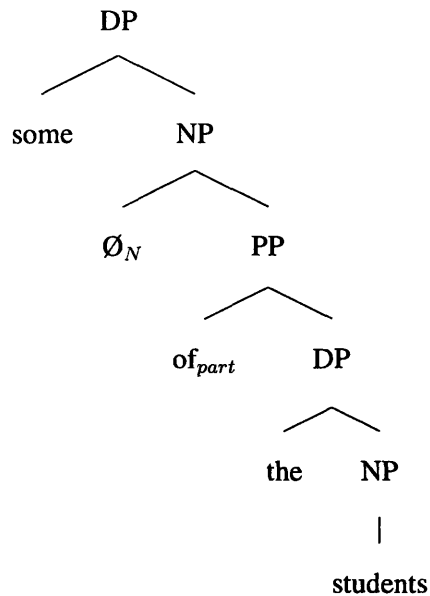


b. Specifier Structure



Though there is a debate in the literature regarding the correct structure for partitives (Chomsky 1970; Selkirk 1977; Jackendoff 1977; Ladusaw 1982; Keenan and Stavi 1986; Barker 1998; Matthewson 2001; Sauerland and Yatsushiro 2003), I adopt the widely-held view that phrases like *some of the students* have the syntax in (11). Here  $\emptyset_N$  is a null noun whose meaning is parasitic on the following NP. (Here  $\emptyset_N$  means something like *students* or *instances of*.)

(11) Partitive Structure



In order to establish that not all Q-*of*-DP phrases are partitive, we need to know what partitivity is. The semantic/pragmatic notion of partitivity involves the assertion or presupposition by the speaker that he or she is not (knowingly) making a claim about the full set in question. This assertion/presupposition is incompatible with exhaustive elements. For example, (12a) shows a possible continuation which professes ignorance of the full set, after the use of a non-exhaustive quantifier, while (12b) shows that exhaustive quantifiers reject such a continuation.

- (12) a. Three of John's students were there, but I have no idea whether he has others that will come later.
- b. #All/both/each of John's students were there, but I have no idea whether he has others that will come later.

Similarly, a partitive cannot be used once knowledge of the full set has been professed (13a). Exhaustives are acceptable in this case (13b).

- (13) a. #John has exactly three students. I saw three of his students yesterday.  
b. John has exactly two students. I saw both of his students yesterday.

This effect survives under negation, a typical symptom of presupposition (14).

- (14) #Every professor was to have sent at least three of his or her students to me yesterday. John has exactly three students. But I didn't see three of his students yesterday.

Indeed, if Barker (1998:680) is correct that true "partitive" nominal phrases have in their extension only *proper* subparts of the entity denoted by the NP/[DP –JMF] object of the partitive *of*" (emphasis in original), then an exhaustive quantifier would always contradict this requirement.<sup>5</sup> If this requirement holds, *one of John's friends* asserts that John has at least two friends. *Both of John's friends*, of course, cannot assert that John has at least three friends.

The two syntactic structures given above for non-partitive Q-*of*-DP phrases ((10) and (11), repeated as (15a) and (15b)) differ from partitive structures, repeated in (16), in at least three ways: (i) the *ofs* that appear in these structures are different elements, (ii) an exhaustive quantifier is a modifier and a non-exhaustive is a head, (iii) the sister of an

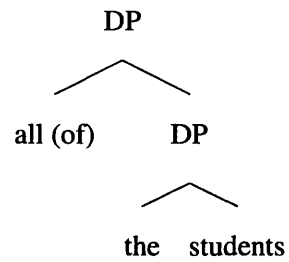
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<sup>5</sup>Barker (1998) argues that his approach allows for *all* to take part in the partitive. However, he assumes that *all* has the meaning of *every*. It is not clear whether the same would be true under modified assumptions regarding the nature of *all* (e.g., Brisson 1998).

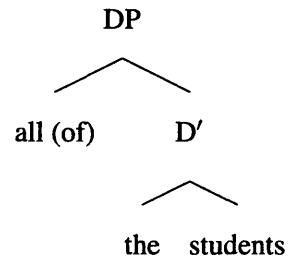


exhaustive quantifier is a DP and the sister of a non-exhaustive quantifier is an NP.

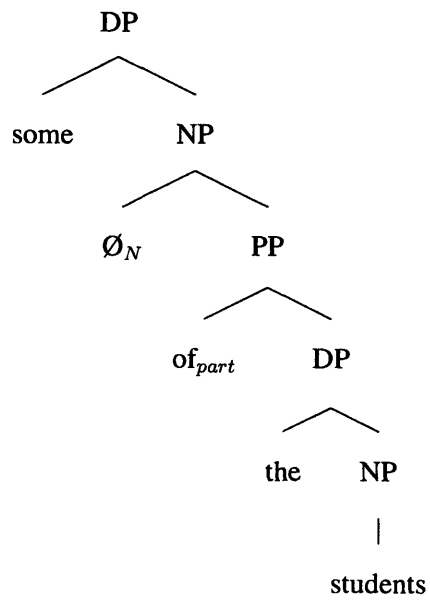
(15) a. Adjoined Structure



b. Specifier Structure



(16) Partitive Structure



As initial motivation for this syntactic distinction, note that possessives can co-occur only with (certain) quantifiers that I have argued take NP sisters. Specifically, *every* and non-exhaustives can occur in this construction (17).<sup>6</sup>

- (17) a. John's every move/wish...  
b. Mary's three sisters...  
c. \*John's all wishes...  
d. \*Mary's both sisters...

If possessive DPs form the specifier of DP, as Abney (1987) argues, then (17c-d) could be used to argue for the proposed syntactic differences. *Every* and *three* allow *John's* as a specifier, but *all* and *both*, as specifiers or adjuncts themselves, conflict with the presence of this specifier (or at least must appear above this specifier). For this argument to hold up, however, one would have to explain also the absence of non-exhaustive examples like *Mary's some sisters* and *John's most wishes*.

I adopt Barker's (1998) proposal that the partitive *of* is special (18a) and does not appear in non-partitive constructions (19b-c).<sup>7</sup>

- (19) a. Three of<sub>part</sub> John's friends...

---

<sup>6</sup>Note that this use of *every* is limited to only abstract items. Thus *He wrote down John's every word* could be said of something John was saying, but not of a list of words that John has.

<sup>7</sup>Barker (1998:688) gives a good example of ambiguity between two types of *of*. (18) can mean either that John's students' papers are generally longer than those written by Mary's students (the genitive reading), or that they are longer than those written by Mary herself (the partitive reading).

- (18) Papers of<sub>gen</sub> John's students tend to be longer than papers of<sub>part/gen</sub> Mary's.

- b. A friend of<sub>genitive</sub> John's friends...
- c. The arrival of<sub>pleonastic</sub> John's friends...

The *of* that can appear with exhaustives is not the same as partitive *of*. That two different *of*s are at play in Q-*of*-DP structures is suggested by the optionality of (non-partitive) *of* with exhaustives (20a) and the obligatory presence of partitive *of* with non-exhaustives (20b).<sup>8</sup>

- (20) a. All (of) the students went home.
- b. Several \*(of) the students went home.

Other tests also suggest a syntactic difference between exhaustive and non-exhaustive Q-*of*-DP phrases. For example, an *of*-phrase can be separated from the quantifier only when the quantifier is non-exhaustive.

First take examples in which the *of*-phrase is separated from the quantifier in a sort of topicalization structure (21). These judgments are certainly subtle, and require close attention to the meaning of the sentence. Despite these difficulties, however, the majority of those I consulted did find the contrast indicated here.

- (21) a. Of the students in this office, **several** will graduate this year.
- b. Of the students in this office, **two** will graduate this year.
- c. ?\*Of the students in this office, **all** will graduate this year.

---

<sup>8</sup>*Each* presents an exception to this statement: *each \*(of) the students*. Again, I have no explanation for this fact.

d. ?\*Of the (two) students in this office, **both** will graduate this year.

Separation of the DP and the quantifier in tough-movement structures lead to similar, though a bit less robust judgments (22).

- (22) a. These cookies will be tough to eat **two** of at once, but I'll give it a try.  
b. These cookies will be tough to eat **several** of at once, but I'll give it a try.  
c. ??These (two) cookies will be tough to eat **both** of at once, but I'll give it a try.  
d. ??These cookies will be tough to eat **all** of at once, but I'll give it a try.

Also, though the effect is subtle, if present at all, separation of the DP from *Q-of* may be better with non-exhaustive quantifiers in examples like (23) and (24).<sup>9</sup>

- (23) a. My eyes are the only thing I still have **two** of.  
b. ?My eyes are the only thing I still have **both** of.
- (24) a. His eyes, which he lost one of in the farming accident, were blue.  
b. ?His eyes, which he lost both of in the farming accident, were blue.

Moving on to other differences, we see in (25) that only non-exhaustive quantifiers can take an overt noun before the *of*-phrase.<sup>10</sup>

- (25) a. Several books of those (books) on the table should go to the library book sale.

---

<sup>9</sup>The speakers that I consulted regarding these examples found the (a) examples uniformly acceptable, but differed widely in their judgment of the (b) examples.

<sup>10</sup>This data could be interpreted as support for the view that non-exhaustive partitives contain an NP that can be headed by a null N ( $\emptyset_N$ ).

- b. ?\*All books of those (books) on the table should go to the library book sale.

Differences in the syntax of quantifier phrases in Russian support the argument that quantificational elements that differ in semantic (non-)exhaustivity also show systematic syntactic differences. Russian non-agreeing quantifiers (NQs) behave like heads: they embed an NP/DP and force genitive marking of this NP/DP (26a). Exhaustive, agreeing quantifiers (AQs), on the other hand, agree with the associated NP/DP just as modifiers do (26b).

- (26) a. Prišlo [malo detej].  
came-NEUT.SG [few children-GEN]  
'A few children came.' (NQ)
- b. Prišli [vse deti].  
came-PL [all-NOM.PL children-NOM]  
'All the children came.' (AQ)

All of these considerations support the conclusion that, despite surface similarities, exhaustive *Q-of-DP* phrases do not have the same syntactic structure as non-exhaustive, partitive *Q-of-DP* phrases.

Though partitivity in Japanese is hard to demonstrate, Ishii (1997) argues that, when we can show differences between partitives and non-partitives in Japanese, floating numerals in Japanese are interpreted as partitives. This fact also supports a preliminary definition of the notion of *exhaustivity* as *non-partitivity* and of *non-exhaustivity* as *partitivity*.

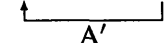
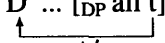
Having established the differing syntax of exhaustives and non-exhaustives, I now turn to the two questions with which I opened this chapter: Why can exhaustive quantificational elements not be stranded by movement? And, why can non-exhaustive quantificational

elements not form adverbial FQs?

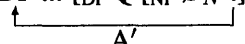
## 5.4 The Lack of Stranded Exhaustive FQs

Recall that one of the main questions posed by the link between (non-)exhaustivity and FQ type is: Why can exhaustive quantificational elements not be stranded by movement? The syntactic differences introduced in the last section present several possible explanations for the lack of exhaustive adnominal floating quantifiers.

Stranding of an exhaustive quantifier, given our syntactic assumptions, would involve movement of either the lower segment of a DP to which *all* (or another element) has adjoined, or movement of a D' (27).

- (27) a. DP ... [DP all t]  

- b. D' ... [DP all t]  


Stranding of a non-exhaustive quantifier, on the other hand, will involve movement of an embedded DP (28).<sup>11</sup>

- (28) DP ... [DP Q [NP Ø<sub>N</sub> t]]  


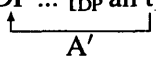
Let us turn first to the possibility in (27a). If movement of this sort is prohibited in general, then the lack of stranded exhaustives is explained. Why would such movement be

<sup>11</sup>I have left out the partitive *of* here as in most cases we have been discussing quantifier stranding in languages that may not have a partitive adposition.

impossible? I argued above that A'-movement can extract a DP from within a DP, while A-movement cannot. In that case, however, we were dealing with two separate DPs, one embedded within the other (29).

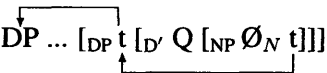
(29) [DP ... [XP ... [DP ... ]]]

In contrast, (27a), repeated as (30), contains two segments of a single DP.

(30) DP ... [DP all t]  


Therefore, locality considerations could still rule out (30). Even A' locality might require the movement of the highest DP segment in this case. A general ban on the movement of incomplete categories (segments) could be at play here.

Turning to the alternative derivation in (27b), a general ban on movement of X' projections could also be called upon to rule out this derivation. More complex assumptions regarding movement out of a DP could also be relevant here. For example, if we assume that movement out of a DP must proceed through the left edge of that DP (for example, if DPs are phases (Chomsky 2001) or linearization domains (Fox and Pesetsky 2004)), non-exhaustive quantifiers could be stranded as in (31).

(31) DP ... [DP t [D' Q [NP Ø<sub>N</sub> t]]]  


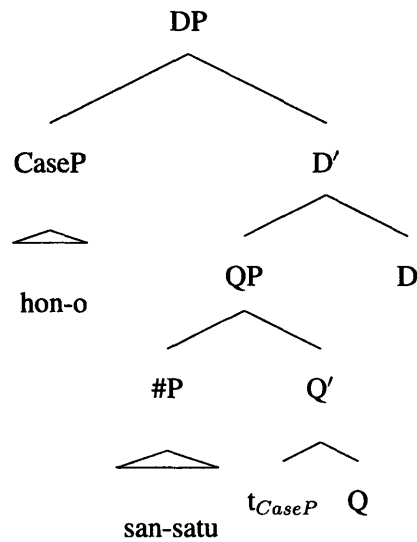
Evidence for this sort of movement comes from the potential source structures for stranding in, e.g., West Ulster English and Japanese. McCloskey (2000a) argues that *who*

*all* is the source for stranding of *all* in *wh-all* split, but that this phrase results from fronting of *who* within its DP.<sup>12</sup>

(32)  $[_{DP} \text{ who } [_{D'} \text{ all } t]]$

Watanabe (To appear) argues that the phrase *hon-o san-satu* is the source of stranding of *san-satu*, and is derived by movement of *hon-o* to Spec-DP, as in (33).<sup>13</sup>

(33) Structure that Feeds FNQ Stranding

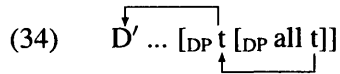


Given this requirement of movement through the edge, exhaustive quantifiers would require a derivation like that in (34). This derivation requires movement of a *D'*, which might be independently ruled out.

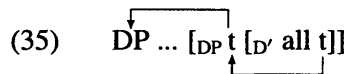
<sup>12</sup>I suggest below that there may be a general ban on movement from complement to specifier position (Pesetsky and Torrego 2001; Abels 2003). If this is correct, and if *who* does move through the edge of DP, it is not the complement of *all* or the D head of the highest DP.

<sup>13</sup>Shlonsky (1991) argues that standing of FQs in Hebrew proceeds through the edge of the DP. Merchant (1996) applies Shlonsky's (1991) idea to German and argues that this operation explains the agreement observed there. I have argued here that exhaustive quantifiers (including those in Hebrew and German) are adverbial in nature.





Even if the exhaustive quantifier were a head, rather than a modifier, as in (35), the derivation would run afoul of a ban on movement from complement to specifier position (Pesetsky and Torrego 2001; Abels 2003).



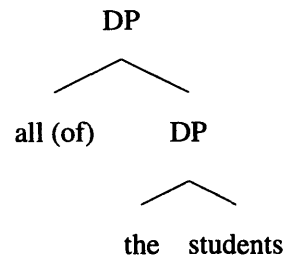
Therefore, regardless of our assumptions regarding the positioning of elements like *all* as adjuncts or specifiers, several principles could rule out a stranding derivation. One worries, of course, about the generalizability of these arguments. These explanations are only generalizable if the syntax of exhaustive/non-partitive elements is uniform across languages. Even if this approach is fully generalizable, however, we are left with a question: Why do exhaustive/non-partitive elements have this syntax? If this structure is universal, or even wide-spread, one wonders what explains *this* link between syntax and semantics. Therefore, to the extent that the present explanation is successful, we have answered one question, but created another.

## 5.5 The Lack of Non-Exhaustive Adverbial FQs

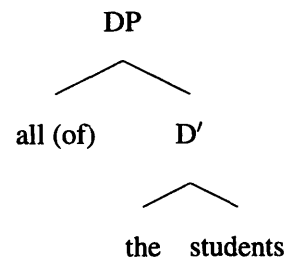
The second of the two main questions raised by the link between FQ type and (non-)exhaustivity was: Why can non-exhaustive quantificational elements not form adverbial FQs? Again, differences in syntax provide several possible explanations for this fact.

First, note that, given the structures argued for above and repeated as (36) and (37), exhaustive quantifiers have DP sisters while non-exhaustives have NP sisters.

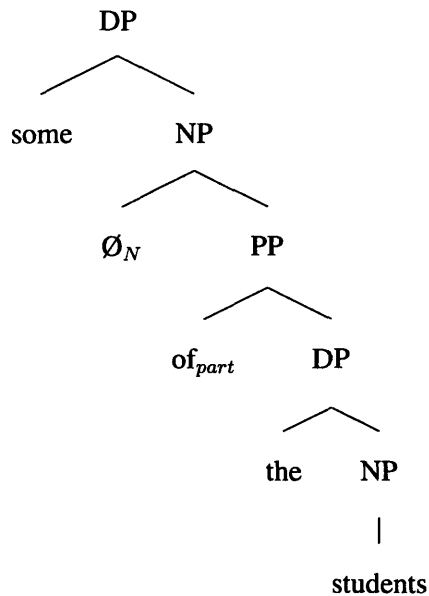
(36) a. Adjoined Structure



b. Specifier Structure



(37) Partitive Structure



If this pattern holds up cross-linguistically, it may provide an answer to this question. Since the null element that allows for the creation of adverbial FQs is a DP, only elements that take DP sisters (that is, exhaustive/non-partitive quantifiers) will be able to form adverbial DPs.

Since non-exhaustive quantifiers can appear in partitive structures that contain a null noun and embed a DP, however, this explanation has a hole in it. One can imagine a structure, like that in (38), in which the null noun takes the null FQ-creating DP as a complement.

(38) [ Q [NP Ø<sub>N</sub> [DP *pro* ]]]

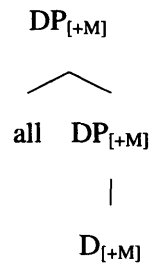
Let us consider for a moment the adverbial nature of adverbial FQs. I argued in chapter 2 that some FQs behave very much like adverbs (in distribution, etc.) and that these ele-

ments contain a null DP. If exhaustive/non-partitive quantifiers are modifiers or adjuncts of this DP, as I argued above, some feature of the DP must be responsible for its distribution. Therefore, though this element is much like a DP, in that it can be modified by *all*, let us suppose that it carries a feature that marks it as a “modal adverb”. By this, I mean that this feature allows the DP to have the distribution of modal adverbs. Call this feature [+M], as in (39).

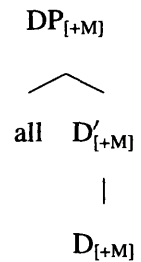
(39)  $[DP_{[+M]} D_{[+M]}]_{pro}$

The adjunction of *all* to this item, as in (40a), or the addition of *all* as a specifier, as in (40b), does not change the adverbial status of the root node. We correctly predict, therefore, that this element will have the distribution of the [+M] class of adverb.

(40) a. Adjoined Structure

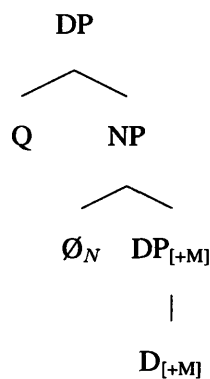


b. Specifier Structure



Given this result, an explanation for the lack of adverbial non-exhaustive FQs becomes available. Unlike exhaustive modifiers, non-exhaustive quantifiers do not adjoin to DPs. Instead, they take an NP as a complement. If the N head of this NP took the null DP[+M] as its sister, the adverbial status of the null DP has no way of projecting beyond this level. Instead, the structure has only the properties of a non-[+M] DP, as we see in (41).

(41) Partitive Structure



Therefore, though such a null DP could in principle appear within a partitive structure, this structure would not be able to appear in adverb positions. That is, such a structure would produce exactly the same distribution as stranded adnominal FQs.

Familiar questions arise regarding this explanation for the lack of non-exhaustive adverbial FQs. This explanation again depends on a difference in the syntax of exhaustives/non-partitives and non-exhaustives/partitives. How universal is this syntactic difference? And, even if it is universally attested, why should this link between syntax and semantics exist? What is it about the meaning of these exhaustive elements that forces them to be modifiers, rather than heads? What about non-exhaustive elements forces them to be heads, and not modifiers?

## 5.6 Korean Case-Marked FNQs

In chapter 4 I argued that while Korean floating numeral quantifiers show the behavior of stranded, A'-related adnominal elements, FNQs that are marked for case behave like adverbials: They fail to show ordering restrictions and do not impose an A'-movement restriction. If case-marked FNQs have the same meaning as non-case-marked FNQs, this behavior poses a problem for the idea that only exhaustive elements can form adverbial FQs. In the absence of evidence to the contrary, one assumes that both types of FNQs are non-exhaustive.

Indeed, despite reports of meaning differences among FNQs (Kim 2005), I have been unable to find decisive arguments that case-marked and non-case-marked Korean FNQs differ in exhaustivity or partitivity. For example, both types of FNQ can be taken to mean “at least n”, rather than “exactly n” (42).

- (42) a. Bill-i maykewu-lul ecey sey-pyeng(-ul) masiesseo  
Bill-NOM beer-ACC yesterday three-CL(-ACC) drink-PAST-Q  
'Did Bill drink three bottles of beer yesterday?'
- b. Eo, sasil ne-pyeng(-ul) masiesseo.  
yes fact four-CL(-ACC) drink-PAST  
'Yes, in fact he drank four.'

It is still possible, however, that Korean case-marked FNQs are indeed “exhaustive” adverbial FQs in the sense developed here. If this is true, one expects some semantic difference to exist between the two FNQ types. If such a difference is discovered, it could tell us something about the true nature of the exhaustivity/partitivity split that was discussed above.

If, however, no exhaustivity/partitivity split exists among Korean FNQs, an explanation of their differing syntactic behavior is still required. In this section I suggest a possible solution to the puzzle of case-marked Korean FNQs that does not rest on the exhaustivity/partitivity split.

Recall that in chapters 1 and 2 I alluded to a third type of “floating quantifier”, the *de-quantificational adverb*. One example of a de-quantificational adverb is English *mostly*. *Mostly* can have a meaning very much like the quantifier *most*, but it appears in supra-VP positions (43). This element has roughly the distribution of modal adverbs and adverbial FQs (44) (see chapter 2), with the exception of (43d) (cf. (44c)).

- (43) a. **Most** of the students will have been being reprimanded for an hour by the time you arrive.
- b. The students **mostly** will have been being reprimanded for an hour by the time you arrive.
- c. The students will **mostly** have been being reprimanded for an hour by the time you arrive.
- d. ?\*The students will have **mostly** been being reprimanded for an hour by the time you arrive.
- e. \*The students will have been **mostly** being reprimanded for an hour by the time you arrive.
- f. \*The students will have been being **mostly** reprimanded for an hour by the time you arrive.
- (44) a. The vegetables all will have been being roasted for an hour by the time you

- arrive.
- b. The vegetables will all have been being roasted for an hour by the time you arrive.
- c. The vegetables will have all been being roasted for an hour by the time you arrive.
- d. ?\*The vegetables will have been all being roasted for an hour by the time you arrive.
- e. \*The vegetables will have been being all roasted for an hour by the time you arrive.

*Mostly* shows overt adverb marking with the suffix *-ly*. In much the same way, case marking is symptomatic of certain adverbial phrases in Korean (45) (Joo Kim 1990; Kim and Maling 1993; Maling 1989; Cho 1999; Kim 2001).

- (45) a. Na-nun tennis-lul [**han sikan-tongan**]-ul chi-ess-ta.  
I-TOP tennis-ACC [one hour-period]-ACC  
  
play-PAST-DECL  
'I played tennis for an hour.'
- b. Na-nun i kos-ul [**sip meyta-mankum**]-ul pha-ess-ta.  
I-TOP this spot-ACC [ten meter-extent]-ACC  
  
dig-PAST-DECL  
'I dug this spot to the extend of ten meters.'
- c. Na-nun New York-lul **twu-pen-ul** pangmwun-ha-ess-ta.  
I-TOP New York-ACC two-time-ACC visit-do-PAST-DECL  
'I visited New York twice.'
- d. Na-nun onul **secang-ey-ul** ka-ess-ta.  
I-TOP today market-to-ACC go-PAST-DECL



‘Today I went to the market.’

Only adverbial phrases that can serve as semantic delimiters (of space, time, etc.) can be case-marked in Korean. Kim (2001) suggests that these phrases contain extra delimiter-adverb structure that leads to case-marking. I suggest that this structure can also be added to a numeral quantifier. In this case, however, case-marking is controlled by the nominal to which the FNQ is related (the FNQ delimits the number of individuals involved), rather than to the event. Crucially, though, this extra adverbial material allows the numeral quantifier to have the syntax of an adverbial, much as the addition of *-ly* gives *most* adverbial syntax.

This approach has the advantage of recognizing that non-exhaustive quantifiers can become adverbs (e.g., *mostly*), though not by the process that creates adverbial FQs. It also recognizes the links between case-marked FNQs in Korean and (other) case-marked adverbials.<sup>14</sup> The final word on the correct analysis of Korean case-marked FNQs will have

---

<sup>14</sup>Though many of my consultants found the following examples to be acceptable, Kim (2001) reports that case-marked adverbials must follow the accusative object (46b-c).

- (46) a. Na-nun ecey tennis-lul [**han sikan-tongan**]-ul chiessta.  
I-TOP yesterday tennis-ACC [one hour-period]-ACC play-PAST-DECL  
‘Yesterday I played tennis for an hour.’  
b. \*Na-nun ecey [**han sikan-tongan**]-ul tennis-lul chiessta.  
I-TOP yesterday [one hour-period]-ACC tennis-ACC play-PAST-DECL  
Intended: ‘Yesterday I played tennis for an hour.’  
c. \***[Han sikan-tongan]-ul** na-nun ecey tennis-lul chiessta.  
[one hour-period]-ACC I-TOP yesterday tennis-ACC play-PAST-DECL  
Intended: ‘Yesterday I played tennis for an hour.’

The same holds for (accusative) case-marked numeral quantifiers (47) and other case-marked quantifiers (48). (Here my consultants agree with the judgments.)

- (47) a. Mary-ka haksayng-tul-ul **twu-myeng-ul** sohwanhayssta.  
Mary-NOM student-PL-ACC 2-CL-ACC summoned  
‘Mary summoned the two students.’  
b. \*Mary-ka **twu-myeng-ul** haksayng-tul-ul sohwanhayssta.  
Mary-NOM 2-CL-ACC student-PL-ACC summoned

to await further investigation of syntactic and semantic differences between these and their non-case-marked relatives.

## 5.7 Summary

In this chapter I have developed a view of the syntax of exhaustive and non-exhaustive quantifiers that helps to explain both the lack of stranded exhaustive FQs and the lack of adverbial non-exhaustive FQs.

Exhaustive quantifiers cannot be stranded by movement because, rather than being a head that embeds a DP, they are adjoined to a DP, or in the specifier position of that DP. Thus stranding would involve movement of a segment or of an X' projection. It is not implausible to assume that both of these possibilities are impossible. Non-exhaustive quantifiers are heads that take NP complements. Therefore, they cannot take as a sister the null DP that forms adverbial FQs. Instead, they could at best embed this DP, thereby masking the DP's adverbial properties. This analysis is summarized in table 5.2.

- 
- Intended: 'Mary summoned the two students.'
- c. \***Twu-myeng-ul** Mary-ka haksayng-tul-ul sohwanhayssta.  
 2-CL-ACC Mary-NOM student-PL-ACC summoned  
 Intended: 'Mary summoned the two students.'
- (48) a. Mary-ka haksayng-tul-ul **motwu-lul** sohwanhay-ss-ta.  
 Mary-NOM student-PL-ACC all-ACC call-PAST-DEC  
 'Mary called all the students.'
- b. \*Mary-ka **motwu-lul** haksayng-tul-ul sohwanhay-ss-ta.  
 Mary-NOM all-ACC student-PL-ACC call-PAST-DEC  
 Intended: 'Mary called all the students.'
- c. \***Motwu-lul** Mary-ka haksayng-tul-ul sohwanhay-ss-ta.  
 all-ACC Mary-NOM student-PL-ACC call-PAST-DEC  
 Intended: 'Mary called all the students.'

**Table 5.2**

	Adverbial FQ	Stranded Adnominal FQ
Exhaustive	Yes	No (*Segment/X' movement)
Non-exhaustive	No (*Embeds DP)	Yes

Though these explanations provide a glimpse at the sort of syntactic differences that could underly the link between FQ type and (non-)exhaustivity, many questions remain. Perhaps most importantly, we would like to know how general these syntactic differences are cross-linguistically. While they are plausible for the languages discussed here, do they extend to other languages? Second, if these syntactic differences hold up cross-linguistically, we are faced with the deeper question of why this should be so.

In this dissertation I have argued extensively from previously discussed and newly discovered empirical phenomena that a link exists between FQ type and (non-)exhaustivity. It is important to note that if the proposals in this chapter are flawed in some way, this puzzle still stands and would still be in need of explanation.



## Chapter 6

### Direct A'-Movement

Having established at some length a new analysis of floating quantification, I turn to one important consequence of this theory—the phenomenon of direct A'-movement. By this, I refer to a situation in which A'-movement, as in (1b), despite the fact that independent principles would seem to require a derivation in which the DP undergoes A-movement (with possible subsequent A'-movement), as in (1a).

- (1) a. [TP DP ... [VP ... t ... ]]
- ↑  
A-move
- b. [CP DP ... [TP ... [VP ... t ... ]]]
- ↑  
A'-move

Several of the languages that I have discussed here are affected by direct A'-movement. Furthermore, the same effect has been noted in other languages based on facts that are unrelated to floating quantification. I will show how the present analysis leads to direct A'-movement in Japanese and West Ulster English and discuss how this phenomenon might

be accounted for in these languages. I will also review Holmberg and Hróarsdóttir's (2003) argument for direct A'-movement in Icelandic and discuss more general effects of the phenomenon.

## 6.1 Japanese

Miyagawa (1989) presents data like those in (2) to argue that Japanese passive and unaccusative subjects originate in low verbal complement positions.

- (2) a. [Gakusei-ga] ano otoko-ni huta-ri korosareta.  
 [student-NOM] that man-by 2-CL were.killed  
 'Two students were killed by that man.' (Passive)
- b. [Gakusei-ga] ofisu-ni huta-ri kita.  
 [student-NOM] office-to 2-CL came  
 'Two students came to the office.' (Unaccusative)

Based on the surface similarity of the position of the passive subjects in (2) and transitive/unergative subjects, one naturally assumes that these elements have undergone A-movement to Spec-TP (3), as is found with passivization in other languages.<sup>1</sup>

- (3) [<sub>TP</sub> [Gakusei-ga] ofisu-ni [t huta-ri] kita]  
 ↑  
 A-movement

The evidence discussed here shows that, at least in cases of FNQ-stranding, passive and unaccusative subjects do not undergo A-movement to "subject position" (Spec-TP).

<sup>1</sup>As I noted in chapter 3, this assumption was not crucial to the original analyses of passives and unaccusatives in Japanese (Miyagawa 1989), which were concerned with the *existence* of movement in these cases, rather than the *type* of movement involved.

Instead, quantifier stranding proceeds through A'-movement, as in (4).

- (4) [CP [Gakusei-ga] [TP ofisu-ni [t huta-ri] kita]]  
↑  
A'-movement

For example, we saw that, though subject fronting can normally create new binding relations (an A-movement phenomenon), as in (5b), FNQ stranding eliminates this possibility (5c).

- (5) a. \*[Otagai<sub>1</sub>-no sensei]-ni [gakusei-ga huta-ri]<sub>1</sub> sikarareta.  
 [each.other-GEN teacher]-by [student-NOM 2-CL] were.scolded  
 Intended: 'Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.'
- b. [Gakusei-ga huta-ri]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ni sikarareta.  
 [student-NOM 2-CL] [each.other-GEN teacher]-by were.scolded  
 'Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.'
- c. \*[Gakusei-ga]<sub>1</sub> [otagai<sub>1</sub>-no sensei]-ni huta-ri sikarareta.  
 [student-NOM] [each.other-GEN teacher]-by 2-CL were.scolded  
 Intended: 'Two students<sub>1</sub> were scolded by their<sub>1</sub> teachers.'

We concluded that, in Japanese, a subject need not move to or pass through Spec-TP. This leads us to wonder what requirements exist on the Spec-TP position in Japanese. I argued here, following Miyagawa (2001) that Japanese requires the presence of some XP in Spec-TP (i.e., T has the EPP property), but that this XP need not be the subject. Therefore, examples like (5c) can involve derivations like that in (6), in which a non-subject element fills the Spec-TP position.

- (6) [CP [Gakusei-ga] [TP [ano otoko]-ni [VP [t huta-ri] korosareta]]].  
↑  
A'-movement

Evidence from the scope of *zen'in* 'all' with respect to negation supports this derivation. In (7b) we see that stranding of *mit-tu* by *teiri-ga* eliminates the low-scope reading of *zen'in-ni* that was available in (7a). I suggested in chapter 3 that this effect is due to the *ni*-phrase's obligatory presence in Spec-TP. Since *teiri-ga* has A'-moved, it cannot occupy Spec-TP. Since something must fill this position, the *ni*-phrase does.

- (7) a. [Teiri-ga mit-tu] zen'in-ni syoomeisarenakatta yo.  
 theory-NOM 3-CL all-DAT approve.PASS.NEG.PAST EXCL  
 'Three theories were not approved by all.' ( $\forall > \text{NEG}$ ,  $\text{NEG} > \forall$ )
- b. [Teiri-ga] zen'in-ni mit-tu syoomeisarenakatta yo.  
 theory-NOM all-DAT 3-CL approve.PASS.NEG.PAST EXCL  
 'Three theories were not approved by all.' ( $\forall > \text{NEG}$ , \* $\text{NEG} > \forall$ )

Thus the EPP in Japanese can be satisfied by a subject DP or by a non-subject XP. What happens, however, when no non-subject XP is available to fill Spec-TP? One would expect that in such a case the subject itself must move to Spec-TP. This prediction is not borne out in all cases. Evidence from the scope of *zen'in* 'all' and negation are also relevant here. Miyagawa and Babyonyshev (2004) show that *zen'in* 'all' can scope below negation in unaccusative contexts (8). We conclude from this that *zen'in* has not raised to TP.

- (8) a. [Zen'in-no hon]-ga arimasen.  
 [all-GEN book]-NOM be-NEG  
 'There aren't everyone's books (here).' ( $\text{NEG} > \forall$ ,  $\forall > \text{NEG}$ )
- b. Zen'in-ga yonde arimasen.  
 all-NOM invite is-NEG  
 'All have not been invited' ( $\text{NEG} > \forall$ ,  $\forall > \text{NEG}$ )



If the subject fails to move to Spec-TP, and Japanese uniformly requires Spec-TP to be filled, what occupies this position when the subject takes low scope in (8)?

The fact that this low scope reading is only possible in these intransitive examples, but not in transitive clauses, suggests that an expletive might be involved. More precisely, Japanese might allow for a null expletive element to occupy Spec-TP in certain structures, such as in unaccusatives and resultatives (9).<sup>2</sup>

(9) [TP *Expl* [<sub>VP</sub> [zen'in-no hon]-ga arimasen]]

Evidence shows that this expletive, if it exists, is unavailable in transitive structures. If it were available in these cases, then a structure such as (10) would allow for a low-scope reading of *zen'in*, contrary to fact (Miyagawa 2001).

(10) [TP *Expl* [<sub>VP</sub> zen'in-ga [sono tesuto]-o ] ukenakatta]  
[TP *Expl* [<sub>VP</sub> all-NOM [that test]-ACC ] take-NEG-PAST]  
'All did not take that test.'

This structure predicts: NEG > ∀

Actual scope: ∀ > NEG, \*NEG > ∀

In fact, this expletive must be unavailable even in passives and unaccusatives when another XP is available to fill Spec-TP.<sup>3</sup> If it were available, the structure in (11) would be possible, leading to low scope for *zen'in*, contrary to fact.

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<sup>2</sup>If this expletive structure shares any characteristics with, e.g., English *there* sentences, one might expect a definiteness effect. This effect would presumably rule out a phrase like *zen'in-no hon* in low position (9). Japanese, however, seems to lack the definiteness effect in general. Thus the possibility of (9) is not problematic.

<sup>3</sup>At the least, the derivation in which the extra XP fills Spec-TP must be strongly preferred by those speakers that I have surveyed.

- (11) [CP [Teiri-ga] [TP *Expl* [<sub>vP</sub> zen'in-ni [ t mit-tu ] syoomeisarenakatta]].  
 [CP theory-NOM [TP *Expl* [<sub>vP</sub> all-DAT [ t 3-CL ] ] approve.PASS.NEG.PAST]]  
 'Three theories were not approved by all.'

This structure predicts: NEG >  $\forall$

Actual scope:  $\forall$  > NEG, \*NEG >  $\forall$

Beyond the noted distributional differences, which make an expletive analysis at least plausible, one would like to find independent evidence for the existence of a null expletive in Japanese. For example, we know from other languages that sentences with expletive “subjects” generally show semantic differences with those that lack them. Unfortunately, I have not yet investigated this question in Japanese.

To some up, we have seen that Japanese allows a phrase that is normally expected to occupy or pass through Spec-TP to avoid this position altogether. This direct A'-movement is in fact forced when the phrase in questions strands a numeral quantifier. In such an instance, some other XP fills the Spec-TP position. Spec-TP in Japanese can be filled by the subject, some other overt XP, or by a null expletive (at least in certain environments). Thus direct A'-movement of the subject is possible, and even unproblematic in Japanese because other methods are available in the language for the filling of the Spec-TP position.

## 6.2 West Ulster English

The derivation of a subject wh-question like (12) is standardly analyzed in GB and minimalist theory as in (13).

- (12) [CP Who [TP t' will t go to the store for me]]?

- (13) a. [TP Wh-Subject ... [<sub>VP</sub> t Verb ... ]]  
↑  
A-movement
- b. [CP Wh-Subject ... [TP t ... [<sub>VP</sub> t Verb ... ]]]  
↑  
A'-movement

Similarly, a wh-subject in a passive sentence like (14) is assumed to undergo A-movement to Spec-TP before A'-movement to Spec-CP (15).

- (14) [CP Who [TP t' was arrested t]]?
- (15) a. [TP Wh-Subject ... [<sub>VP</sub> Verb t ]]  
↑  
A-movement
- b. [CP Wh-Subject ... [TP t ... [<sub>VP</sub> Verb t ]]]  
↑  
A'-movement

Motivation for these derivations is both conceptual and empirical. Conceptually, one assumes that if a non-wh-subject undergoes one type of movement to Spec-TP, a wh-subject will undergo such movement as well. Whatever forces or triggers movement in non-wh contexts, whether case, the EPP, or something else, is presumably also operative in wh contexts.

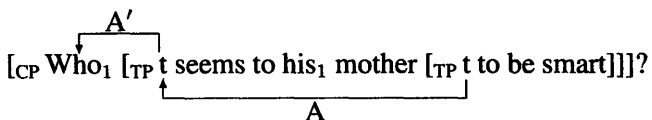
Turning to more empirical arguments, recall that weak cross-over (WCO) arises only with A'-movement (16a). A-movement in roughly the same configuration is completely acceptable (16b).

- (16) a. \*Who<sub>1</sub> did his<sub>1</sub> mother see t<sub>1</sub>?
- b. John<sub>1</sub> seems to his<sub>1</sub> mother [t<sub>1</sub> to be smart].

Given this fact, it is perhaps surprising that a wh-subject does not trigger WCO (17).

(17) Who<sub>1</sub> seems to his<sub>1</sub> mother to be smart?

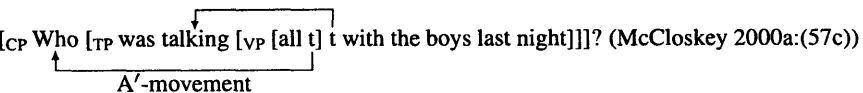
This behavior is readily explicable, however, if the wh-subject first undergoes A-movement raising, just like a non-wh-subject, before moving on by A'-movement to its left-peripheral position (18).

(18) [CP Who<sub>1</sub> [TP t seems to his<sub>1</sub> mother [TP t to be smart]]]?  


This serial derivation, which seems well-motivated, is incompatible with much of the WUE wh-*all* split data discussed here. I argued that wh-*all* split arises through A'-movement of the wh-phrase away from its constituent-mate *all*. Thus movement from the position of *all* must be A'-, rather than A-movement.

Given this reasoning, the following example of a West Ulster English passive wh-subject must be derived as shown in (20). The wh-phrase *who* cannot have first moved to Spec-TP by A-movement, as such movement could not have stranded *all*.<sup>4</sup>

<sup>4</sup>In fact, subjects of transitive clauses must also move by direct A'-movement when stranding *all*. McCloskey (2000a) argues that, due to short verb movement, the theta-position of the subject is post-verbal. This leads to the derivation in (19).

(19) [CP Who [TP was talking [VP [all t] t with the boys last night]]]? (McCloskey 2000a:(57c))  


(20) [CP Who [TP was arrested [DP t all]]]?  
↑  
A'-movement

As McCloskey (2000a) also notes, this derivation does not contain the expected intermediate A-movement to subject position.<sup>5</sup> These examples from West Ulster English pose a challenge. If WUE, like other varieties of English, requires something to fill the Spec-TP position, what fills this position in examples like (23)?

(23) Who was arrested all?

In Japanese, I followed Miyagawa (1997, 2001) in arguing that non-subject XPs can satisfy the EPP, as in (24). This allows a passive subject to strand a numeral quantifier.

(24) [CP Gakusei-ga [TP ofisu-ni [VP [t<sub>1</sub> huta-ri] kita]]]  
 [CP student-NOM [TP office-to [VP [t 2-CL] came]]]  
 'Two students came to the office.'

<sup>5</sup>The A' restriction on *wh-all* split should allow a derivation like that in (21), where A-movement precedes A'-movement.

(21) \*Who does John think [CP that [TP [DP t all] was [VP arrested t]]]?  
↑  
A'-movement  
↑  
A-movement

Generally, stranded *all* must appear prosodically dependent on the verb (McCloskey 2000b). The intervention of the complementizer *that* in (21) therefore rules this out. If no *that* is present, as in (22), the string is ambiguous between (22a) and (22b). In this case we cannot conclude anything from the acceptability of (22).

(22) Who does John think all was arrested?  
 a. Who does John think [CP all [TP was arrested]]?  
 b. Who does John think [TP all was arrested]?

(21) might also be a case of the *that*-trace effect.

I argued that, in certain cases (e.g., passives and unaccusatives that lack another overt XP), a null expletive can also fill this role in Japanese.

- (25) [TP *Expl* [VP [Zen'in-no hon]-ga arimasen]].  
 [TP *Expl* [VP [all-GEN book]-NOM be-NEG]]  
 'There aren't everyone's books (here).'

In some cases, a non-subject can also occupy Spec-TP in English. For example, the DP that would be the surface subject, as in (26a), need not move to this position if an expletive *there* is present, as in (26b).

- (26) a. [Many students] were arrested t.  
           ↑  
       b. There were arrested many students.

Just as in Japanese, when a non-subject fills the Spec-TP position and the subject moves by direct A'-movement, no A-movement effects arise. For example, we see in (27a) and (27b) that the associate of *there* in an existential sentence can undergo A'-movement. Since A'-movement does not allow the creation of new binding relations, binding is blocked in (27c). Since weak cross-over is triggered by A'-movement, WCO arises in (27d).

- (27) a. There seem to be five students outside.  
       b. How many students do *there* seem to be outside?  
       c. \*How many students<sub>1</sub> do *there* seem to themselves<sub>1</sub> to be outside?  
       d. \*How many students<sub>1</sub> do *there* seem to their<sub>1</sub> mothers to be outside?

If no *there* is present, these effects go away. Binding is possible in (28a) and no WCO arises in (28b).

- (28) a. How many students<sub>1</sub> seem to themselves<sub>1</sub> to be outside?  
b. How many students<sub>1</sub> seem to their<sub>1</sub> mothers to be outside?

Thus we see that Spec-TP can be filled in English (including, presumably, West Ulster English) by the subject or by an overt expletive. But what fills Spec-TP in (29)?

- (29) [CP Who [TP was arrested [ t all]]]?  
          └──────────────────┘

The availability of a null expletive seems unlikely in this case, as this element would also have to be available in transitive contexts like (30). With no difference among sentence types, the positing of a null expletive in this case seems an entirely ad hoc measure.

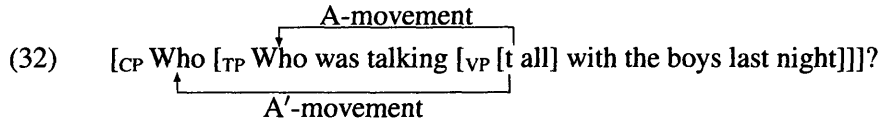
- (30) [CP Who [TP was talking [ t all] with the boys last night]]?  
          └──────────────────┘

Chomsky's (2004) suggestion that a phrase may in some way move in parallel to both an A- and an A'-position might be relevant here. Were this possible, parallel movement could presumably satisfy the requirements of Spec-TP while allowing the wh-phrase to strand *all* (32).<sup>6</sup>

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<sup>6</sup>Parallel movement of this sort would have to be unavailable in Japanese, as there we see only A' effects with direct A'-movement. One could test whether "parallel movement" truly has A-movement effects with a sentence like (31) in WUE.

- (31) Who<sub>1</sub> seem(s) to his<sub>1</sub>/their<sub>1</sub> mothers to have been arrested all?



Thus, if “parallel movement” is available in West Ulster English, A'-movement is possible, and even unproblematic in WUE because other possibilities exist in the language for the filling of Spec-TP.<sup>7</sup>

The existence of parallel movement in WUE has certainly not been proven, however. Direct A'-movement in West Ulster English has led us onto quite speculative ground. Unlike what we found in Japanese, WUE does not provide ample evidence for alternative means of filling Spec-TP. Therefore, I leave this puzzle largely unanswered here.

So far we have looked at direct A'-movement in the context of quantifier float and asked how the EPP is satisfied in these cases. I now turn to evidence that direct A'-movement may extend beyond the phenomenon of floating quantification.

### 6.3 Icelandic

We can conclude from quantifier stranding in Japanese and West Ulster English that, in some cases, what were thought to be serial derivations that involved both A- and A'-movement in fact contain direct A'-movement. This conclusion is not entirely without

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Binding in this case should be possible if movement has A-properties, and should be impossible (as in Japanese) if it has only A'-properties.

<sup>7</sup>Note that parallel movement of this sort must be unavailable in Japanese, as there we see only A' effects with direct A'-movement. One could test whether parallel movement truly has A-movement effects with a sentence like (33) in WUE. (I have not yet been able to test these predications.)

(33) Who<sub>1</sub> seem(s) to his<sub>1</sub>/their<sub>1</sub> mothers to have been arrested all?



precedent. Holmberg and Hróarsdóttir (2003) reach the same conclusion for Icelandic from an entirely different perspective.

Holmberg and Hróarsdóttir (2003) show that Icelandic *seem*-type raising verbs take an optional dative experiencer argument (34a) that can raise to Spec-TP, as in (34b). As we see in these examples, the raising verb may agree with the lower nominative subject only if the dative experiencer has raised (34b).

- (34) a. Það virðist/\*virðast [einhverjum manni] [hestarnir vera seinir].  
 EXPL seems/\*seem [some man]-DAT [the.horses-NOM be slow]  
 ‘It seems to some man that the horses are slow.’
- b. Mér virðast [hestarnir vera seinir].  
 me-DAT seem-PL the.horses-NOM be slow  
 ‘It seems to me that the horses are slow.’

Given this pattern, one would expect to see agreement with the lower nominative if the dative experiencer is wh-moved. Such a derivation would look like (35).

- (35) 
$$\begin{array}{c} \text{A'-movement} \\ \downarrow \\ [\text{CP Wh-experiencer } [\text{TP } t \text{ seem } t \text{ } [\text{TP the horses to be slow}]]] \\ \uparrow \\ \text{A-movement} \end{array}$$

This prediction is not borne out, however. Instead, agreement is impossible in this case

(36).

- (36) [Hvaða manni] veist þú að virðist/\*virðast [hestarnir vera seinir]?  
 [which man]-dat know you that seems/\*seem [horses be slow]  
 ‘To which man do you know that the horses seem to be slow?’

Holmberg and Hróarsdóttir (2003) note that one can describe these facts as follows: Agreement with the lower nominative is blocked by a dative or a wh-trace of the dative. Crucially, however, one must ensure that the wh-dative cannot move as in (35). If it could, no wh-trace would intervene between the raising verb and the nominative in (36). Instead, only a trace of A-movement would intervene. We know that traces of A-movement do not block agreement from (34b), repeated as (37).

- (37) Mér virðast [hestarnir vera seinir].  
 me-DAT seem-PL the.horses-NOM be slow  
 'It seems to me that the horses are slow.'

Therefore, the derivation of (37) must be as in (38), rather than as in (36).

- (38) [CP Wh-experiencer [TP seem t [TP the horses to be slow]]]  
 ↑  
 A'-movement

Icelandic dative experiencers provide another example of direct A'-movement in contexts where we would normally expect to see a serial derivation that contained A-movement followed by A'-movement. Unlike in the case of stranded floating quantifiers, nothing seems to be forcing direct A'-movement in this case. Instead, direct A'-movement just seems to be the way A'-movement behaves. If this is generally true, then the FQ pattern of direct A'-movement is part of a much larger phenomenon that barely begun to be explored.

# Chapter 7

## Conclusions

### 7.1 A New Analysis of Floating Quantification

I have argued that floating quantification can arise in natural languages from at least two different mechanisms. First, I developed a precise theory of adverbial floating quantifiers, following previous adverbial proposals (Dowty and Brody 1984; Bobaljik 1995; Doetjes 1997; Brisson 1998). These adverbial FQs were shown to appear only in certain adverb positions and be linked to A-movement. Second, I argued that some floating quantifiers are stranded by movement, along the lines of previous stranding proposals (Sportiche 1988; Miyagawa 1989; Shlonsky 1991; Merchant 1996; Bošković 2004).<sup>1</sup> I added to these extraction proposals the requirement that stranding proceed only through A'-movement. These two proposals addressed a series of puzzles that arise in the cross-linguistic behavior of floating quantification. These puzzles included differences in distribution, links to different

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<sup>1</sup>A third route to something like floating quantification, the de-quantificational adverb, was also discussed. An example is the English adverb *mostly*.

types of movement, and differences in the presence of extraction phenomena. This new hybrid approach to the analysis of floating quantification provides clear explanations for the existence of these puzzles.

## **7.2 A Syntax-Semantics Link**

Beyond puzzling differences in the syntactic behavior of FQs, I argued that the two types of FQ also show systematic semantic differences. Specifically, I argued that FQs seem to group together in their behavior based on their semantic exhaustivity or partitivity. I showed that this link between semantic exhaustivity and syntactic FQ-type is quite robust cross-linguistically. I then developed an explanation for this link that is based on differences in the syntax of exhaustive and non-exhaustive elements. This explanation leaves many questions, however. Most importantly, one wonders why these syntactic differences should parallel differences in semantics. What is it about these types of semantic meanings that link them to a certain syntactic structure?

## **7.3 Direct A'-movement**

The present approach to floating quantification also results in the surprising conclusion that certain phrases undergo direct A'-movement. That is, though one would have expected a serial derivation in which a phrase undergoes first A-movement, and then A'-movement, as in (1a), the present arguments suggest that only the derivation in (1b) is possible.

- (1) a.  $\begin{array}{c} \text{A}'\text{-movement} \\ \downarrow \\ [\text{CP Who } [\text{TP } t' \text{ seems } [\text{TP } [t \text{ all}] \text{ to have won the lotto } ]]] \\ \uparrow \\ \text{A-movement} \end{array}$
- b.  $\begin{array}{c} [\text{CP Who } [\text{TP seems } [\text{TP } [t \text{ all}] \text{ to have won the lotto } ]]] \\ \uparrow \\ \text{A}'\text{-movement} \end{array}$

This possibility raises questions about the role of T and the Spec-TP position in a derivation. It also forces us to consider how A- and A'-related phenomena (binding, weak crossover, reconstruction, etc.) arise and how these types of movement interact with them. We saw that languages may have different mechanisms through which the Spec-TP position can be filled, and that these differing mechanisms effect the ways in which direct A'-movement interacts with other syntactic phenomena.

## 7.4 Directions for Future Work

The lack of FQ stranding by A-movement was explained here by appeal to deep differences between the locality conditions that govern A- and A'-movement. While A'-movement was presented as a feature-sensitive type of movement that can extract one DP from within another, A-movement was conceived of as displacement more strictly confined by hierarchy. When a given projection requires a specifier, the closest DP is moved to this position. No sub-phrasal extraction is possible here, and no superiority-violating movement will suffice. Thus A- and A'-movement are conceived of as quite different phenomena.

If such a view of A- and A'-movement is correct, then we should see the effects beyond the realm of stranded FQs. Any type of split constituency that is derived by stranding should show the same effects. Many types of split constituency exist across languages

(e.g., possessor raising in Korean and elsewhere; *was-für* split, etc. in German (Pafel 1996); *combien...de* questions in French; *ne* cliticization in Italian). In most of these cases, there is some debate as to the proper analysis of this split. Some of these debates are in many ways parallel to the debate regarding the proper analysis of floating quantification. That is, one can analyze constituency splits either as derived through movement transformation or through some non-transformational mechanism. If the adverbial/adnominal split that I have argued for in the realm of floating quantification extends to other types of split constituency, one could use the phenomena discussed here as tests for types of split in other domains. For example, we might expect that any types of split that are derived through movement will show A' effects. Each of these phenomena involve their own complexity and fields of debate. Still, these constituency splits clearly provide a ground ripe for further research along the lines that I have developed here.

Ideally, one could establish some of the present findings as truly universal phenomena. That is, one might find that the restrictions on floating quantification that have been discussed here extend far beyond this phenomenon. If this is not found to be the case, however, the present findings are still valuable. The links between FQ type and movement type, and the link between semantic type and FQ type, are quite robust and should be applicable in studies of movement and the interaction of syntax and semantics.

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