Quantifiers and Selection

Quantifiers and Selection

On the Distribution of Quantifying Expressions
in French, Dutch and English

Proefschrift

ter verkrijging van de graad van Doctor
aan de Rijksuniversiteit te Leiden,
op gezag van de Rector Magnificus Dr. W.A. Wagenaar,
hoogleraar in de faculteit der Sociale Wetenschappen,
volgens besluit van het College van Dekanen
te verdedigen op donderdag 27 november 1997
te klokke 15.15 uur

door

JENNY SANDRA DOETJES

geboren te Leidschendam in 1965

Promotiecommissie

promotor:	Prof. dr. J.G. Kooij
co-promotor:	Dr. T.A. Hoekstra
referent:	Prof. dr. J.E.C.V. Rooryck
overige leden:	Dr. H. de Hoop (Rijksuniversiteit Utrecht)
	Prof. dr. H.E. de Swart (Rijksuniversiteit Utrecht)

Acknowledgements

In the orignal acknowledgements of my dissertation (that you can read below) I was not allowed to thank my advisor Teun Hoekstra. As many linguists know, Leiden University still sticks to an odd rule in their so-called 'promotieregelement' which disallows Leiden PhDs explicitely to show gratitude to their advisors. Even though this is an unrevised version of the dissertation (all bugs are still there), I make an exception for the big omission in these acknowledgements.

When I first took a class in generative syntax with Teun, I really felt this was what I wanted to know more about. Linguists who have not had the opportunity to sit in in his classes really missed something. Thinking of the way he would stand near the blackboard, squibble an analysis on it, and say: 'Mooi, hè?' (Isn't it beautiful?) still makes me smile. And then he would continue, with an even wider grin on his face: 'But it cannot be true!' which was followed by his own analysis. Teun's love for linguistics and his encouragements have played a major role in my choice to become a linguist.

When I was finishing my thesis, Teun was already very ill. Yet, he has read all chapters and he has given valuable comments, for which I am very grateful.

In the Linguistics Department in Leiden, writing a thesis almost becomes some sort of a social activity, which was quite fortunate for me. I want to thank all PhD students, visitors, post-docs and staff members in the department and in HIL for their contribution to the lively, international working environment. I would like to mention a few of them in particular: my (former) office mates Astrid Ferdinand, Marjan Grootveld, Anikó Lipták and Grażyna Rowicka; Martin Honcoop, with whom I had many interesting (and heated) discussions on event-related readings; as well as Ana Arregui and Krisztina Polgárdi. Thanks to Jeroen van de Weijer and José Birker for their friendly help with all sorts of practical matters.

When I started my undergraduate studies in this department, the inspiring atmosphere, the enthusiasm of the professors and the many interesting courses have been a determining factor in my choice to become a linguist.

Besides the careful comments of the members of my thesis committee, I received useful comments on (parts of) the manuscript from Ana Arregui, João Costa, Marcel den Dikken, Marjon Helmantel and Rint Sybesma. During the last weeks of writing, Ana helped me out with a number of particularly recalcitrant passages. Special thanks to Marcel, who found time in his very busy schedule to carefully read the manuscript and to correct my English. Thanks also to René Mulder for professional help with the tree diagrams. Obviously, all usual disclaimers apply.

Without my informants, this research would not have been possible. The following people provided me with their judgements on French: Christiane Bernard, Gilles Boyes, Frédéric and Fatima Marin, Rose-Marie Déchaine, Elisabeth Delais, Françoise Flesch, Florence Guardia, Myriam Landard and Nathalie Lesgourgues. Un grand merci à vous tous! Thanks also to Becca Gross and Michael Redford for English judgements, to my family and my Dutch colleagues for helping me to get the Dutch judgements clear, and to Rint Sybesma and Lisa Cheng for their help with the Chinese data.

During the past five years, I had several opportunities to travel abroad with support of the faculty of arts of Leiden University and the Dutch Organization for Scientific Research NWO. In the fall of 1994 I spent a semester at UMass in Amherst, where I had a chance to study with Angelika Kratzer, which was very fruitful. Thanks also to Marga Petter, with whom I shared an appartment during this period. Thinking of UMass brings back the memory of the salsa workshops organized by Elisabeth Villalta and Maribel Romero...

At the LSA Summer Institute in Ohio, I met Anna Szabolcsi, who has been very encouraging ever since. Besides her, I would like to thank the following linguists for interesting conversations and/or stimulating comments on my work: Gennaro Chierchia, Rose-Marie Déchaine, Carmen Dobrovie-Sorin, Jacqueline Guéron, Helen de Hoop, Aafke Hulk, Alice ter Meulen, Hans Obenauer, Alain Rouveret, Henriëtte de Swart and Anne Zribi-Hertz.

The supportive attitude of my parents, Joke en Zach, my sister Nynke, and my friends, who kept me in touch with normal life, needs a special word of thanks. My family has always stimulated my interest in language and research, and, what is more important, they have always been there for me when I needed them. The same is true for my friend Jeroen de Boer, who definitely made finishing this thesis much easier. Thanks a lot! Even though you were in London (both 'floated' and 'at a distance') during the past year, I look back at this period with much pleasure.

Table of Contents

1   Introduction

A lot, *often*, *many* and *all* have in common that they define a quantity. This can be a quantity of matter, as in *a lot of sand*, a quantity of events, as in *John often visits the National Gallery*, or a quantity of individuals, as in *many linguists* and *all linguists*. As the examples show, we find these quantifying expressions (henceforth Qs) in the context of NPs and VPs. The purpose of this thesis is to study the selectional properties of different types of Qs in relation to properties of the context in which they occur, within the framework of Government and Binding theory (cf. Chomsky 1981). This will result in a classification of quantifying expressions on the basis of their selectional properties.

    I concentrate on the quantificational system of French. The French system is compared in quite some detail with the English and the Dutch ones. The comparison reveals a number of striking and unexpected similarities, suggesting that further cross-linguistic study of quantificational systems is promising in the light of the search for universal properties of natural language.

    A first subdivision into four classes of Qs, based on their selectional properties, is illustrated by the French examples in (1) to (4). The first type of Q will be called DEGREE QUANTIFIERS or DQs. An example is French *beaucoup*, as is its English translation 'a lot'. DQs do not impose severe categorial restrictions on their context and can be used with both VPs and NPs:

(1)   a.   Les linguistes ont   **beaucoup**   dansé   la salsa
              the   *linguists*   *have*   *a-lot*   *danced*   *the salsa*
       b.   **Beaucoup**   de linguistes   ont   dansé   la salsa
              a-lot   *of linguists*   *have*   *danced*   *the salsa*

In (1a) *beaucoup* is used adverbially and determines 'the amount of salsa dancing' by the linguists. In (1b), where *beaucoup* is used adnominally, it modifies the number of linguists.

There are also Qs which function exclusively in either the nominal or the verbal system. ADVERBS OF QUANTIFICATION or Q-adverbs such as *souvent* 'often' are uniquely found with VPs, not with NPs:

(2)   a.   Les linguistes ont   **souvent**   dansé   la salsa
             the linguists   have   often   danced   the salsa
       b.   *__Souvent__ (de) linguistes ont   dansé   la salsa
             often   (of) linguists   have   danced   the salsa

Plusieurs 'several', on the other hand, is a typically ADNOMINAL QUANTIFIER (AdnQ), which can be combined with an NP but not with a VP:

(3)   a.   *Les linguistes   ont   **plusieurs**   dansé   la salsa
             the linguists   have   several   danced   the salsa
       b.   **Plusieurs**   linguistes ont   dansé   la salsa
             several   linguists   have   danced   the salsa

A fourth class of quantifying expressions consists of adnominal quantifiers that can float. It will be argued that the FLOATING QUANTIFIER (FQ) occupies an adverbial position, and in that respect resembles *beaucoup* in (1a). It does not, however, function as an adverbial quantifier from a semantic point of view:

(4)   a.   Les linguistes ont   **tous**   dansé   la salsa
             the linguists   have   all   danced   the salsa
       b.   **Tous**   les linguistes   ont   dansé   la salsa
             all   the linguists   have   danced   the salsa

Contrary to what we see in (1), where (1a) and (1b) clearly differ in meaning, the examples in (4) are synonymous: *tous* quantifies over linguists, whether it floats, in (4a), or not, in (4b). It is not possible to understand (4a) on a par with (1a), so that the linguists would be responsible for all of the salsa dancing in the domain of denotation.

It is clear that there are two factors playing a role in determining these patterns: the selectional properties of the quantifying elements themselves on the one hand, and the characteristics of NPs and VPs, in the context of which Qs can be found, on the other. The results of this thesis will therefore be relevant for the study of quantifying expressions in general and for the investigation of differences and parallels between the nominal and the verbal systems in relation to quantification.

In order to account for the distributional differences between Qs I will make use of two types of selection: CATEGORIAL SELECTION and THETA SELECTION. I will assume that categorial selection is dependent on X ' structure, and is

found in the head-complement configuration. In this configuration the head may select the syntactic category as well as certain morphological features of the complement. Given the schema in (5), Q categorially selects YP:

(5)

```
                    QP
                  /    \
              Spec      Q′
                      /    \
                    Q       YP
```
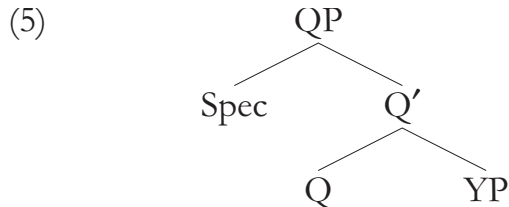
I will defend the idea that categorial selection within the functional superstructure of a lexical category is unique. In the configuration in (5), Q selects one single lexical category. In chapter 7 I will motivate that typically adnominal Qs such as *plusieurs* occupy a head position in the superstructure of the NP. Given the claim that categorial selection is unique, it cannot account for the occurrence of a Q in different categorial contexts. Qs categorially select at most one category, and Qs that occur in the context of different categories lack categorial selection altogether.

The lack of categorial selection will correspond to a syntactic adjunction structure. Adjoined QPs, as in (6), are insensitive to the categorial properties of XP:

(6)

```
              XP
            /    \
          QP      XP
```
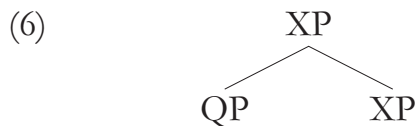
Degree quantifiers do not categorially select as they may be combined with different categories (cf. (1)). I will argue in chapters 4 to 6 that they are adjuncts and as such do not impose categorial restrictions on the phrase they combine with.

The second type of selection which will play a role, theta selection, depends on the presence of specific types of theta roles. Theta selection can be illustrated on the basis of the distribution of the degree modifier *too*, as in *too friendly*. This element only combines with scalar adjectives. According to Zwarts (1992) *too* enters into a relation, and I will come back to the nature of this relation below, with a theta position in the grid of scalar adjectives. Only scalar adjectives contain such a position. Zwarts calls this the *g*-position, where *g* stands for *grade*. As *too* can only be interpreted in the presence of a *g*-position, non-scalar adjectives such as *next*, which lack a grade position, are incompatible with *too*. This accounts for the contrast between *too tall* and **too next*.

The degree expression *more* differs from *too* as it is not restricted to the adjectival domain. *More* combines with adjectives, NPs and VPs. Within the

adjectival domain, *more* is sensitive to the presence of the *g*-position, as it only combines with acalar adjectives, and not with the non-scalar ones: *more friendly* is fine, while **more next* is out. I will argue that *more* is in all contexts sensitive to the presence of a scalar theta position. The expressions *too* and *more* are both theta selectors, while I will argue in chapter 4 that only *too* is also a categorial selector. *Too* categorially selects AP, while *more* does not categorially select at all. It will be argued that NPs and VPs which can be combined with *more* also contain a scalar argument position. In *more linguists*, for instance, I will assume that the plural noun *linguists* contains a scalar *q*-position, where *q* stands for quantity. As a result we can maintain that he relation between *more* and AP on the one hand and *more* and NP or VP on the other is essentially the same.

Given its compatibility with nouns and verbs, *more* belongs to the class of degree quantifiers or DQs, on a par with *beaucoup* in (1). The incompatibility of certain DQs with adjectives will be accounted for in chapter 4. I will argue that the distribution of all degree quantifiers, independently of their compatibility with adjectives, is determined by theta selection of a scalar argument position.

The rest of this introduction will be organized as follows. Section 1.1 below contains some preliminary remarks. The thesis will be situated with respect to current linguistic research and I will clarify my use of terminology. In section 1.2 I will give a short introduction to theta theory which includes a discussion of the possibility to saturate an open theta position through identification with a saturated position, a process which will be exploited in the subsequent chapters. Section 1.3 gives an outline of the dissertation.

1.1   Preliminary remarks

1.1.1   Theoretical perspective

In current linguistic research the intricate relation between syntax and meaning is receiving more and more attention. There is a steadily growing literature on the syntax-semantics interface within Chomsky's (1981) Government and Binding framework. One could think of Higginbotham's (1985) article on theta theory; Kratzer's (1989) syntactic account of the contrast between stage-level and individual-level predicates; Diesing's (1992) mapping hypothesis, which relates syntactic position to quantificational interpretation; De Hoop's (1992) research on the relation between case and the interpretation of NPs; and Obenauer's (1984, 1992, 1994) work on Quantification at a Distance and *wh*-questions.

The expression of quantity is typically a field in which syntax and

interpretation interact. The main syntactic tool I will use in expressing the interpretational relations between Qs and the syntactic contexts in which they occur is theta theory (cf. Higginbotham 1985), which will be introduced in 1.2 below. I will strongly rely on Zwarts (1992), who implements theta theory in order to account for the relation between degree modifiers and scalar adjectives. My account of the representation of quantities will be in part modelled after his representation of grades in scalar adjectives. As we have seen above, the English degree quantifier *more* functions both as a degree modifier of a scalar adjective (*more intelligent*) and as a quantifier in nominal and verbal contexts (*more linguists*; *John danced more than Peter*). Following Zwarts (1992) and Corver (1997), I consider the relation between *more* and *intelligent* as a theta relation. As I already mentioned in the previous section, my goal is to show that the relation between *more* and an NP and *more* and a VP is basically the same as the one between *more* and an AP (cf. 2.1.4, 2.2.5 and chapters 4 to 6 below).

Chomsky's Minimalist Program (Chomsky 1995) and Kayne's Antisymmetry framework (Kayne 1994) will not play an important part in this thesis, even though both theories are quite influential nowadays. Both the Minimalist Program and Antisymmetry are based on the idea that even if the linguistic data of different languages show quite some variation in word order, this variation is very limited at some other level of representation. For Minimalism this is the level of Logical Form, and for Antisymmetry this is deep structure (or some intermediary stage before S-structure). The cost of simplicity at one level is a more complicated derivation. In this study I will primarily focus on surface order and not on derivation. Accordingly I do not aim to accommodate either Minimalism or Antisymmetry.

Morphological features, and more specifically Number features, which form a key concept in Minimalism, will play a role, as they can be involved in categorial selection (cf. chapters 6 and 7). In the Minimalist Program features must be checked, which is done in specific configurations that are created by movement. Checking occurs either before S-structure (or Spell Out in the minimalist literature) or at LF. It has been argued that Number morphology triggers movement of N to the head of a Number Phrase or NumP (cf. for instance Ritter 1991, Bernstein 1993). There is no evidence for overt movement to the head of a Number projection in English or Dutch and I argue in chapter 6 that there is no such evidence in French either (contrary to the claim of e.g. Bernstein 1993). According to the Minimalist framework Number features which are not checked at Spell Out should be checked at LF. As this would be an instance of covert movement in the three languages I discuss, I will leave the question of whether LF movement of N to Num takes place or not to the theoretical preferences of the reader.

Antisymmetry is based on the Linear Correspondence Axiom (LCA), which states that there is a strict correspondence between word order and syntactic structure. As a consequence of the LCA constituents must occupy a structurally higher position than all phrases they precede. Right adjunction violates the LCA as the right adjoined phrase is structurally higher than some of the constituents to its left. Accordingly, right adjunction is excluded within the Antisymmetry framework. In some of the issues that will be discussed below right adjunction seems to be a suitable option to handle the data, but may be circumvented on the basis of Barbiers (1995). Barbiers proposes that what seems to be right adjunction of YP to XP at first sight is in fact the result of left adjunction of YP to XP and subsequent movement of XP to a position to the left of YP. In some of the cases that will be discussed, an approach within Barbiers' framework seems to have certain advantages.

At various points in this thesis I will argue that syntactic representation overrules conceptual differences. Syntax shapes meaning, not the other way around. In chapter 6 for instance, I will argue that a conceptual grade can be syntactically represented as a quantity and vice versa. Argumental NPs represent quantities from a linguistic point of view, even if they refer to abstract notions which conceptually define grades, as in *a lot of luck*. Scalar adjectives, on the other hand, syntactically introduce a grade, but the scale they introduce can conceptually correspond to quantity, as in *very salty*. The syntactic distinction between grades and quantities will play a role in determining restrictions on the distribution of Qs.

The distribution of degree expressions is another domain which illustrates the importance of syntactic specifications and their conspiracy with meaning. I will argue, for instance, that the French degree expressions *si* 'so' and *tant* 'so much' both define the same value on a scale and only differ from each other in terms of their syntactic properties. From a descriptive point of view, *si* 'so' is used in the context of scalar adjectives, while *tant* 'so much' is used in the context of NPs and VPs and is excluded in the context of adjectives. In many cases elements such as *tant* 'so much' can combine with adjectives as well. The degree quantifier *trop* 'too much', for instance, is compatible with adjectives, NPs and VPs. I will argue in 4.3 that cases of complementary distribution as exemplified by *si* 'so' and *tant* 'so much' are due to the Elsewhere Condition (cf. Kiparsky 1978). This condition is mostly used to explain paradigms in phonology and morphology, but I will argue that the system of degree expressions is plausibly a syntactic domain in which the Elsewhere Condition applies. The expressions *si* 'so' and *tant* 'so much' do not differ in meaning — they define the same value on a scale — but they differ in syntactic selectional properties. The element *si* 'so' is restricted to adjectives, and I will argue that *tant* 'so much' functions as the elsewhere form, as a result of which it is incompatible with adjectives.

A final issue which illustrates the importance of syntactic structure is the mass/count distinction. Contrary to Bunt (1985) and Landman (1989), I will argue that the semantic notion of minimal part is not essential in the distinction between mass and count nouns. A noun which on the basis of its syntactic distribution qualifies as a mass noun can be structurally similar to a plural (cf. Chierchia 1995). The different distribution of plurals and mass nouns is the result of their grammatical properties, and more specifically of the presence or absence of Number morphology, and does not depend on the presence or absence of minimal parts.

1.1.2   Terminology

In this section I will clarify the most important notions used in this dissertation. The term QUANTIFIER, QUANTIFYING EXPRESSION or Q, will be used for elements such as *beaucoup*, *souvent*, *plusieurs* and *tous* in the examples (1) to (4). Cardinal numerals fall in the same category as *plusieurs*, which is the category of adnominal Qs. Adnominally used Qs are also called determiner-quantifier in the literature (cf. for instance Von Fintel 1994), to avoid confusion with the use of the term 'quantifier' in the Generalized Quantifier framework (cf. Barwise and Cooper 1981). Within this framework the term 'quantifier' is used to refer to quantified noun phrases such as *tous les étudiants* 'all the students'. In general I will use the term quantified noun phrase. However, I will argue in chapters 8 and 9 that floating quantifiers and adverbs of quantification turn out to contain a noun phrase. The floating quantifier contains an empty pronominal element, and the adverb of quantification is similar to noun phrases of the form *Q times*. Strictly speaking the FQ and the adverb of quantification should not be called Q themselves, but consist of a Q and a nominal element.

Qs have a DOMAIN OF QUANTIFICATION (or RESTRICTION) and may have a NUCLEAR SCOPE. In the sentence *Two children came to the party*, *two* is the Q, *children* defines the domain of quantification, and *came to the party* the nuclear scope. The domain of quantification and the nuclear scope can be represented as sets of individuals (this idea is exploited in the Generalized Quantifier framework, cf. Barwise and Cooper 1981). The first set contains the contextually relevant children (A), and the second those individuals who came to the party (B). The Q determines the relative or absolute number of individuals in the intersection of A and B (C): *two* states that the cardinality of C equals two, *all* that A is a subset of B, implying A = C, and *most* that C contains more than half of the individuals in A.

From a syntactic point of view the domain of quantification of a Q will correspond to the NP or VP which is modified by Q. I will argue that NPs and VPs contain a THEMATIC *q*-POSITION, where *q* stands for quantity. The

notion of *q*-position will be introduced and motivated in chapter 2, and the role it plays in establishing a relation between Q and the NP or VP in chapters 4 to 7. The syntactic scope of a quantified phrase is its c-command domain. In the sentence in (1b) (*Beaucoup de linguistes ont dansé la salsa* 'Many linguists danced the salsa') the domain of quantification of the Q *beaucoup* is defined by the NP *linguistes*, while the rest of the sentence (*ont dansé la salsa*), which is the c-command domain of the subject, functions as the syntactic scope of the quantifier. In certain cases the scope of quantification may be absent because the quantified constituent lacks a c-command domain. An example of a sentence containing a Q without a nuclear scope is (1a) (*Les linguistes ont beaucoup dansé la salsa* 'The linguists danced the salsa a lot'). I will argue in chapter 5 that the VP defines the domain of quantification of adverbially used *beaucoup*. In the absence of a nuclear scope (the quantified VP does not have a c-command domain) the interpretation can only be existential: there was a lot of salsa dancing by the linguists.

As has been shown by Rooth (1985) and Partee (1988), focus can alter the interpretation of the domain of quantification and the scope of a quantifying expression. This is illustrated in (7), where capitalization indicates the presence of focus:

(7)   Most ships pass through the lock AT NIGHT

The sentence in (7) has two readings. The first possibility is that *ships* defines the domain of quantification, and *pass through the lock AT NIGHT* defines the nuclear scope. The second possibility is that *most* ranges over ships that pass through the lock, most of which do that at night. I will assume that the effect of focus in (7) does not alter the syntactic structure, and that it is semantic in nature.

Following Abney (1987) I assume that NPs have a functional superstructure. This superstructure includes the D projection, and one or two Q projections (cf. chapters 7 and 8). I will use the abbreviation NP to refer to the lexical projection of the noun, and noun phrase (written out) to refer to the extended projection.

As for Vs, I will make the assumption that they contain a davidsonian argument position in their thematic grid, following Higginbotham (1985). This position will be called EVENT POSITION or *e*-position. In accordance with Higginbotham, I will assume that such a position is present independently of the dynamic or static character of the predicate. Next to dynamic events such as *John goes to Paris* and *John works*, I will talk about static events, such as *John is in Paris*.

A final notion which needs to be introduced as I will use it quite liberally is the one of CLASSIFIER (CL). In numeral classifier languages, such as Mandarin Chinese, it is not possible to use cardinal count numerals without

inserting an extra noun-like item which is called a (numeral) classifier. An example is Mandarin *ge* 'CL$_{unit}$':

(8)   san-ge   ren
        three-CL$_{unit}$ man
        'three men'

In non-classifier languages a classifier-like item (*kilo*, *box*, *bottle*) is inserted when mass nouns are combined with a cardinal numeral. I will call these elements (non-individual) classifiers. There are obviously clear differences between the individual classifier *ge* in Chinese, which is in a sense similar to Number morphology, and non-individual classifiers or measure phrases such as *kilo*, but I will concentrate on the similarities between the two rather than on the differences, and mostly use the term 'classifier', generalizing over the two types. Classifiers, and more specifically the classifier *ge* 'CL$_{unit}$' will play an important role in the discussion of the mass/count distinction in chapter 2. In chapter 7 I will discuss the role of the classifier in constructions such as (8).

1.2   Theta theory and saturation through identification

According to theta theory lexical items are associated with a theta grid. This grid contains a number of thematic positions or argument positions. An example is the lexical grid of the verb *walk*, which contains a position corresponding to the external argument or agent, and a position corresponding to the walking event. The open theta positions in the grid of the lexical item are discharged in syntax. The basic rules of the game are stated in the Theta Criterion:[1]

(9)   THETA CRITERION
        a.   X discharges at most one thematic role in Y
        b.   Every thematic position is discharged once

According to Higginbotham a thematic role can be discharged or 'saturated' by either THETA MARKING or by THETA BINDING. Theta marking corresponds to theta assignment. A verb assigns thematic roles to his arguments, and the arguments discharge the role in the grid of the verb by receiving it. In the sentence *John works* the verb *work* assigns a theta role to the subject *John*, as a result of which this theta position is discharged.

---

[1]   This version of the theta criterion is based on Higginbotham (1985:561). Cf. Chomsky (1981) for the original version.

A theta binder is an operator saturating a thematic role through binding. Theta binding accounts for discharging of the event argument in the VP. Higginbotham argues that the event argument is not assigned, and hence theta marking is excluded. The *e*-position is discharged through theta binding by Tense (or Infl). Another case of theta binding is the relation between a determiner and a noun. Following Williams (1981), Higginbotham assumes that nouns contain an *r*-position, and this position is bound by the determiner. Zwarts (1992) adds to these cases theta binding of a *g(rade)*-position in scalar adjectives by elements such as *so*, *as* and *how*, which head a DegP selecting AP. In all these cases the theta binder occupies a functional head position, which has led Abney (1987) and Zwarts (1992) to the conclusion that this type of configuration is a condition for theta binding, and I follow this idea. The typical configuration in which theta binding takes place is illustrated in (10):

(10)   XP <1*>
                      ╱   ╲
                  X   YP <1>
                                |
                               Y <1>
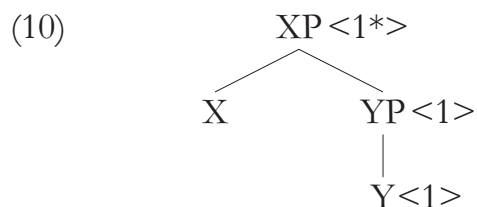
In this structure the head X functions as a theta binder of the open theta position <1> in Y, which percolates up to the YP level. At the level of XP the position is saturated as a result of theta binding. Saturated positions are marked by an asterisk.

Besides the two operations theta marking and theta binding, which involve saturation of an open theta position, there is a third theta operation which does not involve saturation of a theta position but merely relates two open position. This operation, which is called THETA IDENTIFICATION, reduces two open positions to one. The resulting position is still open, and hence must be saturated. Theta identification typically accounts for modification. An example is the relation between a VP and a modifying PP in sentences such as *John worked in the garden*. The fact that John's working took place in the garden is expressed by identification of the event position in the thematic grid of the verb with an open event position in the PP. The past tense operator theta binds the resulting position, which discharges both theta roles at once, as illustrated by the simplified structure in (11):

(11)   a.   John worked in the garden
        b.   TP$<e_i*>$

```
                    TP<eᵢ*>
                   /        \
                  T          VP<eᵢ>
                  |         /      \
               Op_past   VP<eᵢ>      PP<eᵢ>
                        /    \      /\
                      Spec   V<e> in the garden
                       |      |
                     John   worked
```

As illustrated in the examples in (10) and (11), theta positions percolate up to the level of the maximal projection. The different theta relations have in common that they are possible under sisterhood only (Higginbotham 1985).

   In the rest of this section I will present evidence for a third type of theta saturation, which is a variant of theta identification, and which I will call SATURATION THOUGH IDENTIFICATION. I will argue that an adjunct, which normally enters into a theta identification relation with its host, can be saturated itself, which results in saturation of the corresponding open position in the host. This process is different from theta binding because it does not involve a head complement structure. It is different from theta marking, because the category containing the saturated position is not an argument but an adjunct.

   The argument is based on some of the structures discussed by Zwarts (1992) and involves degree modification, which will also play a role in chapter 4 below. Before going over to the cases in which theta identification and saturation through identification play a role, let us first consider a case of theta binding. In (12) the Deg-head *so* theta binds the open *g*-position in the scalar adjective *ill*:

(12)   DegP$<1,g*>$

```
            DegP<1,g*>
           /        \
         Deg         AP <1,g>
          |           |
          so          A<1,g>
                      |
                     ill
```

This is a theta binding configuration on a par with (10): the theta binder occupies a head position and binds the *g* position in the theta grid of the adjective. The non-saturated variable 1 represents a theta position corresponding to the individual(s) who is (are) ill.

   Other degree expressions are not analysed as heads but as adjuncts. These

are elements such as *badly*. The syntactic difference between elements such as *so*, heading the DegP, and adjoined degree modifiers such as *badly* has been established by Corver (1990) on the basis of the contrast in (13):

(13) a. *How is John ill?
     b. How badly is John ill?

The impossibility of (13a) as a *wh*-counterpart of *John is so ill* follows if *how* is generated in the head of the DegP. The DegP cannot be extracted leaving the AP containing *ill* behind, because this AP is part of the DegP. The fact that *how badly* can be extracted shows that *badly* cannot be generated in the Deg position, and hence is evidence for an adjunction analysis of *badly*. Zwarts follows Corver, and *badly ill* is analysed as in (14):[2]

(14)
$$\text{DegP} <1,g*>$$

$$\text{Deg} \qquad \text{AP} <1,g>$$

$$\text{AP}<g_i> \quad \text{AP}<1,g_i>$$

$$\text{A}<g> \qquad \text{A}<1,g>$$

$$\text{badly} \qquad \text{ill}$$

The open *g*-position in the modified AP is bound by the empty Deg position, which satisfies the second clause of the Theta Criterion.

The structure in (14) cannot be maintained (or at least cannot be the only possible one) in view of cases where the Deg position contains the overt Deg head *how*. Filling in *how* in the Deg position in (14) results in (15):

(15)   [DegP how [AP [AP badly [AP ill]]]]]

There must be an alternative derivation possible in which the DegP containing *how* forms a constituent with *badly*. Evidence is Corver's extraction example in (13b), where *how* is extracted together with the degree modifier *badly*. Given the possibility of (13b) the structure of *how badly ill* cannot correspond to (15), which would not allow for extraction of *how badly*. The structure in (16) is in accordance with the facts: the DegP forms a phrase together with the degree modifier and the extraction facts can be accounted for:

---

[2] The actual example given by Zwarts is *extremely tall*, which is parallel to *badly ill* (Zwarts 1991:52). I use a slightly different notation.

(16) $[_{AP}$ $[_{DegP}$ how/so$[_{AP}$ badly]] $[_{AP}$ ill]]

Adopting the structure in (16) has an important consequence for the relation between degree modifiers and adjectives, and brings us back to the possibility of identification of an open and a closed position. As *how* binds the g-position in *badly*, the g position in the adjoined DegP is saturated, yielding the intermediate structure in (17):

(17)   AP $<1,g_1>$
                                    ╱   ╲
                      DegP$<g_2*>$ AP $<1,g_1>$
                       ╱   ╲   │
                  Deg   AP$<g_2>$ A $<1,g_1>$
                   │   │   │
                  how   A$<g_2>$ ill
                               │
                             badly
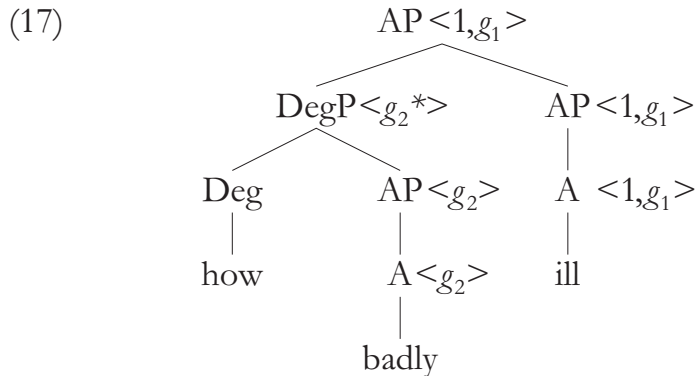
Standard theta identification of g_1 and g_2 cannot apply because g_2 is not an open position. There must, however, be a theta relation between g_2 and g_1, as otherwise the DegP is uninterpretable, and hence we have to allow identification of a saturated and an open position. This, in turn, must result in a saturated g-position, as leaving the position open would lead to a theta clash. If the resulting position is left open, it has to be saturated in accordance with the Theta Criterion. This unavoidably leads to a clash provoked by double saturation of the already discharged g-position in *how badly*. We are led to the conclusion that theta-identification of a saturated and a non-saturated position is possible and involves saturation of the open position. The structure (17) should be completed as in (18):

(18)   AP $<1,g*>$
                                    ╱   ╲
                      DegP$<g_i*>$ AP $<1,g_i>$
                       ╱   ╲   │
                  Deg   AP$<g>$ A $<1,g>$
                   │   │   │
                  how   A$<g>$ ill
                               │
                             badly
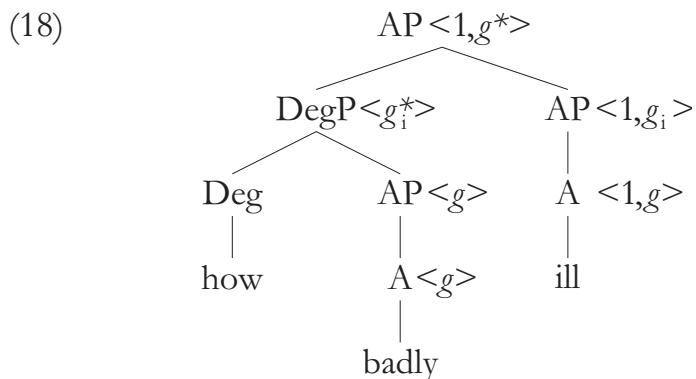
Besides the two familiar ways of saturation of a theta role (theta binding and theta marking) the mechanism of saturation through identification offers

a third possibility to discharge a theta role.[3] Saturation through identification plays a role in my account of the 'measuring out' effect (chapter 3), in the way DQs (cf. (1)) are interpreted (chapters 4 to 6), and in the analysis of quantification at a distance (chapter 11).

1.3   Outline of the dissertation

In the next two chapters I will focus on properties of NPs and VPs which are relevant for the representation of quantity, in preparation of the chapters concentrating on the Qs themselves. The issue of quantity is tightly related to the mass/count distinction, which is in part motivated by the distribution of Qs. Degree quantifiers, for instance, only combine with mass and plural expressions. Other Qs are restricted to plurals or to singulars. In chapter 2 the mass/count distinction in the nominal and the verbal systems will be studied and compared. I will argue that quantity is represented in the thematic grid of both nouns and verbs, making part of the information contained in semantic representations available for syntax.

There are some remarkable differences between the nominal and the verbal system as far as mass and count properties are concerned. The mass/count distinction is lexical in the nominal system and to a large extent compositional in the verbal system, which has been shown by Verkuyl (1972). In so-called 'measuring out contexts', an example of which is given in (19), nominal reference properties carry over to the VP as a whole.

(19)   a.   John ate an apple in an hour/*for an hour
        b.   John ate apples for an hour/*in an hour

In (19a) the noun *an apple* corresponds to a bounded quantity. The VP is bounded as well, which is shown by its compatibility with an *in*-adverbial. (19b) contains the unbounded noun phrase *apples*. Only the *for*-adverbial can be used, which indicates that the VP is unbounded. The way measuring out functions and how it can be represented in terms of q-positions will be the main topic of chapter 3.

Chapter 4 will be the first of three chapters focusing uniquely on degree quantifiers (DQs). I will give an inventory of different types of DQs (*much*, for instance, is adjectival, and *a lot* derives from a classifier construction). DQs will be analysed as adjuncts which discharge an open scalar position

---

[3]   It might be possible to reanalyze theta marking in terms of saturation through identification. Assignment of a theta role would then be reanalysed as identification with a saturated position. This reduces the possibilities of theta relations to theta binding and theta identification, the latter of which may involve saturation. I will not pursue this idea further here.

in the thematic grid of their host by means of saturation through identification. They are insensitive to the categorial properties of the phrase they combine with, which is corroborated by the compatibility of a subset of DQs with adjectives. In the context of adjectives the DQ acts as a grade modifier. I will argue that in case a DQ cannot be combined with an adjective, this is due to the Elsewhere Condition.

In chapter 5 I will discuss the combination of DQs with VPs. I will comment on the difference between grades and quantities, which is a necessary distinction in the light of the distribution of Dutch *erg* 'badly' and *veel* 'a lot' as compared to that of French *beaucoup* 'a lot'.

Chapter 6 will be concerned with DQs in the context of NPs. The chapter will address issues such as the position of the DQ with respect to adjectives, the role of the element *de* 'of' in *beaucoup de linguistes* 'a lot of linguists', and partitivity.

In chapter 7 we will turn to typically adnominal Qs (AdnQs). I will show that AdnQs differ from DQs not only because they are restricted to the nominal system. AdnQs and DQs impose clearly different restrictions on the Number specifications of the NP they modify. Their properties will follow from the assumption that AdnQs select the NP on the basis of categorial selection and not on the basis of theta selection. The chapter also includes a discussion on classifiers, which may be inserted in contexts that otherwise cannot accommodate an AdnQ, and on the status of adverbial phrases of the form *Q times*.

Floating Qs will be discussed in chapter 8. They will be analysed as adjuncts, which bind the trace of the noun phrase they are associated with (cf. Doetjes 1992). I will give evidence for the presence of an empty noun phrase within standard FQs such as French *tous*, which makes it possible to distinguish between standard FQs, and bare FQs, such as French *tout* 'everything'. Bare FQs function as operators and are not associated with an argument noun phrase in the same sentence. It will turn out that adverbial DQs, such as *beaucoup* 'a lot', may function as bare FQs.

Adverbs of quantification will be argued to contain a nominal element as well, on a par with the standard FQs. This can account for a number of differences between adverbs of quantification on the one hand and adverbial DQs on the other, as will be shown in chapter 9.

Chapter 10 will deal with quantification at a distance (QAD), a special type of construction containing a DQ. The construction is interesting because the DQ has both adverbial and adnominal properties, as illustrated in (20):

(20) a. Jean a   beaucoup lu   de livres
          Jean   has a-lot   read   of books

b. Jean a   lu   beaucoup de livres
   Jean has read a-lot   of books
c. *Jean a   lu   de livres
   Jean   has read   of   books

(20a) is a case of QAD. The DQ is in an adverbial position, to the left of the past participle. The examples in (20b) and (20c) show that the form of the direct object *de livres* corresponds to the one we find in the context of an adnominally used DQ, as in (20b). The use of the *de NP* is excluded in the absence of the quantifier, as in (20c), which suggests that there is some relation between the adverbial DQ and the *de NP* in the QAD construction. It will be shown that the QAD construction has hibrid quantificational properties which will be discussed in the light of the analysis of measuring out in chapter 3.

Chapter 11 gives an overview of the main results.

2   Mass and count properties of nouns and verbs

The purpose of this chapter is to look at parallels and differences between the nominal and verbal systems which are relevant for the way they interact with quantifying expressions. In this respect the mass/count distinction is a central issue. The example in (1) illustrates the interaction between quantifying expressions and the mass/count distinction in the nominal system. Whereas *much* selects a mass noun (*bread*), *many* combines with a count plural (*sandwiches*):

(1)   a. John eats too much bread/*sandwiches for breakfast
          b. John eats too many sandwiches/*bread for breakfast

The mass/count distinction for nominals has often been compared to aspectual differences in the verbal domain. Atelic or unbounded verbs, such as *to run*, are compared to mass nouns, and telic or bounded predicates, such as *to run into the house*, are compared to count nouns. Yet, as will become clear in the course of this thesis, the similarities are only partially reflected by the way they combine with quantifiers.

This chapter and chapter three are meant to be a primer for the rest of the thesis, where the quantifying expressions themselves will be in the centre of our attention. For the time being Qs will be mentioned only in as far as they illustrate aspects of the mass/count distinction. For ease of exposition, the examples will mostly be taken from English.

Abstract nouns and verbs will mostly be disregarded in this chapter, but I will come back to them in chapters 5 and 6. It will turn out that psych verbs do not behave in the same way as the stage-level verbs on which I will concentrate in this chapter, while abstract nouns, when used in argument position, do not seem to have properties that are very different from those of other mass or count nouns.

In the first section the mass/count distinction in the nominal system will be discussed and in the second section properties of mass and count nouns

will be compared to mass and count verb phrases. It will become clear that verbs do exhibit a mass/count distinction which is similar, in several respects, to the one found in the nominal system. Next to the parallels, there are some striking differences as well, the most remarkable one being that the mass/count distinction in the verbal system is to a large extent compositional (cf. Verkuyl 1972), and depends on the reference properties of certain argumental noun phrases. These arguments are said to MEASURE OUT the event. The discussion of measuring out will be postponed until chapter 3.

2.1 Mass nouns and count nouns

The basic semantic difference between mass and count nouns seems to be that count terms always provide us with a criterion for counting, while mass nouns do not, or as I will argue below, not necessarily. Nouns such as *water*, *gold* and *wine* are mass nouns and refer to substance, while *lake*, *ring* and *bottle* are count nouns and refer to objects. The distinction between the two types of nouns is justified by their syntactic distribution. Next to the nouns that refer to physical objects (count) and stuff (mass) there are also abstract nouns that share the mass or count syntax with the count or the mass nouns. Count nouns such as *idea*, *characteristic* and *opinion* do not refer to physical objects but do provide a criterion for counting and share the distribution of count nouns. *Happiness* and *appreciation*, on the other hand, do not, and function as mass nouns.

In the context of the mass/count distinction it is unavoidable to talk about mass-to-count and count-to-mass shifts. An example of a count-to-mass shift is the pair *a chicken/chicken*. Starting out with the count noun *a chicken* we can form the mass noun *chicken*, which refers to chicken meat. On the basis of the mass noun *beer* we can form the count noun *a beer* by mass-to-count shift, which refers to a type of beer, or alternatively a serving of beer. Shifting processes, which are often available, can make it hard to decide with which type of noun we are dealing with. Moreover, if we want to show that in a certain construction only mass nouns or only count nouns are possible, we have to exclude the shifted interpretation. From now on the impossibility of a mass or count form will be marked by #, which indicates that the form is impossible, unless a shift has taken place. Thus the use of # in #*a beer* indicates that the form *a beer* is only possible if the mass noun *beer* has shifted to a count interpretation.

The organization of this section is as follows. In 2.1.1 I will list the most striking distributional properties of count nouns and mass nouns. Count-to-mass and mass-to-count shifting processes will be discussed in 2.1.2. In 2.1.3 we move on to semantic structures of mass and count nouns that have

been proposed within the spirit of Link (1983). In this context the status of collective nouns, such as *furniture*, will be discussed. These challenge the idea that mass nouns never provide us with a criterion for counting (cf. Bunt 1985). In section 2.1.4 I will introduce the notion of *q*-position. The *q*-position, where *q* stands for quantity, is a position in the thematic grid of the noun, which can be saturated by a quantifying expression. In *more tea*, for instance, the *q*-position of the mass noun *tea* is saturated by *more*. The *q*-position can be either scalar or non-scalar, depending on the semantic structure corresponding to the noun.

2.1.1   Distributional criteria

There are several distributional differences between mass nouns and count nouns. The first and most striking difference is that count nouns have both a singular and a plural form, and mass nouns do not:[4]

(2)   a.   #golds, #waters, #wines
       b.   rings, lakes, bottles

The examples in (2a) are unacceptable unless we give a count sense to *water*, *gold* and *wine*, as indicated by the sign #.

   Quantifying expressions are often sensitive to mass, count and plurality properties of the nouns they combine with (see chapter 7 for a detailed overview). The indefinite determiner *a* selects a singular count noun, while cardinal numerals and a number of other quantifying expressions such as *several* select a plural count noun:

(3)   a.   a ring, two lakes, several bottles
       b.   *a rings, *two lake, *several bottle
       c.   #a gold, #two water(s), #several wine(s)

When an element such as *kilo*, *litre* or *bottle* is inserted in the examples in (3c), they are fine:

(4)   a kilo of gold, two litres of water, several bottles of wine

The role of these elements, which I call classifiers, will be discussed in 2.1.3 below and in chapter 7.

_____

   [4]   The lack of plural for mass nouns can either mean that mass nouns are always singular, or that they do not bear Number morphology at all. In chapter 7 I will defend the idea mass nouns do not bear Number morphology.

There is also a small set of quantifying expressions that can only be combined with mass nouns. English examples are *much* and *a little*:[5]

(5)   a.   much water, a little wine
        b.   much #ring/*rings, a little #bottle/*bottles

Count plurals and mass nouns have a lot in common. The core of their resemblance is the cumulative reference property, which can be described as follows. If you have two parts which are *P* (where *P* stands for a nominal predicate) and when you put them together, the sum is also *P*, *P* has the cumulative reference property. Quine (1960) already shows that this is a property of mass terms. Take for instance the noun *tea*. If the liquid in my cup is tea and the liquid in the teapot is too, the sum of these liquids is tea as well. Link (1983) shows that bare plural count nouns share this property with mass nouns: if the animals in this camp are horses and the animals in that camp are horses, the animals in both camps are horses.

Some more evidence for the resemblance of mass nouns and plurals is based on the distribution of quantifying expressions. Mass nouns and plurals are both found in the context of for instance *a lot*, *enough* and *more*, which are incompatible with count singulars:

(6)   a.   a lot of water, enough gold, more wine
        b.   a lot of lake*(*s*), enough ring*(*s*), more bottle*(*s*)

Quantifying expressions such as the ones in (6), which I call degree quantifiers, form a rather large set cross-linguistically and will be extensively discussed in later chapters.

In many languages, bare plurals and mass nouns can have an existential reading, while bare singular count nouns cannot. This is illustrated in (7) for English:

(7)   a.   John read book#(**s**)
        b.   John ate ice cream

French is exceptional in that bare plurals and bare mass nouns cannot be used in argument positions. They have to be preceded by the indefinite determiner *du/ de la/ des* lit. 'of the'. The different forms correspond to the masculine and feminine singular and the plural, respectively:

---

[5]   Chierchia (1995) notes that Qs which only combine with mass nouns are quite rare cross-linguistically. There is a tendency to use these Qs with plurals as well. Gathercole (1986) reports that children continue to use *much* with plurals to the age of 8. Marcel den Dikken pointed out to me that *few* is often replaced with *little* even in adult, highly educated English. Cf. also chapter 7.

(8)   a.   Jean   a   lu   *(des)   livres
           Jean   has   read   (of-the)   books
           'Jean read books'
      b.   Jean   a   mangé   *(de la)   glace
           Jean   has   eaten   (of the)   ice cream
           'Jean has eaten ice cream'

The impossibility of bare noun phrases in (8) has been related to the lack of plural morphology (cf. Delfitto & Schroten 1991). In French the distinction between singular and plural is often only a matter of writing, as the plural marker –*s* is generally not pronounced: *livre* 'book' is pronounced in the same way as *livres* 'books'. Only a small class of nouns has an audibly different form for singular and plural (e.g. *cheval* /ʃval/ 'horse' versus *chevaux* /ʃvo/ 'horses').[6]

However, except for the impossibility of using them as existential bare noun phrases, French plural nouns do behave like real plurals. In the first place, they directly combine with cardinals: *un livre* 'a book', *deux livres* 'two books'. In Chinese, as we will see below in 2.1.3.2, there is no Number marking at all and nouns behave like mass nouns in the sense that they can only be combined with cardinals if a classifier is inserted (cf. also (4)). In the second place, phrases such as *trois enfants* 'three children' trigger plural agreement on the verb. In 7.3 it will become clear that this cannot be attributed to the numeral *trois*, as there are some cases in Dutch where a subject containing a cardinal numeral (>1) does not trigger plural. I will assume that even though French nouns are not overtly marked for Number they contain a singular or plural feature, as this makes them compatible with certain Qs including cardinal numerals. With respect to their behaviour in the context of Qs, French count nouns are similar to the English and Dutch ones. These issues will play a role in chapter 7.

So far we have seen that there are important distributional differences between mass nouns, count singulars and count plurals, especially in the context of quantifiers. Furthermore, there is an overlap in the distribution of mass nouns and count plurals.

---

[6]   Plural morphology on a noun can surface in so-called liaison contexts. In case of liaison, an otherwise silent word final consonant is pronounced under influence of a following word starting in a vowel. The plural ending –*s* of a noun may surface as /z/ if followed by a modifier starting in a vowel, as in *les Etats-Unis* /lezetazyni/ 'the United States'. Liaison between a plural noun and a subsequent modifier starting in a vowel is not required, and often absent in colloquial speech. This case of liaison is a property of the plural –*s*, as a final silent consonant of a singular noun cannot surface: the -*t* in *un savant agréable* /œsavã(*t)agreabl/ cannot be pronounced. Cf. Gougenheim (1938) and Morin & Kaye (1982) for discussion. For a general overview of liaison, cf. Tranel (1981).

2.1.2   Shifts

Nouns can easily shift from a count sense to a mass sense and vice versa. This section focuses on count-to-mass and mass-to-count shifts, and I will argue on the basis of the way these shifting processes function that there must be a lexical distinction between mass and count nouns. As we will see below count-to-mass shifts follow more or less a regular pattern, while mass-to-count shifts are quite unpredictable. In both cases there are examples of nouns that resist shifting, which shows that it cannot be the case that either all mass nouns are derived through count-to-mass shift or all count nouns through mass-to-count shift. I will not consider formal properties of shifts, but see Link (1983) and Landman (1990).

In count-to-mass shifts, a major role is played by the "Universal Grinder" (this term is due to David Lewis), which turns a count noun into a mass noun. In principle, any count term that has physical objects in its extension can be used as a mass term given an appropriate context (cf. Pelletier 1975, Gleason 1965 and Hoepelman and Rohrer 1981). An example illustrating this idea due to Gleason (1965) is the following. A mother termite complains about her son and says:

(9)   Johnny is very choosy about his food. He will eat book, but he
            won't touch shelf.

In this example a typical count nouns are used as if they are mass. The nouns *book* and *shelf* correspond here to 'substance a book/shelf is made of'. Nouns that do not denote physical objects do not undergo count-to-mass shift. Examples of nouns that cannot 'pass through the grinder' are abstract count nouns such as *characteristic*, *mile* and *aspect*. The process of shifting from a count meaning to a mass meaning is quite regular. In general, nouns that physical objects in their extension can undergo a shift in which case they denote the substance an object they would normally refer to is made of, though some cases are obviously more common than others.

Shifts from mass to count are far more complex. It is often possible to interpret a mass noun N_{mass} as a count term referring to *a type of N_{mass}*, *a serving of N_{mass}* or *a piece of N_{mass}* but these processes are not transparent. Note, for instance, that having the *type of N_{mass}* reading does not imply that mass-to-count shift has taken place. A Dutch example of a mass *type of N_{mass}* reading is given in (10):

(10)   Ze verkopen dit hout   al jaren
            they sell   this wood   since years
            'They have been selling this (type of) wood for years'

The word *hout* cannot be a count term in this *type of N$_{mass}$* reading, because it cannot be pluralized. In order to obtain the plural meaning, the complex form *houtsoorten* 'kinds of wood' is used, as is shown in (11):

(11)   Ze verkopen verschillende duurzame
           they sell   different   durable
           *houten/houtsoorten
           woods/kinds of woods
           'They sell different kinds of durable wood'

It is not the case that the mass noun *hout* cannot be used as a count noun at all. In *slaghout/slaghouten* 'bat/bats', lit. 'beat-wood(s)' the noun is count, as the existence of both singular and plural shows. Other words that resist mass-to-count shift via the *type of N$_{mass}$* reading are *glas* 'glass', *zand* 'sand', *afval* 'waste' etc., though there might be some variation among speakers.

In other cases the *type of N$_{mass}$* reading does involve a mass-to-count shift as plural can be formed. An example is *wijn* 'wine':

(12)   Marie heeft verschillende wijnen geproefd
           Marie has   different   wines   tasted
           'Marie tasted different wines'

The examples in (11) and (12) demonstrate that the availability of the count *type of N$_{mass}$* reading is not free, at least not in Dutch. Other possibilities for interpreting N$_{mass}$ as a count noun are *serving of N$_{mass}$* or *piece of N$_{mass}$*. Again, these processes are not predictable as is the count-to-mass shift discussed above. This is illustrated by the Dutch examples in (13). (13) illustrates three ways in which a mass noun can be used as a count noun. The count noun can be the same form that is used as mass noun (*wijn* 'wijn'), it can be a compound in which the noun is preceded by a specification of what the object is used for (*slaghout* 'bat') and it can be a diminutive form (*slaapje* 'nap'). Diminutives are always count. It is not the case, however, that the compounds and the diminutives in (13) must be derived from the simple count noun, after mass-to-count shift has taken place. The diminutive and the compound can exist when there is no corresponding simple count noun as in (13a), (13d) and (13f). Moreover, there can be a difference in meaning between the diminutive or compound and the simple count noun, which also shows that they are directly derived from the mass noun. For instance, there are two mass nouns *stof*, one of which is neuter and means 'dust', the other of which is feminine and means 'fabric'. The diminutive *stofje* (which is always neuter, due to the presence of the diminutive suffix) can be used to refer to either a dust-particle or to a type of tissue. Only in the latter interpretation the deminutive is derived from the count noun *stof*, as the

count noun *stof* is always feminine and cannot mean 'dust particle'. In the leftmost column of (13) the original mass noun is given, in the middle column the corresponding count noun, with its plural ending between brackets, and in the rightmost column the diminutive form. Compounds are only added in case they are not derived from the simple count form. The schema does not include jargon.

(13)		*mass*	*count (plural)*	*compound*	*diminutive*
	a.	hout	-	e.g. slaghout(en)	houtje
		wood		*'hitwood(s)',*	*piece of*
				bat(s)	*wood or stick*
	b.	bier	bier(en)		biertje
		beer	*type(s) of beer*		*serving of beer*
	c.	elastiek	?elastiek(en)		elastiekje
		elastic band	*piece(s) of elastic band*		*piece of elastic band*
			NOT *type of elastic band*		
	d.	boter	-		botertje
		butter			*serving of butter*
	e.	stof N/F	stof(fen) F		stofje
		dust (N)	*type(s) of stuff,*		*dust-particle;*
		stuff, fabric (F)	*fabric*		*type of fabric*
	f.	slaap	-		slaapje
		sleep (mass)			*nap*
	g.	plastic	plastic(s)		plasticje
		plastic	*type(s) of plastic*		*any small piece*
					of plastic
	h.	ijzer	ijzer(s)	e.g. strijkijzer(s)	ijzertje
		iron	*type(s) of iron*	*flatiron(s)*	*small piece of iron*
	i.	wijn	wijn(en)		wijntje
		wine	*type(s) of wine*		*serving/type of wine*
	j.	glas	glas (glazen)		glaasje
		glass	*piece of glass,*		*small piece of glass,*
			a glass, NOT *type of glass*		*a glass*
	k.	goud	-		-
		gold			

The examples in (13) show that the possible interpretations of derived count forms vary quite seriously. Certain types of meaning show up frequently: *a piece/ a serving of* N_{mass} and *a type of* N_{mass}. In general, the diminutive refers to a small *piece/ serving of* N_{mass}, while the bare noun form refers to the *type of* N_{mass} reading. However, we cannot predict which forms are possible and which meanings are allowed. As I showed above, the count *type of* N_{mass} reading is not always available. In the *piece* or *object of* N_{mass} reading, we do not know what kind of object the count version of the mass noun refers to. *Een glas* or *een glaasje* 'a (piece of) glass' can be used for a drinking glass, the chimney of an oil-lamp or a spectacle-glass, but not for a glass vase or a fragment of broken glass. Alongside the unpredictable meanings, there are several unpredictable gaps in the paradigm. The mass nouns *slaap* and *boter*

must be diminutive in order to be count. The form *botertje* 'serving of butter' is not accepted by all Dutch speakers. The mass noun *goud* 'gold' lacks a count use for all speakers, apparently even for chemists, who often can use stuff names for molecules or atoms, as in *two coordinated waters*.[7]

The examples in (13) show that a lot of information about possible and impossible count meanings is stored in the lexicon. It is not possible, given a mass noun, to predict whether there is a count meaning in the first place and, if there is one, what it would be. In this respect the mass-to-count shifts show far more variety than the more regular count-to-mass shifts. We have seen that there are mass nouns and count nouns that cannot have a shifted interpretation. Abstract count nouns such as *characteristic* and *mile* are examples of count nouns that resist the Universal Grinder. The mass noun *goud* 'gold' in Dutch seems to be always mass. This observation is important, because it shows that mass nouns and count nouns both exist, independently of each other.

The claim that all nouns in English might actually be mass nouns has been put forward by Sharvy (1978). Sharvy argues that the mass-to-count shift might not be lexical, but realized through the insertion of an empty classifier in syntax. The use of the mass noun *beer* as a count noun in *two beers* is possible because of the presence of an empty classifier at the syntactic level, which is responsible for the shift. In this respect English might be similar to numeral classifier languages, such as Chinese, in which all nouns have mass-noun syntax and need the presence of a classifier in the context of a cardinal numeral (see 2.1.3.2 below). Nouns are mass and count interpretation involves the syntactic operation of classifier insertion.

There is, however, evidence against this claim, which shows that shifts function as lexical and not as syntactic operations. The argument against Sharvy's claim is based on the form of the noun. Mass nouns are not marked for plural when used with a classifier, as in *two glasses of beer(#s)*. Mass nouns that have undergone the mass-to-count shift typically bear plural morphology when used in a plural context (*different wine*s, *three glass*es etc.). One might be tempted to say — as Sharvy does — that the plural morphology of a silent classifier gets transposed onto the head noun. This hypothesis is highly unlikely for the following reason. The plural morpheme can be left out in certain specific contexts. In a restaurant setting we can use phrases such as *two rice* and *three beer*, without plural morphology on the verb. Phrases of this type are possible in certain numeral classifier languages as well. In Vietnamese, for instance, the otherwise obligatory classifier can be left out in cases such as *two chicken, three beef* and *two coffee* etc. in a

---

[7]   Thanks to Jeroen Kolnaar, who provided me with the chemists' jargon judgements.

restaurant setting.[8] The use of this type of construction in classifier languages, plus the fact that the form of the mass noun in these cases is the same as in the context of an overt classifier, suggests that there is in fact an empty classifier present in these constructions. This in turn shows that the presence of plural in *three wines* is quite suspect within Sharvy's approach, as plural is not found in the context of an empty classifier in the restaurant cases. As a consequence, the mass-to-count shift has to be situated in the lexicon.

We can conclude that there must be, in the lexicon, mass nouns and count nouns. We cannot assume that all nouns are inherently count, and that mass nouns are derived by count-to-mass shift through the Universal Grinder, given the existence of mass nouns that can never be used as count nouns. Examples are *hout* 'wood' and *goud* 'gold'. Moreover, there are mass/count noun pairs where the count noun only has a *type of N_{mass}* reading (e.g. *wijn* 'wine' and *bier* 'beer' in Dutch).[9] These count nouns do not refer to physical objects and hence grinding is impossible, which means that in these cases, the count noun cannot be the source of the mass noun, so that the mass meaning cannot be derived through count-to-mass shift. We cannot assume either that all nouns are inherently mass, given the existence of nouns such as *characteristic*, *mile* and *aspect*, which do not correspond to a mass noun. Furthermore, I argued that the mass-to-count shift itself is a lexical process, and not the result of syntactic insertion of a silent classifier, contra Sharvy (1978).

---

[8]   The information on which this argument is based was provided by David Gil's query on classifiers on the Linguist List (summary: 13th April 1994).

[9]   Note that the *serving of N_{mass}* reading is only available for the diminutive forms *biertje* 'beer+DIM' and *wijntje* 'wine+DIM', not for the plural count noun *bieren/wijnen* 'beers'/'wines':

(i)   a.   twee   bieren/wijnen
              two   beers/wines
              'two types of beer/wine' (not: 'two servings of beer/wine')
         b.   twee   biertjes/wijntjes
              two   beer+DIM.PL/wine+DIM.PL
              'two types/servings of beer/wine'

The forms *twee bier* 'two beer' and *twee wijn* 'two wine' also have the *serving of N_{mass}* reading, but these are cases of empty classifier insertion, not of lexical mass-to-count shift (cf. the examples *two coffee* and *two beef* discussed in the main text).

2.1.3 The structures of mass nouns, count nouns and plurals

In the recent semantic literature on the mass/count distinction it has been claimed that mass nouns, count nouns and plurals correspond to algebraic structures (cf. for instance Link 1983, Krifka 1986, Lønning 1987, Landman 1989, Gillon 1992, Chierchia 1995 and Schwarzschild 1996). In 2.1.3.1 I will introduce the notion of complete join semi-lattice, which will allow us to define reference properties such as cumulative and quantized reference. Then, in 2.1.3.2 the distinctions between mass nouns, count nouns and plurals will be discussed. The status of mass nouns is a matter of debate. According to Bunt (1985) and Landman (1989, 1991), mass nouns correspond to structures which do not contain minimal parts. There is no defined smallest part in the denotation of a noun such as water, and, from a linguistic point of view, they argue, the same holds for nouns such as *furniture*. Chierchia (1995), on the other hand, assumes that there is no structural difference between the domain of denotation of a count plural, such as *chairs* and the mass noun *furniture*. He argues that the structures corresponding to mass nouns contain minimal parts, and mass nouns are in this respect identical to plurals. I will give some arguments for an intermediate point of view. The Bunt/Landman way of looking at mass nouns seems correct for nouns such as *water*, but Chierchia's approach is more appropriate for collective nouns such as *furniture*. The discussion will be based in part on data from Mandarin Chinese. This language, which is often said to comprise mass nouns only, will be argued to have a lexical distinction between 'count mass nouns' or collectives and 'mass mass nouns'.

2.1.3.1 Join semi-lattices

An example of a join semi-lattice is given in (14):[10]

(14)

---
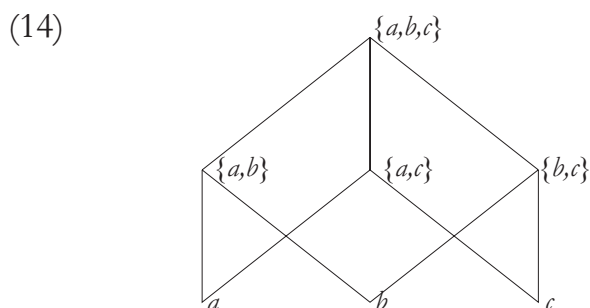
[10]   The discussion of the formal properties of Boolean Algebras and lattices is inspired by Szabolcsi (1997), who offers a very clear introduction to lattice theory.

The diagram in (14) represents a set, which is ordered by the *part of*-relation. The members of the set are *a*, *b*, *c*, {*a,b*}, {*a,c*}, {*b,c*} and {*a,b,c*}. If we interpret the upward lines in the diagram in (14) as 'is part of' we can see that the diagram encodes the following information: *a* is part of {*a,b*} and {*a,c*}; *b* is part of {*a,b*} and {*b,c*}; *c* is part of {*a,c*} and {*b,c*} and {*a,b*}, {*a,c*} and {*b,c*} are each part of {*a,b,c*}. The part of relation is a TRANSITIVE relation, which means that *a*, *b* and *c* are part of {*a,b,c*} as well. As we know that *a* is part of {*a,b*} and {*a,b*} is a part of {*a,b,c*} we can derive that *a* is part of {*a,b,c*} by transitivity of the *part of*-relation. The same obtains, *mutatis mutandis*, for *b* and *c*. The *part of*-relation is defined as a REFLEXIVE relation. For every member of the set *A* the *part of*-relation holds between that element and itself. The third property of the *part of*-relation is ASYMMETRY. Asymmetry holds if for any *x* and *y* that are members of a set *A*, and if *x* is part of *y* and *y* is a part of *x*, *x* and *y* must be identical. As the diagram shows there are no two different elements in *A* that are ordered in such a way that the first is part of the second and the second part of the first, which means that asymmetry holds. A relation which has the three properties reflexivity, transitivity and asymmetry is called a partial ordering.[11] The elements *a*, *b* and *c* are the minimal elements of the set, also known as the ATOMS.

Given a partially ordered set, or poset, we can define the operations JOIN and MEET. Given a poset $<A, \leq>$ the join of two elements $a \in A$ and $b \in A$, $a \vee b$ is defined as the minimal element for which $a \leq a \vee b$ and $b \leq a \vee b$ both hold. Hence for every $c \in A$ such that $c \leq a$ and $c \leq b$, we know that $c \leq a \vee b$. Applying this to the example in (14) we find that the join of *a* and *b* is {*a,b*}, the join of {*a,b*} and *c* is {*a,b,c*}, the join of {*a,b*} and {*a,b,c*} is {*a,b,c*} etc. The operation meet is the reverse of join. Thus the meet of *a* and *b*, $a \wedge b$, is the maximal element for which both $a \wedge b \leq a$ and $a \wedge b \leq b$ hold. For every $c \in A$ such that $a \leq c$ and $b \leq c$, $a \wedge b \leq c$ as well. In the structure in (14) the meet of *a* and *b* is undefined, the meet of {*a,b*} and *a* is *a* etc.

A structure is closed under a certain operation if the result of applying the operation to any pair of elements in the structure is an element in the structure as well. The structure in (14) is closed under join. If you take two arbitrary elements in *A* you will find the join of these elements in *A* as well. A lattice is a poset $<A, \leq>$ which is closed under meet and join. The structure in (14) is not closed under meet, given that the operation meet is not defined for the pairs *a* and *b*, *b* and *c* and *a* and *c*. This is so because the structure does not contain a zero element which would be the meet of these pairs. A structure which fails to be a lattice because it is not closed under

---

[11]   The ordering is partial, as not all elements are ordered with respect to each other. *a*, *b* and *c*, for instance, are not ordered with respect to each other by the *part of*-relation.

meet but which is closed under the join operation is called a join semi-lattice.

At this point we can turn back to nouns. The type of structure in (14) has been proven to be useful to represent the extension of nouns. In this respect I will mostly follow Chierchia (1995), who builds on work by Link (1983) and Landman (1989,1991).[12] Singular count nouns, Chierchia states, have as their extension a set of singularities. The extension of a singular count noun such as *table* corresponds to the set of singular tables in the domain of denotation. The plural count noun *tables* corresponds to the set of pluralities that can be formed on the basis of the singular tables. Chierchia illustrates this by (15) (his (21)):

(15)　　　　　$\text{PL}(\text{table}_w)$
$$
\begin{bmatrix}
 & \{a,b,c\} & \\
\{a,b\} & \{a,c\} & \{b,c\} \\
 & &
\end{bmatrix}
$$

PL

$table_w$　　$\begin{bmatrix} a & b & c \end{bmatrix}$

Assume *a*, *b*, and *c* are the only tables in the domain in a given world *w*. The plural morpheme triggers the operation PL, which yields a set of pluralities, formed on the basis of the extension of the singular form. The set of pluralities of singular tables forms the extension of the plural form *tables*. Putting the two together, we get a join semi-lattice, the atoms of which correspond to the elements of the set of singularities.

The more controversial part of Chierchia's proposal concerns mass nouns. According to Landman (1989, 1991) the extension of mass nouns corresponds to a join semi-lattice which does not have minimal parts. There is no set of atoms representing the smallest entities which fall into the extension of the noun. This corresponds to the homogeneity hypothesis defended by Bunt (1985). A predicate has homogeneous reference if it is both cumulative and divisive. Cumulative reference has been mentioned above (a formal definition will be given below). Mass nouns such as *tea* have cumulative reference because if the liquid in my cup is tea and the liquid in the teapot is tea, and I put the two together, the result is still tea as well. In case divisivity holds, given a part which falls into the extension of a predicate *P*, any subpart of this part will fall into the extension of *P* as well.

---

[12] The original Linkian structure was a lattice (or more precisely a complete Boolean Algebra, which is a specific type of lattice), and included a zero element. Landman has proposed that this element should be removed, mainly for reasons of elegancy. This issue is not relevant here. See Landman (1991:302) for discussion.

If there is tea in my cup, and I drink half of it, the liquid in the cup is still tea.

Bunt's claim that mass nouns have homogeneous reference is clearly not intended to be a claim about the ontological properties of objects referred to by mass nouns. This distinction between the linguistic and the ontological properties of mass objects is justified, Bunt argues, because nothing in the linguistic use of mass nouns indicates a commitment on the part of the speaker to the existence of minimal parts (Bunt 1985:45). From an ontological point of view we do not want to say that mass objects do not have minimal parts, but as we do not find any reflection of this partitioning in language, this should be accounted for in the linguistic representation of mass nouns. Bunt formulates the HOMOGENEOUS REFERENCE HYPOTHESIS as follows:

> Mass-nouns refer to entities as having a part-whole structure without singling out any particular parts and without making any commitments concerning the existence of minimal parts.
>
> Bunt (1985:46)

Bunt's homogeneous reference hypothesis pertains not only to substance denoting mass nouns such as *tea* and *water*, but also to collective nouns such as *furniture*.

Chierchia, to the contrary, argues that all nouns have minimal parts in their extension, including typical mass nouns such as *water*. The structure corresponding to a mass noun is hence an atomic join semi-lattice, as the one in (14). He illustrates his point of view mostly by examples of the *furniture* type. His 'inherent plurality hypothesis' generalizes over mass nouns such as *water* and collective mass nouns such as *furniture* as well.

> A mass noun simply denotes a set of ordinary individuals, *plus* all the pluralities of such individuals. For example "change" denotes, roughly, single coins and the possible sets of pluralities of coins. This view is an "atomistic" one: we are committed to claim that for each mass noun there are minimal objects of that kind, just like for count nouns, even if the size of these minimal parts may be vague.
>
> Chierchia (1995:2)

In what follows I will argue that the class of mass nouns should not be viewed as a single homogeneous class. There are two types. On the one hand, the 'mass mass nouns', which seem to have homogeneous reference, in accordance with the Bunt/Landman approach, and on the other the 'count mass nouns', or collectives, which have minimal parts. Mass mass nouns are mass from a syntactic point of view (no Number morphology, incompatibility with cardinals etc.) and from a semantic point of view (no minimal parts), while the count mass nouns are mass from a syntactic point of view only, and not from a semantic point of view.

Count mass nouns have a structure similar to the one adopted for plurals. Contrary to plurals they are not formed on the basis of a singular form representing a set of singularities. I will start out the argument by a discussion of some Mandarin Chinese facts. In Mandarin Chinese all nouns have the distributional characteristics of mass nouns. In this language there are clear signs that there is a class of 'mass' nouns for which we must assume that they lexically provide us with a criterion for counting. The next step will be to show that there are reasons to assume a similar distinction in languages such as English, and that this exactly corresponds to the distinction between real mass nouns such as *water* and collectives such as *furniture*.

The point of view which I will defend is not necessarily in conflict with Chierchia's approach. The minimal parts introduced by mass nouns may be vague, he states, whereas the minimal parts in count nouns are singled out in the lexicon. Given this formulation, Chierchia's analysis can accommodate the existence of two semantically distinct classes of mass nouns, one with 'vague minimal parts', and the other with lexically determined ones. I am not sure whether structures with vague minimal parts and structures without minimal parts make different empirical predictions, and will not take a principled position in this semantic debate.

2.1.3.2 Traces of the mass/count distinction in Chinese

Mandarin Chinese is a so-called numeral classifier language. In numeral classifier languages all nouns behave syntactically as mass nouns. We can draw this conclusion, in the first place, because there is no real plural morphology in Chinese (cf. Iljic 1994). A bare singular form can be used both for a singular and for a plural:

(16)   shu
          book(s)

In the second place, when a Chinese noun is combined with a cardinal numeral, a classifier has to be inserted. In non-classifier languages count nouns can directly combine with cardinals, as in *three books*. In (17) the classifier *ben* CL$_{volume}$ is inserted between the cardinal *san* 'three' and the noun *shu* 'book':

(17)   san-*(**ben**) shu
          three-(CL$_{volume}$) book

In the history of Chinese, the disappearance of Number morphology

correlates with the emergence of the generalized classifier system (cf. Peyraube 1995). Most numeral classifier languages lack the opposition between singular and plural, as has been observed by Sanches (1971), cited in Greenberg (1972).

Chinese nouns resemble mass nouns in non-classifier languages, as mass nouns are not marked for plural and need the presence of a classifier (*kilo*, *box*, *bottle*) when they are combined with cardinal numerals. The similarities between Chinese nouns and mass nouns have, not surprisingly, led to the view that all nouns in Chinese are mass nouns and that individuation is in fact introduced by classifiers (cf. Sharvy 1978). More recently Muromatsu (1995) has worked out this idea for Japanese. According to Muromatsu there is no lexical difference between mass and count nouns in the lexicon. Nouns have a mass or count interpretation depending on the syntactic structure in which they occur. In the context of non-individual classifiers such as *kilo* and *box*, which function as a measure, nouns are mass. Individual classifiers, such as *ben* 'CL_{volume}' in (17), individuate the noun as they add form to the otherwise unstructured mass. Universally, individual classifiers are usually associated with shapes, as noted in Greenberg (1972). In Muromatsu's view the classifier introduces shape in an otherwise formless mass. In the following discussion it will become clear that also in numeral classifier languages such as Chinese, there is a distinction between nouns which provide us with minimal parts and nouns which do not. As we will see, there are individual classifiers which do not individualize, but depend on the presence of a structure with minimal parts.[13]

Let us first reflect a little more on how minimal parts and number agreement interact in the context of 'real' count nouns in languages such as English and Dutch. The plural ending in *the books* indicates that there is more than one book. It does not give information about what unit could be considered to be a singular book, and therefore we know that this information must somehow be present in the denotation of the count noun *book*. In other words, we know the plurality of what we are talking about when we use a plural. Similarly, when we use *one N* or *another N*, we know what unit is intended. For instance, *one cup* cannot be used to refer to the ear of the cup. As *one* only indicates that we are dealing with one unit, the information about what counts as a unit must be present in the singular

---

[13]   Cf. Cheng & Sybesma (1996), who, on a par with Muromatsu (1995), make a distinction between individual classifiers and measure phrases or non-individual classifiers, which they call 'massifiers'. Contrary to Muromatsu they assume that the individualization is present in the denotation of certain nouns. Individual classifiers only combine with 'count nouns', which correspond to my count mass nouns, and enter in a different syntactic structure than the massifiers. I will reach the conclusion that the mass/count distinction plays a role in Chinese on independent grounds, and will not take into account eventual syntactic differences between massifiers and classifiers.

noun. In order to show that Chinese has count nouns, i.e. nouns with minimal parts in their denotation, we have to look at elements that force us to count units, but that do not tell us what the units are.

The Chinese classifier *ge*, which in fact corresponds to something close to *unit*, is similar to the category Number in this respect. Many individual classifiers contain information about how the partitioning is made. For instance, the classifier *ben* 'CL$_{volume}$' signals that we are talking about book-volumes. Other classifiers give information about shape (*zhi* 'CL$_{branch}$' indicates that the object is long and thin and it selects *bi* 'pen' and *jian* 'arrow'; *mian* 'CL$_{surface}$' selects nouns such as *qi* 'flag' and *jingzi* 'mirror'). The classifier *ge*, however, does not convey such information. Therefore we expect that in the context of this classifiers the choice of what counts as a unit can only be made on the basis of the denotation of the noun, or, alternatively, as with mass nouns shifted to a count interpretation (*a beer)*, on the basis of convention or context.

This is in fact what seems to happen. The classifier *ge* tends to replace more specific classifiers. Next to (18a), where the classifier *ben* 'CL$_{volume}$' is used, (18b) with *ge* 'CL$_{unit}$' is possible:

(18) a. san-**ben** shu
     three-CL$_{volume}$ *book*
  b. san-**ge** shu
     three-CL$_{unit}$ *book*
     'three books'

However, *ge* 'CL$_{unit}$' cannot replace just any classifier. As Rygaloff (1973:73) notes, the classifier *ge*, though it is the most general and most frequent classifier, cannot be used with mass terms, unless these terms can also be conceived of as count terms (e.g. *a fish* versus *fish*). This is a clear indication that semantically the mass/count distinction, including shifting processes, exists in Chinese as well.[14] The classifier *ge* does not give any information about the unit we are looking for. In this respect there is no difference between *ge* and number morphology. Neither *ge* nor number morphology conveys any information about what counts as a unit. Hence the noun must contain this information.[15]

---

[14] It is possible to use *ge* in the context of the mass noun *pi-jiu* 'beer' when mass-to-count shift has applied. *yi-ge pi-jiu* can be used for 'a serving of beer' (Rint Sybesma, p.c.). This is of course similar to the English pair *beer/a beer*, which results from mass to count shift.

[15] The existence of a neutral individual classifier which is not associated to a specific form is not restricted to Chinese. For instance, in Kana, a numeral classifier language spoken in Nigeria, the most general classifier is *kà*, which is originally the word for

Note that the argument I am making here goes only in one direction. If a noun can be combined with *ge* it must have a count structure, but I do not make an explicit claim about nouns that cannot be combined with *ge*. Take, for instance, the word *shu* 'book', which used to be incompatible with *ge*. There are two ways one can look at the change: on the one hand it could be the case that first *shu* was a mass noun, and because it became a count noun the classifier *ge* became possible. It might be the case as well that *ge* could be extended to be used with *shu* because *shu* had a count structure already. I will show below that the latter option has to be preferred given that certain nouns which cannot be combined with *ge* have count properties on the basis of other tests.

One of these other tests, and a second argument in favour of the existence of 'count' nouns in Chinese, is compatibility with classifiers such as *da* 'dozen', and *qun* 'crowd; flock'. These classifiers belong to a group of elements which involve some sort of counting, or pluralization. Chao (1968) calls these elements 'group measures', and defines them as elements which are 'semantically [...] used for a group or collection of individuals'. In the examples in (19), we see that *da* 'dozen' and *qun* 'flock' directly combine with the noun, which shows that they function as classifiers, not as cardinal numerals. The classifier *pi*, which must be inserted in order to combine the noun *ma* 'horse' with a cardinal numeral, has to be omitted:

(19)   a.   yi-da   (*pi)   bai-ma[16]
            *one-*CL$_{dozen}$ *(*CL$_{horse}$*)*   *white-horse*
            'a dozen of white horses'
       b.   yi-qun   (*pi)   ma
            *one-*CL$_{flock}$ *(*CL$_{horse}$*)*   *horse*
            'a flock of horses'

The classifiers *da* CL$_{dozen}$ and *qun* CL$_{flock}$ are similar to plural morphology in the sense that they indicate that there is a plurality of individuals, while they do not indicate themselves what counts as an individual. This information must be provided by the noun, suggesting that the noun *ma* provides us with a criterion for counting. Interestingly, for most speakers the classifier

---

'mother' and which is used with a great variety of nouns, including the ones corresponding to 'father', 'school', 'axe' and 'alligator' (cf. Ikoro 1994 for details about the Kana classifier system). A similar process has been observed in Vietnamese by Thomson (1965), cited in Greenberg (1972).

[16]   Without the adjective *bai* 'white', the sentence is not acceptable, whether the classifier is present or not. This might have to do with a tendency to avoid monosyllabic words, though this cannot be a full explanation of the problem as the presence of *bai* is not necessary in (19b) (Lisa Cheng, p.c.).

pi cannot be replaced by *ge*. Yet, the noun *ma* acts like a 'count' noun in the example in (19). This shows that compatibility with *ge* is a diagnostic for the presence of count structure, while incompatibility with *ge* does not necessarily indicate that a noun is a real mass noun.

A further sign of the existence of a mass/count distinction in Chinese might be the distribution of the suffixes *–zi* and *–tou*. According to Rygaloff (1973:62) the suffix *–zi* is a marker of non-compositionality for count nouns. By this he means that the affix is found on the stem of a count noun which is not part of a compound. So there is *fángzi* 'house' next to *píngfáng* 'bungalow' (lit. 'flat-house') and *yuánzi* 'garden' next to *gōngyuán* 'public garden'. In *fángzi* 'house' and *yuánzi* 'garden' the suffix is necessary, but with other nouns, such as *dāo(zi)* 'knife', it is optional. There are at least two counterexamples to the claim that we are dealing with a suffix that selects a count noun here, and these are *shāzi* 'sand' and *mòzi* 'foam' (Rint Sybesma, p.c.). However, one could argue that these are count nouns in Chinese, and correspond to 'grain of sand' and 'bubble', respectively. The suffix might perhaps be analysed as a diminutive marker (Rint Sybesma, p.c.). If this analysis is correct the count properties of *–zi* could be related to the count properties of the Dutch diminutive suffix *–tje* (cf. (13) above). Next to *–zi* there is another marker of non-compositionality, *–tou*, which is only used with mass nouns. We find *-tou* in *mùtou* 'wood' but not in the composed *sōngmù* 'fir-wood' (Rygaloff 1973:62).

All nouns in Chinese have the syntactic distribution of mass nouns, as they cannot directly combine with cardinal numerals (cf. section 2.1.1 above). On the basis of the evidence presented in this section a semantic distinction between two types of syntactic mass nouns can be made. 'Mass mass nouns' do not provide us with a criterion for counting and 'count mass nouns' do. In Chinese these two types of nouns reflect an instance of the mass/count distinction. The necessity of a classifier in the context of numerals does not indicate that there are no minimal parts present in the denotation of a noun, as there are classifiers such as *ge* 'CL$_{unit}$'. As this classifier does not contain any information about what counts as a 'unit', its use depends on the presence of minimal parts in the denotation of the noun it combines with. The classifier *ge* 'CL$_{unit}$' is very similar to Number morphology. Both depend on the presence of minimal parts in the domain of denotation of the noun. They indicate the presence of countable units but do not give information about what the units are. In chapter 7 I will argue that the classifier *ge* 'CL$_{unit}$' and Number are both grammatical markers of the presence of minimal parts. Cardinal numerals need the presence of a syntactic marker of countability, which can be either a classifier or Number morphology. The reason they cannot combine with a count mass noun is not that the noun does not provide a criterion for counting, but that the presence of minimal parts needs to be signalled by a syntactic

marker. As the count mass nouns do not bear Number morphology, the only way to mark the presence of minimal parts is through insertion of a classifier. The main difference between count mass nouns and real count nouns can hence be seen as the impossibility versus the possibility to accommodate Number morphology.

Real mass nouns, or mass mass nouns cannot be combined with the classifier *ge* 'CL_unit' unless mass-to-count shift has taken place. These mass mass nouns seem to correspond to the Bunt/Landman type of structure without minimal parts, while count mass nouns do have minimal parts, and could be assigned the structure Chierchia proposes for mass nouns.

2.1.3.3 *Furniture*-nouns

The existence of count mass nouns is not restricted to classifier languages. There is evidence that certain mass nouns in non-classifier languages do provide us with linguistically significant minimal parts in the domain of their denotation, even if Number morphology does not have access to them. The argument is similar to the one used for the Chinese cases. If a classifier does not provide any information about what to choose as a unit, and given a noun combined with that classifier we know exactly what unit to choose, the semantic structure corresponding to the noun must contain minimal parts.

Classifiers such as *piece* are so general that we can safely presume that they give us no clue as to what unit they pick. These classifiers allow us to make an interesting distinction between two classes of mass nouns. In the context of certain mass nouns, the partitioning is arbitrary, whereas it is perfectly clear how the partitioning has to be made in the context of other mass nouns. Consider the examples in (20), in which the general classifier *piece* and the analogous Dutch *stuk* are combined with the mass noun *cheese/kaas*:

(20)   a.   a piece of cheese
       b.   een   stuk   kaas
            a   piece   cheese

There are no real conditions on how the partitioning should be made. Therefore, the following statement is true:

(21)   a piece of a piece of cheese is a piece of cheese

Many mass nouns pattern like *cheese*: *wood*, *glass*, *plastic*, etc. The inference in (19) cannot be made, however, for all mass nouns that can be combined with the classifier *piece*. Consider the examples in (22):

(22) a. a piece of furniture/silverware [*English*]
    b. een stuk vee/ meubilair/ bagage/ gereedschap [*Dutch*]
       a piece   cattle/ furniture/ luggage/ tool

In the context of the nouns in (22) we know exactly and unambiguously what is meant by *a piece of N*, and instead of the inference in (21) we can make the inference in (23):

(23)   a piece of a piece of furniture is **not** a piece of furniture

The leg of a chair is not a piece of furniture, though it is a piece of a piece of furniture. Very general classifiers are in this respect similar to Number morphology. The word *piece* tells us that we have to subdivide in units. It does not say anything about what these units are. Similarly, plural number signals the presence of minimal parts, and does not give information about what these parts are.

    The relation between countability and *piece* in the context of *furniture*-nouns is strengthened by the following observation. In Dutch, the classifier *stuk* 'piece' can be used to replace a null count noun in answering a question. In that case we find the form *stuks* 'piece+GEN' as is shown in (24):[17]

(24)   Hoeveel boeken neem je   mee? twee *stuks/*stukken*
        how-many books take you   with? two piece+GEN/pieces
        'How many books do you take? Two'

When we replace the count plural *boeken* 'books' by the mass noun *kaas* 'cheese', the classifier must have the plural form *stukken*:

(25)   Hoeveel kaas heb je gegeten? twee *stukken/*stuks*
        how-much cheese have you eaten?   two pieces/piece+GEN
        'How much cheese did you eat? Two pieces'

There is a strong tendency to use the count form *stuks* when *furniture*-nouns are combined with cardinals:

(26)   drie stuks/#stukken vee; vijf stuks/#?stukken bagage
        three piece+GEN/pieces cattle five piece+GEN/pieces luggage

In this respect the *furniture*-nouns pattern with the plurals, not with the mass

---

[17]   In Dutch, classifiers do not always take plural in the context of a cardinal (>1). There are several distinctions related to the presence or absence of plural on the classifier, to which I will come back in chapter 7.

nouns, which can be understood if we adopt the idea that mass nouns of the *furniture*-type correspond to structures containing minimal parts.

Furniture-nouns are extensively discussed by Chierchia in his defence of the idea that mass nouns have minimal parts. I fully agree with him as far as *furniture*-nouns are concerned, given the evidence presented in this section. However, there is a difference between these nouns and nouns such as *water*, *ice* and *mud*, for which it is at best unclear what the minimal parts are.

In relation to the previous section we can conclude that the Chinese count mass nouns correspond to collective nouns of the *furniture*-type in non-classifier languages. In what follows I will use both of the terms **count mass noun** and **collective mass noun** to refer to this class of nouns.

2.1.3.4 Back to structures

The different structures we adopted so far for count singulars, count plurals, mass mass nouns and count mass nouns are recapitulated in table 1:

type of noun	examples	domain of denotation
count singulars	*table*	set of singularities: a, b, c etc.
plurals	*tables*	the set of pluralities formed on the basis of the set of singularities which constitute the extension of the corresponding singular form: $\{a,b\}$, $\{a,c\}$, $\{b,c\}$, $\{a,b,c\}$ etc.
count mass nouns (collective)	*furniture*; Mandarin *shu* 'book' (cf. (18))	set of atoms and the corresponding set of pluralities: a, b, c, $\{a,b\}$, $\{a,c\}$, $\{b,c\}$, $\{a,b,c\}$ etc.
mass mass nouns (non collective)	*water*	portions of matter, ordered with respect to each other by the *part of*-relation

TABLE 1

Given this classification there is no relation between the presence of minimal parts and the syntactic mass or count status of the noun, as determined on the basis of the distributional tests in section 2.1.1. Syntactic

count nouns must provide us a criterion for counting, as they combine with Number morphology, which never introduces count structure but depends on count structure. Syntactic mass nouns, however, can be semantically mass and semantically count. A subset of the classifiers (Cheng & Sybesma's 1997a massifiers) introduces minimal parts that are not part of the denotation of the noun. In *two litres of water*, *litres* indicates what we are counting, and hence we do not need information about which units we count in the denotation of the noun *water*. A number of very general classifiers, however, do not provide this information. Chinese *ge* 'CL_{unit}' for instance, used in *san-ge shu* 'three CL_{unit} book', implies that we are counting units, but not what these units are, and as a consequence, these units must be present in the denotation of the noun *shu* 'book'. This means that the difference between syntactic mass nouns and syntactic count nouns is not that only the latter provide us with a criterion for counting. Syntactic count nouns **must** provide us with a criterion for counting, while syntactic mass nouns **may** do so. The presence of minimal parts in the denotation of a noun is not the criterion on the basis of which nouns are divided into syntactic mass and count nouns. This view seems to be in accordance with the result of language acquisition experiments. Gathercole (1986) reports that children are hardly influenced by the physical properties of the referents of nouns when acquiring the mass/count distinction, whereas grammatical properties (availability of plural, compatibility with *another*) plays a crucial role. The different syntactic behaviour of the two types of semantic count nouns in the context of quantifying elements and the relation between Number marking and classifiers will be discussed in chapter 7.

In numeral classifier languages all nouns that are semantically count, and contain specific minimal parts in their domain of denotation, are syntactically mass, and fall into the category of count mass nouns or collectives. I will reserve the term count noun, which is used by Rygaloff (1972) and Cheng & Sybesma (1997a) for what I call count mass nouns, for those nouns that are count from a syntactic point of view.

The domains of denotation of the two types of mass nouns and of the plurals constitute a join semi-lattice, ordered by the *part of*-relation. Singular count nouns are exceptional in this respect. The different singular objects that form the set which corresponds to their extension cannot be ordered with respect to each other by the *part of*-relation. Following Chierchia (1995), plural is seen as an operation which makes the sets of pluralities available, and these sets, in turn, can be ordered with respect to each other, and form a join semi-lattice.

We have seen in section 2.1.1 that plurals and mass terms share the property of cumulative reference. Cumulative reference is formally defined as in (27) (cf. Krifka 1992):

(27) $\forall P (CUM(P) \leftrightarrow \forall x,y[P(x) \ \& \ P(y) \rightarrow P(x \lor y)]$
            (the predicate P has cumulative reference)

The formula in (27) states that a predicate has cumulative reference if and only if for every x and y that have the property P, the join of x and y has the property P. A predicate whose domain of denotation is defined as a join semi-lattice has this property by default. In section 1.1 it was shown that the property holds in fact for both mass nouns and plurals. Given that a chair and a table are both furniture, the plural object they form together is furniture as well, and if the animals in one camp are horses, and the animals in an other as well, they are all horses. Singular count nouns, whose domain does not form a join semi-lattice, do not have cumulative reference.[18]

Atomic reference is the property of a predicate P which says that given P(x), there is a proper part of x which is a P-atom. The definitions of atom and atomic reference are given in (28) (cf. Krifka 1992):

(28)   a. $\forall x,P[ATOM(x,P) \leftrightarrow P(x) \ \& \ \neg \exists y[y < x \ \& \ P(y)]]$
             (x is a P-atom)
        b. $\forall P[ATM(P) \leftrightarrow \forall x[P(x) \rightarrow \exists y[y \leq x \ \& \ ATOM(y,P)]]]$
             (the predicate P has atomic reference)

The mass mass nouns do not have atomic reference, unless we adopt the existence of vague atoms, in accordance with Chierchia. Plurals, count singulars and count mass nouns all constitute atomic predicates.

Given the assumption that singular count terms denote a set of singularities, count singulars can be distinguished from count plurals and both types of mass nouns by the property of quantized reference, which is defined by Krifka (1992) as follows:

(29) $\forall P (QUAN(P) \leftrightarrow \forall x,y[P(x) \ \& \ P(y) \rightarrow \neg(y < x)]$
            (the predicate P has quantized reference)

Take again the count singular noun *table*. An object which is a table does not contain a proper part which qualifies as a table itself. Quantized predicates are necessarily atomic. If P is a quantized predicate and x is a member of P, x is a P-atom by definition, and hence P is atomic. Mass nouns and plurals do not have quantized reference, but quantified nouns often do. Take for instance *two tables*. There is no proper part of two tables which qualifies as two tables as well. The same obtains for *a cup of tea*, *a kilo of oysters* etc. The Q *two* and the classifier constructions *a cup* and *a kilo* can

---

[18]   Unless there is only one element in their domain of denotation (cf. Krifka 1992 for discussion). I will disregard these cases here.

be seen as expressions which turn a predicate which has cumulative reference into a predicate with quantized reference.

In the preceding sections we have discussed the semantic structures corresponding to count singulars, plurals and mass nouns. I have argued that there is a distinction between two types of mass nouns, only one of which provides us with minimal parts. The two types of mass nouns and plurals correspond to structures which introduce a join semi-lattice, and have cumulative reference. The denotation corresponds to a set of singularities, which are not ordered with respect to each other by the *part of*-relation, and as a result count singulars have quantized reference.

2.1.4 Quantity and thematic structure

In the chapters to follow, I will assume that the reference properties of nouns are encoded by a position in their thematic grid. In the introduction I cited some ideas of Zwarts (1992), who assumes that gradable adjectives contain a thematic position, the *g-position*, or *grade*-position. In *so/too/more intelligent*, the *g*-position of the scalar adjective *intelligent* is saturated by the elements *so*, *too* and *more*. Whereas *so* and *too* are only used in the context of adjectives, *more* can also be combined with nouns and verbs, as in the examples in (30):

(30) a. more tables, more tea
      b. John danced more than Peter

Taking as point of departure Zwarts' (1992) approach to adjectival degree modification, the relation between *more* and *intelligent* constitutes a theta relation: *more* saturates the *g*-position in the grid of *intelligent* (cf. also Corver 1997). At this point one can interpret the data in (30) in either of two ways. A first possibility is to assume that there are two different forms *more*, one of which is a degree modifier and is interpreted through saturation of the *g*-position in a scalar adjective, and the other a quantifier which is interpreted by a different mechanism. Such an approach does not imply that the relation between *more* and an NP or *more* and a VP is established by means of theta theory. Alternatively, one can assume that there is only one *more*, which is always interpreted in the same way, and always saturates a theta position in the grid of the phrase it modifies.

The second approach is more general, and therefore has to be preferred to the first. In chapter 4 it will become clear that *more* is not an isolated case, which makes a general approach even more desirable. English *less*, French *trop* 'too (much)', *plus* 'more' and *moins* 'less' and Dutch *minder* 'less' are other examples of DQs which are found in combination with adjectives,

NPs and VPs. A third possibility, which is equally general as the second, would be to assume that theta theory is not involved in either the relation between *more* and an NP/VP nor in the relation between *more* and an adjective. I take the existing analyses of degree modification in the adjectival system in terms of theta theory as my point of departure. An investigation of other possible formalisms that might render the relation between *more* and the phrase it modifies goes beyond the scope of this thesis.

Concentrating on NPs for the time being (I will turn to VPs in 2.2 below), *more* in (30a) modifies the quantity of books and tea, respectively. Following the idea that *more* is always interpreted as an element which saturates a theta role in the grid of the phrase it modifies, I propose that quantity is represented in the thematic grid of an NP, and I call the corresponding position q-position, where q stands for quantity.

Gradable adjectives are compatible with *more* because they contain a position introducing a scale, with respect to which *more* can be defined given an appropriate context. In the preceding section we have seen that the domains of denotation of mass nouns and plurals can be ordered in a join semi-lattice, while the domain of denotation of count singulars was argued to be a set of singularities, not ordered with respect to each other by the *part of*-relation. A join semi-lattice corresponds to the scale on the basis of which *more* can be defined, while the unordered set of singularities do not define a scale. In fact, *more* combines with plurals and mass nouns, and not with count singulars, unless count-to-mass shift has taken place. We can form *more tables* and *more tea*, but not #*more table*. Hence the presence of a scalar q-position depends on the cumulative reference property of the predicate.

The q-position cannot be identified with the g-position in scalar adjectives. The presence of a g-position is independent of the reference properties of the adjective, while a scalar q-position depends on cumulative reference of the predicate. In chapters 5 and 6 it will be shown that the distinction between g and q plays a role in determining the selectional properties of quantifiers and degree modifiers.

The presence of the scalar q-position cannot be the mere effect of cumulative reference of a predicate. Adjectives, for instance, can have cumulative reference, but do not contain a q-position. Take for instance the adjective *purple*. This adjective has cumulative reference: if John's marbles are purple and Peter's marbles are purple, the marbles of John and Peter together are purple as well. However by stating that Peter's marbles are more purple than John's, we cannot mean to say that Peter has more purple marbles than John. In *more purple*, *more* modifies the g-position in the scalar adjective *purple*, which is independent of quantity or cumulative reference. This illustrates that in the context of an adjective we do not have access to a q-position corresponding to the quantity of individuals or objects that has

the property denoted by the adjective. The reason why *more purple* cannot mean the same as *more purple objects* seems to be that the notion of quantity and the presence of a *q*-position is related to reference. Nouns are referential expressions and as such contain an *r*-position (cf. Williams 1981). I assume that the *q*-position is associated with this *r*-position, and therefore present in nouns and not in adjectives. The presence of a *q*-position in the noun depends on the presence of the *r*-position. The association of the *q*-position with the *r*-position is descriptive, and I will neither formalize the relation nor theoretically account for it.

I will assume that contrary to the *g*-position, which is scalar by definition, the *q*-position is not inherently scalar. Singular NPs which contain a *r*-position are assumed to contain a non-scalar *q*-position in accordance with their quantized reference. Plural formation should be seen as an operation which changes the properties of the *q*-position. According to Chierchia's account of the plural (cf. (15)), the plural morpheme changes the denotation of a singular count noun in such a way that the extension of the singular (a set of singularities) is replaced by the set of pluralities that can be formed on the basis of these singularities. I assume that from a syntactic point of view adding a plural morpheme changes the properties of the *q*-position in the noun, and makes the *q* scalar.

Summarizing, I proposed that mass nouns and plurals contain a scalar *q*-position, while singular count nouns contain a non-scalar *q*-position. Contrary to the *g*-position found in scalar adjectives, the *q*-position depends on the reference properties of the phrase in which it is contained. In rest of this thesis the notion of *q*-position will be used and further developed.

2.1.5   Concluding remarks

So far the mass/count distinction has been discussed with reference to nouns. In 2.1.1 I summarized the most important distributional differences between mass nouns, count singulars and plurals. In 2.1.2 mass-to-count and count-to-mass shifts were discussed, on the basis of which I concluded that the mass/count distinction is lexical in nature. The semantic structure corresponding to the different types of nouns was discussed in section 2.1.3. Following Chierchia I assume that count singulars denote singular objects, on the basis of which the plural can be computed. I argued that there are two distinct classes of mass nouns. The count mass nouns have minimal parts in their domain of denotation, contrary to the view of Bunt (1985) and Landman (1989, 1991), and the mass mass nouns do not (or if they do, they are 'vague'; cf. Chierchia 1995). Count mass nouns differ from real count nouns because the former cover the domain of denotation of the singular and the plural count noun, having both singular and plural objects in their

domain of denotation. Count singulars correspond to a set of singularities, and as a result they do not have cumulative reference and do not define a scale. In 2.1.4 I introduced the notion of *q*-position. The *q*-position is a thematic position which represents part of the reference properties of mass nouns and count nouns in the syntactic structure. Plurals and mass nouns contain a scalar *q*-position, and count singulars a non-scalar one.

In the next section we will turn to verbs, and compare their mass/count properties, including the presence of scalar and non-scalar *q*-positions, with the mass/count properties of nouns.

2.2   Mass and count in the verbal system

The nominal mass/count distinction has often been compared to aspectual properties of verb phrases (cf. Allen 1966, Mourelatos 1978, Bach 1986 and Krifka 1986, 1992). An example is given in (31):

(31)   a.   Mary drew a circle
         b.   Mary drew

The event depicted by the sentence in (31a) is bounded. The end point is specified and corresponds to the moment the circle was drawn on the paper. In (31b) the event is unbounded, the end of Mary's drawing is not specified. Bounded VPs are similar to count nouns, and unbounded VPs to mass nouns.

In this section I will compare the mass/count distinction in the nominal system and aspectual properties of VPs. Section 2.2.1 will concentrate on the traditional aspectual classes in relation to mass and count. In 2.2.2 I will test the presence of minimal parts in verbal predicates in different ways, and discuss the status of plural and Number in the verbal system. Plural turns out to be far less obvious a category in the verbal system than in the context of nouns. In 2.2.3 an important fact about the verbal mass count distinction will be highlighted, which is the influence of the reference properties of arguments on the reference properties of the VP as a whole. Section 2.2.4 treats the corresponding semantic structures, including a discussion of their representation in thematic structure and in section 2.2.5 I will compare the nominal shifting processes discussed in section 2.1.3 above to mass-to-count and count-to-mass shifts in the verbal domain.

2.2.1   Aspectual classes in terms of mass and count

Verb phrases are usually classified in four aspectual categories, first

proposed by Vendler (1957), and further developed in for instance Verkuyl (1972) and Dowty (1979). Vendler proposes the following basic categories of verbs, or more accurately verb phrases: STATES, ACTIVITIES, ACCOMPLISHMENTS and ACHIEVEMENTS.

A first distinction can be made on the basis of boundedness, which sets apart states (*to hate*) and activities (*to run*) from accomplishments (*to run a mile*) and achievements (*to recognize*). States and activities are unbounded. They share the property of being compatible with durative adverbials of the form *for a certain time*. They last for an unbounded period of time that can be specified by the *for*-adverbial:

(32)   a.   John hated Peter for four years
       b.   John swam for an hour

Accomplishments (*to run a mile*) and achievements (*to recognize*) cannot be used with a *for*-adverbial, in accordance with their bounded nature. Achievements are momentary; the moment they begin defines their endpoint as well. Accomplishments can be combined with *in*-adverbials such as *in five minutes*, and the momentary achievements combine with phrases such as *at that moment*:

(33)   a.   Mary ran a mile in five minutes/*for five minutes
       b.   At that moment John recognized Peter
       c.   *John recognized Peter for two minutes

The second criterion Vendler uses to establish his four classes is compatibility with the progressive. States and achievements are strange when used in the progressive, while activities and accomplishments are fine:

(34)   a.   ??John is hating/recognizing Peter
       b.   Mary is running (a mile)

Compatibility with the progressive depends on whether the verb denotes a process going on in time. States and achievements do not meet this criterion, though for different reasons, while activities and accomplishments do. I will leave the distinctions based on the progressive mostly aside and concentrate on the first distinction, which is similar to the mass/count distinction.

Though not stating this explicitly, Vendler indicates that activities have cumulative reference whereas accomplishments have quantized reference.

> If it is true that someone has been running for half an hour, then it must be true that
> he has been running for every period within that half hour. But even if it is true that a
> runner has run a mile in four minutes, it cannot be true that he has run a mile in any
> period which is a real part of that time [...].
>
> <div align="right">Vendler (1967:101)</div>

Activities share the cumulative reference property with mass nouns and plurals, and the same could be said about states.[19] Accomplishments and achievements are similar to count singulars as they have quantized reference.

2.2.2   Plurality and minimal parts

In this section I will investigate to what extent we can determine the presence of minimal parts in verb denotations, which is related to the role of plural in the verbal system.

A famous test to distinguish activities and accomplishments is the so-called IMPERFECTIVE PARADOX (cf. Dowty 1979). The examples in (35) show that for an activity, but not for an accomplishment we can conclude on the basis that John V-*ed* that he has V-*ed*:

(35)   a.   Sue is running $\rightarrow$ Sue has run
       b.   Sue is running a mile $\nrightarrow$ Sue has run a mile

I will use the imperfective paradox as a test to see whether or not a verbal predicate contains minimal parts that we have access to from a linguistic point of view. The difference between the sentences in (35) can be explained in terms of the absence versus the presence of minimal parts. Under the assumption that the activity *running* does not impose any minimal parts, at least not ones that play a linguistic role, we expect that as soon as Sue is running, we will be able to say that she has run, referring to the running she has done. The predicate *to run a mile* introduces a minimal event. This event is not over yet during the time Sue is running a mile, and hence the implication does not hold. This makes activities such as *to run* similar to the mass mass nouns (*water*), and reinforces the suggestion that accomplishments such as *to run a mile* resemble count singulars (*table*).

The question arises whether there are also verbal counterparts of collective mass nouns (*furniture*) and/or plurals (*tables*). The answer to the first question seems to be positive. Take for instance a verb such as *to jump*. If I say *John jumped* he can have made one single jump or several ones. *To*

---

[19]   It will turn out in chapter 6 that with respect to quantifiers stage-level states (*in the garden*) are similar to other mass verbal predicates, while individual-level predicates such as the psych verbs have different properties, and should not be seen as mass.

jump is different in this respect from *to run*. *John ran* is not ambiguous in the same way as *John jumped*. The difference between the two verb phrases can be illustrated through the way they are interpreted in combination with cardinal count adverbials:

(36)   a. John jumped once
        b. John ran once

In (36a) John made a single jump, while in (36b) there has been a single running event, the size of which is undetermined. The singular and plural readings of *to jump* are not distinguished by morphological singular or plural markers, which suggests that *to jump* is not similar to a count noun (*table*/*tables*) but to a count mass noun or collective (*furniture*). Other 'collective' verbs behaving on a par with *to jump* are *to knock*, *to step*, *to hop* etc.

    The presence of minimal parts in the verb *to jump* can also be shown on the basis of the imperfective paradox:

(37)   John is jumping $\nrightarrow$ John has jumped

The sentence *John is jumping* can refer to an event in which John jumped once, or one in which he jumped repeatedly. In case John makes a long jump and he is halfway through his seven metres, *John is jumping* is true, but *John has jumped* is not, which demonstrates that there is no entailment in (37). On the basis of the (36) and (37) we can see that *to jump*, contrary to *to run*, contains a criterion for counting. We can conclude that *to jump* can be seen as a verbal counterpart count mass nouns such as *furniture* and while *to run* is similar to mass mass nouns such as *water*.

    Translating the collective verb *to hop* into Dutch demonstrates a distinction which is similar to the one between collectives and plurals in the nominal system. *To hop* can be translated as either *huppen* or as *huppelen*. The former corresponds to its English counterpart in that it can be used independently of the number of hops. *Huppelen*, however, implies a plurality of hops.

(38)   a. Piet   hupte   de stoep   op
        b. Piet   huppelde de stoep   op
            Piet   *hopped*   *the side-walk on*
            'Piet hopped onto the sidewalk'

Only (38a) can be used in case there was only one hop. The form *huppelen*, which is derived from *huppen* by addition of the morpheme *–el*, resembles plural nouns in some respects but not in others.

    A first difference is that in the nominal system a plural is formed on the

basis of a singular: on the basis of the singular *table* we make the plural *tables*. There does not seem to be a singular verb form at the basis of *huppelen*, but rather a collective, as *huppelen* is morphologically derived from *huppen* 'to hop' by addition of the morpheme *–el*, which itself covers both singular and plural interpretation on a par with *to jump*.

A second difference between the plural morpheme in the nominal system and the morpheme *–el* is the following. Whereas plural applies almost without exception to singular nouns, it is only occasionally possible to add *–el* to a verb. Next to *springen* 'to jump' there is no **springelen*, nor do we find **hupselen* next to *hupsen* 'to hop'. Moreover, there are cases where a verb containing the *–el* morpheme does not necessarily imply some sort of a plurality. The verb *duikelen* 'to make somersaults', derived from *duiken* 'to dive', is an example. Next to the core meaning 'to make somersaults', which seems plural, the verb can be used in contexts where there is no reason to assume any plurality whatsoever. In *Jan duikelde van zijn fiets* 'John fell of his bike' and *de koers duikelde naar beneden* 'the exchange rate nose-dived down' have no more of a plural interpretation than their English translations.[20]

Even though *huppelen* 'to hop' does have a plural flavour in all its occurrences, it does not seem to give access to the atomic hops. In this respect *huppelen* is different form *huppen*:[21]

(39)   a.   Jan maakte drie hupjes
            Jan made   three hops
            'Jan made three hops'
       b.   Jan huppelde drie keer
            Jan hopped   three times
            'Jan hopped (a bit) three times'
            not: 'Jan made three hops'
       c.   Jan hupte   drie keer
            Jan hopped   three times
            'Jan made three hops'

There is a nominal counterpart of (39b), which is given in (40) (Helen de Hoop, p.c.):

(40)   Jan maakte drie   huppeltjes
            Jan made   three   series-of-hops

---

[20]   Helen de Hoop observes that this 'singular' use of *duikelen* can be compared to plural noun forms that denote singular objects, such as *trousers* and *glasses*.

[21]   The diminutive form *hupjes* is used because the non-diminutive *hup* in the sense of 'hop' sounds odd.

This sentence means roughly the same as the one in (39b), but what we see is that the *–el* morpheme is included in the noun. This suggests in fact that what counts as a minimal part in the verb *huppelen* has a plural interpretation itself. There is no means to specify the number of singular **hops** in case we use *huppelen*. We can conclude that there may be a resemblance between *–el* verbs and the nominal category plural, but there is certainly no straightforward correspondence.[22]

Other cases of iterative readings can be found for accomplishments and achievements:

(41)   a.   Mary played the sonata all morning
        b.   John ran across the street all afternoon

In (41) the durative time adverbials are possible because the singular event is iterated. One obvious condition is the possibility for the arguments of the verb to undergo the event more than once. There is in this respect a difference between writing a sonata and playing it. A sonata is written only once, while it can be played an indefinite number of times. So-called 'once-only' predicates, such as to write, cannot accommodate an iterative reading. Again the parallel with plural is not complete, as there is no morphological marking of the iterated reading. In the next chapter and in chapter 9 I will come back to iterated readings.

Number agreement and aspectual morphology on the verb cannot be seen as instantiating plural either, at least not in languages such as English or French. Plural agreement depends on the plurality of the noun, not on a plural event interpretation, which is illustrated by the French examples in (42):

(42)   a.   **Les** enfants   **ont**   soulevé le piano
          the children PL *have* PL *lifted*   *the piano*

In (42a) the verb bears plural agreement morphology, but this does not imply that there must be a multiple event interpretation. The sentence can

---

[22] There are quite some African languages in which we find so-called pluractionals (cf. Newman 1980, Lasersohn 1995). The term pluractional is used for a morphologically marked group of verbs that are plural-like in nature. According to Gerhardt (1984:12) "[m]any languages of the Nigerian Middle Belt display plural [i.e. pluractional] verb roots, which indicate that the verbal action is characterized by one or another kind of multiplicity: it can happen habitually; it can be executed by a certain number of subjects; it can be applied to a certain number of objects; it can continue over a longer period of time; or it can be performed at different places." Further study on the interaction between pluractionals and plurals on the one hand and quantifying expressions on the other seems a promising research topic for gaining more understanding of the status of plural in the verbal domain. Thanks to Stefan Elders for drawing my attention to this phenomenon.

have a single event interpretation, corresponding to a situation in which a group of children lifts the piano together.

As for aspectual morphology, one can observe that both the perfective and the imperfective are independent of the singular or plural interpretation of the event even though imperfectives may trigger a plural-like interpretation, and perfective forms often correspond to singular events.[23] The French imperfect tense can be used for habituality, which, as in (43a), can have a plural flavour. (43b), however, shows that the habitual reading of the imperfect does not entail a plural interpretation, so that the imperfect marker on the verb cannot be seen as an exact parallel of the plural marker:

(43) a. Pendant l'été   les enfants   jouaient   dans le jardin
          during the summer   the children   played IMP in the garden
      b. L'année dernière, Marie   vivait   à Paris
          the year last   Marie   lived IMP in Paris
          'Last year Marie lived in Paris'

The simple past tense often yields a singular interpretation. This tense is used to render the subsequent events that make up a story, as opposed to the imperfect, which gives the background information. The example in (44) shows that the simple past is not incompatible with a plural interpretation, though:

(44)   A partir de ce jour-là, elle vint   ici pendant
          to start of that day   she came PS here during
          une semaine, puis   elle disparut
          a week   then   she disappeared PS
          'From that day on, she came regularly for a week, then she disappeared'

The imperfect and the simple past introduce some sort of a mass/count distinction (cf. Hoepelman & Rohrer 1981, De Swart to appear). In the context of adverbials such as *three times*, normally the simple past tense is used. In the context of the imperfect these adverbials cannot be used, unless the sentence has a frequentative or habitual interpretation (cf. De Swart 1991:24). The imperfect, on the other hand, is the past tense form one has to use in the context of durative adverbials such as *depuis deux heures* 'since two o'clock; for two hours already'. I will briefly come back to this distinction below, as it plays a role in mass-to-count and count-to-mass shifting processes.

In the previous section it was shown that the distinction between activities

---

[23] Cf. Guéron (1995) for discussion on the relation between plural and imperfectivity.

(*to draw*) and states (*to love Mary*) on the one hand and accomplishments (*to draw a circle*) and achievements (*to recognize Mary*) on the other is quite similar to the mass/count distinction in the nominal system. In this section I investigated the presence of minimal parts in verbs and verb phrases in more detail. Both mass mass nouns and mass count nouns seem to have a close correlate in the verbal system. Verbs such as *to run* could be characterized as mass mass verbs whereas *to jump* and company are similar to the collective count mass nouns. Only for the latter category can the minimal parts be identified on linguistic grounds, as has been shown on the basis of the imperfective paradox and cardinal count adverbials. The verbal counterpart of plural nouns is not easily discerned. Certain verbs have plural-like features (Dutch *huppelen* 'to hop') and accomplishments and achievements, if not 'once-only' predicates, may have an iterated reading. I showed as well that Number and (im)perfective morphology on verbs functions differently than singular/plural morphology on nouns, and never unambiguously introduces plurality of events. It will be shown in chapter 7 that those quantifiers which are sensitive to the presence of singular or plural morphology only function as adnominal quantifiers, not as adverbial Qs. This is in accordance with the observation that there is no clear counterpart of Number morphology in the verbal system.

2.2.3   The role of arguments

In the nominal system the mass/count distinction is to a large extent a lexical matter. In the verbal system the mass count/distinction is, except for the collective verbs, mostly a matter of the verb phrase as a whole. This is actually one of the most striking differences when we compare the nominal and the verbal mass/count distinction. Starting out with a mass verb, addition of an argument makes the verb phrase count. Some examples, showing that simplex verbs are mass and can be made count by adding further arguments are given in (45):

(45) a. John drank for an hour/*in an hour
      a'. John drank his two beers in an hour/*for an hour
      b. Sue drove for an hour/*in an hour
      b'. Sue drove Bill to the station in an hour/*for an hour
      c. Pete drew for an hour/*in an hour
      c'. Pete drew the circle in an hour/*for an hour

Verkuyl (1972), who was the first to study the compositional nature of aspectual distinctions in detail, adds to this that it is not just the mere presence of an argument that makes a difference, but that the boundedness

properties of the verbal predicate depend also on the reference properties
of the arguments (cf. also Verkuyl 1993). Replacing the direct internal
arguments in (45), which have quantized reference, whith bare noun phrases,
wich have cumulative reference, we are back to unbounded sentences:

(46)   a.   John drank *beer* for an hour
       b.   Sue drove children to the station for hours/all afternoon
       c.   Pete drew circles for an hour

The reference properties of the argument (quantized or cumulative)
determine the reference properties of the VP. This phenomenon, which has
been called *measuring out* by Tenny (1987, 1994), will be further discussed in
the next chapter.

   We can conclude that count categories play a much more important role
at the lexical level in the nominal system. A count interpretation is often
obtained at the phrasal level in the verbal system, and depends on the
presence of a quantized nominal predicate.

2.2.4   Shifts

When comparing the nominal mass/count distinction to aspectual
differences in the verbal system, Bach (1986) briefly discusses the verbal
counterparts of the mass-to-count and count-to-mass shifting processes. In
the nominal system the shift from count-to-mass yields a predictable result,
while the shift from mass-to-count is rather idiosyncratic and depending on
the situation and lexical properties of the noun (cf. section 2.1.2). According
to Bach the verbal mass/count distinction is characterized by similar
restrictions on shifting, though he does not substantiate his claim by many
concrete examples. In what follows the verbal mass-to-count and count-to-
mass shifts will be examined and it will be shown that in most cases the
shifting processes resemble the ones found in the nominal system, though
the verbal mass-to-count shift is not as much lexically restricted as the
corresponding shift in the nominal domain.

   Given any count noun denoting a physical object, it is possible to derive
a mass term which denotes the substance the object is made of. For
example, if we start with the count term *a fish*, and we put it in a mass
context, we get a mass term *fish* which roughly denotes the substance a fish
is made of.

   To see whether something similar exists in the verbal domain, we first
have to know when a mass interpretation of a VP is triggered. In the
nominal system, the mass interpretation of a singular count noun is
triggered, for instance, if it is used as a bare noun. Singular count noun

phrases can be used as a bare noun only if count-to-mass shift takes place, as in *He ate fish*. In the previous section I alluded to the possibility that a verb put in the imperfect tense in French has mass properties because it is similar to a bare noun phrase. The progressive in English is similar in this respect to the French imperfect.[24] The interpretation shift brought about by the use of the progressive is illustrated in (47):

(47)   a. John built a house
       b. John was building a house

The predicate in (47a) refers to a singular event. A subinterval of the interval corresponding to John's building of a house does not contain any parts which can be characterized as *John built a house*. When we put the verb in the progressive as in (47b), mass like behaviour shows up. If John was building a house during a certain time interval, he was building a house during subintervals of this time interval as well. As in the "object-to-substance" shift in the nominal system, the resulting meaning is predictable. The interpretation shifts from an event as a whole (the "object") to the activity that fills up the event space (the "substance"). This predicts that events which lack an internal temporal structure, as is the case for the punctual achievements, the count-to-mass shift is not possible, which is in correspondence with Vendler's observation that the progressive is not available for achievements. Achievements do not consist of temporal "stuff", and hence count-to-mass shift is blocked. This restriction on the verbal count-to-mass shift is similar to the one induced by the Universal Grinder. Only those nouns that can refer to physical objects, and hence consist of physical substance, can be ground.

When looking at mass-to-count shifts, we can discern some differences between the nominal and verbal domains next to the clear similarities. In the verbal domain the meaning of the mass predicate in a count context is mostly clear; it denotes a closed event consisting of that activity or process. In the nominal system, adding a cardinal numeral to a mass noun introduces the *piece of* N_{mass} reading, the *type of* N_{mass} reading, the *serving of* N_{mass} reading or an ungrammatical form depending on the noun. The example of Dutch *glas* 'glass' discussed in 2.1.2 illustrates this point very well. The word *glas* can denote certain objects made of glass ('drinking glass', 'chimney of an oil-lamp' or 'spectacle glass'), but not others (*een glas* 'a glass' cannot be used for a glass vase or a fragment of broken glass).

---

[24]   Mourelatos (1978) makes a similar suggestion, but see De Swart (to appear) for a discussion of differences between the progressive and the French imperfect tense related to aspect. De Swart (to appear) and De Swart & Molendijk (1997) discuss aspectual mass-to-count and count-to-mass shifts in a similar perspective as I do here.

If we use a mass verbal predicate in the context of a cardinal count adverbial (*n times*), we get *n* bounded events. The sentence *John swam three times* states that there are three swimming events by John. There are no lexical idiosyncrasies of the sort we find in the nominal domain. If we add a cardinal count adverbial, we always get the bounded event reading. Restrictions as the ones found for the count use of the Dutch mass noun *glas* 'glass' are not found for verbs, as can be shown on the basis of the verb *to swim*. The sentence *John swam once last week* is appropriate in the context of all sorts of possible swimming events. Whether John was swimming on his back or on his breast, whether it was in a tropical swimming paradise or in the North Sea and whether he is a good or a bad swimmer is of no importance. We cannot use the word *glas* 'glass' for a glass vase, but we can say *John swam once last week* independently of the kind of swimming event John was involved in. This shows that mass-to-count shifts in the nominal domain are subject to lexical restrictions in a way the verbal mass-to-count shifts are not.

The contrast between the nominal shift and the verbal shift is actually not so amazing, given the different dimensions that play a role for mass and count. Objects can be shaped in a whole array of different forms, as they function in a three dimensional space. The choice of form in the verbal domain, which is organized on the basis of the time axis, is more restricted.

There are some mass-to-count shifts which do have a lexical component. In the previous section the compositional nature of many count predicates was discussed. I mentioned the fact that accomplishments are often formed out of an activity verb and a nominal argument which has quantized reference. There are a few cases of mass-to-count shift which seem to involve insertion of an implicit argument. Consider for instance (48) (cf. Dowty 1979):

(48)   John ate in ten minutes

The presence of the *in*-phrase forces a bounded interpretation which can be obtained if *to eat* is understood as *to eat a meal*. In the next chapter I will argue that the sentence in (48) contains an empty phrase corresponding to *a meal*, which is licensed by the verb *to eat*. The mass-to-count shift is not a lexical operation in this case, but a syntactic one, even though the licensing of the empty argument is in fact a lexical property of the verb. I argued in 2.1.2 that shifts in the nominal system are lexical operations on word meanings.

In this section count-to-mass and mass-to-count shifts in the verbal system have been compared to their nominal counterparts. The nominal count-to-mass shift has a close parallel in the verbal domain, while mass-to-count shifts seem to yield a more predictable meaning in the verbal system.

Cases such as *to eat* are similar to nominal mass-to-count shifts in the sense that they are lexically determined, but, whereas the mass-to-count shift in the nominal system is a lexical operation on the noun, the verbal mass-to-count shift does not seem to affect the verb *to eat* at the lexical level.

2.2.5 The structure of mass and count verbal predicates

Bach (1986) proposes in an article entitled 'The algebra of events' that the domain of events should be modeled after the domain of objects, to formally express the relation between bounded events and count objects on the one hand, and unbounded processes (≈ Vendler's activities) and stuff on the other. Alongside the domain of objects, he proposes the existence of a domain of eventualities which is ordered in a complete Boolean algebra.[25] Similar ideas have been developed by Krifka (1986, 1992). The *part of-*relation in the domain of events is defined in terms of temporal intervals (for a formal account, see Krifka 1992). An event *e1* is part of *e2* if the interval corresponding to *e1* is part of the interval corresponding to *e2*. This allows us to order events in a join semi-lattice structure as in (12), ordered by the *part of-*relation.

Given the structural properties of the domain of events we can define properties such as cumulative reference, quantized reference and atomic reference for event predicates as well, thus accounting for the similarities we found between the nominal and the verbal systems.

Krifka (1992) concentrates on the measuring out phenomenon. He derives measuring out from the reference properties of the verb and its arguments, and the relation between the verb and its arguments. If the relation between an argument and a verb obeys certain semantic restrictions, the reference properties of the argument determine the reference properties of the verbal predicate as a whole. I will not discuss Krifka's analysis in any detail here.

In 2.1.3 I proposed that the thematic grid of nouns contains a *q*-position. This position reflects the reference properties of the noun, and is associated with the *r*-position. Given the similar structures for the domain of events, it seems fair to assume that there is a *q*-position associated with the *e*-position in the grid of a verb as well. Again I will not determine the precise nature of this association. It is important to realize, however, that the *q*-position in a VP is an expression of the reference properties of the event, and not of, for instance, the subject. *They ran a lot* does not imply that there were many people who ran, but that there was a lot of running taking place.

---

[25] In accordance with Link's original proposal, Bach assumes that the domain of eventualities contains the zero element, i.e. instead of a join semi-lattice he starts out with a Boolean algebra. This is not of any importance for the discussion in this chapter.

The idea that VPs contain a *q*-position is in accordance with the observation that verb phrases can be combined with quantifying expressions such as *more*, as in *John works more than Sue*, on a par with *more tables*. Recall that the motivation for postulating a *q*-position in NPs is the desire to have a uniform syntax for expressions such as *more*, which combine with adjectives, NPs and VPs alike. Following analyses of degree modifiers in the adjectival system, I will treat the relation between degree expressions such as *more* and the phrase they modify as a theta relation. The analysis of degree quantifiers such as *more* presented below will make use of the presence of the *q*-position in the NP and the VP. The *q*-position will also play a crucial role in the analysis of 'measuring out' that I will develop in the next chapter.

2.3 Conclusions

In this chapter I discussed the mass/count distinction in the nominal and verbal systems. Mass and count properties of nouns match aspectual properties of verbal predicates to a certain extent. In both domains reference properties such as cumulative reference, quantized reference and atomic reference play a role, which can be accounted for through structural properties of the domain of objects and the domain of events. I proposed that these properties are reflected in syntax by the presence of a *q*-position, which can be either scalar, reflecting the scale introduced by the join semi-lattice structure, or non-scalar. Singular expressions do not have a scalar structure, and hence contain a non-scalar *q*-position.

The nominal mass/count distinction is mostly a lexical phenomenon. The status of a noun is given in the lexicon, and shifts take place in the lexicon as well. As for the verbal mass count distinction, only part of the mass/count properties play a role at the lexical level. I argued that there is a difference between mass mass verbs (*to run*) and count mass verbs (*to jump*) in the lexicon, which is comparable to the distinction between mass mass nouns and count mass nouns. In both cases the predicates have cumulative reference, but whereas the count mass expressions have lexically determined minimal parts, the mass mass expressions do not. There is no clear parallel in the verbal system to the nominal singular/plural opposition in the verbal system, even though there are several phenomena that come close. In spite of the lexical distinctions between verbs, the verbal mass/count distinction is largely a syntactic phenomenon. It is not the verb alone which determines the mass or count status of the VP given that arguments may influence the mass/count properties of the VP. This phenomenon is the subject matter of the next chapter.

One of the main differences between the verbal mass/count distinction and the nominal mass/count distinction is the fact that countability in the verbal system is, in many cases, determined by the syntax and semantics of an argument NP of the verb, not by lexical properties of the verb form itself (cf. Verkuyl 1972, 1993). The interaction between verbs and arguments which causes these interpretational effects and the syntactic configurations in which we find them will be the main topic of this chapter.

The examples in (1) show that depending on the form of the direct internal argument, the VP is understood as mass or count, as is evident from the choice of time adverbial. In the context of the bare mass noun *soup* or the bare plural *apples* the durative *for*-adverbial *for five minutes* is fine and the *in*-adverbial *in five minutes* is excluded, which indicates that the VP is mass or unbounded. In the presence of the quantized form *an apple* the reverse pattern is found: the VP is count or bounded.

(1)   a.   John ate **soup/apples** *in five minutes/for five minutes
           b.   John ate **an apple** in five minutes/*for five minutes

The direct internal argument in the sentences in (1) is said to MEASURE OUT the event (cf. Tenny 1987, 1994).

What happens in 'measuring-out' contexts has been nicely put by Krifka: the reference properties of the syntactic arguments carry over to the reference properties of the complex construction (Krifka 1992:38). As said in the previous chapter, Krifka deduces the measuring-out effect from the reference properties of the verb and its argument in combination with semantic properties of the thematic relation that holds between the two. In this chapter I will concentrate on the syntactic configurations in which we find the effect, and I will argue that theta-identification is responsible for the mapping of the reference properties of an argument onto the reference properties of the whole VP.

As for the syntactic configurations in which we find the measuring-out effect, I will follow Hoekstra (1988, 1992), according to whom the configurations in which arguments of a verb can provoke a bounded interpretation contain a resultative small clause (SC). I will show that Hoekstra's analysis cannot fully account for the interpretive effects found in measuring-out contexts, and I will motivate the presence of an empty inchoative auxiliary in the resultative SC. In the analysis that I will develop below, the inchoative event represents the process of getting into the state described by the SC predicate. I will argue that in this context mapping of the theta position representing quantity (q-position) in the SC subject is identified with the q-position associated with the e-position in the inchoative auxiliary. As this position will be subsequently identified with the q-position in the matrix V, we get the desired effect: the reference properties of the SC subject carry over to the reference properties of the VP.

I will start out this chapter with a discussion of the data, which is based on work by Tenny (1994). The syntactic generalizations she makes, and for which she accounts in terms of aspectual role assignment, can be very well handled in terms of resultative SCs as will be shown in 3.1. In 3.2 I will discuss Hoekstra's proposal in more detail, and give arguments in favour of the presence of an inchoative auxiliary in the SC. Section 3.3 will be concerned with boundedness properties of resultatives and the measuring-out effect. I will show that unbounded resultatives present a problem for the Tense linking analysis and develop an analysis based on the identification processes mentioned above.

3.1   Syntactic generalizations

3.1.1   The special role of the direct internal argument

Tenny (1987, 1994) gives an overview of the syntactic contexts in which the measuring-out effect is found. I will briefly summarize her findings here. In the example of measuring-out in (1) the argument that triggers the measuring-out effect (*soup/apples/an apple*) is the direct internal argument. Tenny argues that direct internal arguments are in fact the only type of arguments which can trigger the measuring-out effect. External arguments do not influence the aspectual interpretation of a sentence:[26]

---

[26]   For Verkuyl (1972, 1993) all arguments may influence the boundedness properties of a sentence. There is, however, an asymmetry between the direct internal argument and the external argument. An unbounded VP will not become bounded as a result of the presence of a DP subject with quantized reference, as illustrated in (2), but Verkuyl shows that noun phrases such as *nobody* may yield an unbounded sentence in the context of a bounded VP, as illustrated in (i), which is durative/unbounded:

(2)   a.   **A girl** walked in the garden for an hour/*in an hour

unbounded

        b.   **Children** walked in the garden for an hour/*in an hour

unbounded

        c.   **Eight large oaks** surrounded the house for one winter/*in one winter

unbounded

        d.   **Snow** surrounded the house for one winter/*in one winter

unbounded

Whether the external argument is a bare noun phrase with cumulative reference or not, the sentence is unbounded. The pattern in (2) is general and we can conclude that external arguments do not measure out the event.

Prepositional objects do not measure out the event either, Tenny states, but in some cases PPs provide a 'terminus' or an endpoint to the event.[27] Adjunct PPs of the type *with a candle/with hot coal* do not have any effect on the boundedness properties of the sentence:

(3)   a.   John melted the ice cube **with a candle** in a minute/*for a minute

bounded

        b.   John melted the ice cube **with hot coal** in a minute/*for a minute

bounded

Selected PPs expressing a goal do influence the aspectual structure by providing a terminus. The addition of the phrase *to the garage* to the unbounded sentence in (4a) turns it into a bounded sentence, as illustrated in (4b):

(4)   a.   John drove his car for ten minutes/*in ten minutes

unbounded

        b.   John drove his car **to the garage** in ten minutes

bounded

The phrase *to the garage* provides an endpoint to the event, but cannot be considered to measure out the event, Tenny says, because it only implies the endpoint (but see (50) below).

(i)   Nobody gave a badge to a congress-goer

Even though there is an aspect change due to semantic properties of the subject in this case, the term measuring out does not apply to this case. A full comparison between Verkuyl's approach and Tenny's, and an account of cases such as (i) goes beyond the scope of this thesis.

[27]   Tenny calls the PPs in both (3) and (4) indirect arguments of the verb.

Tenny summarizes her findings as a set of constraints on the aspectual function of types of arguments, an adapted version of which is given in (5) (cf. Tenny 1994:114):

(5)   a.   Direct internal arguments are the only overt arguments which can measure out the event
        b.   External arguments cannot participate in measuring out or delimiting the event described by a verb
        c.   A selected PP can only participate in aspectual structure by providing a terminus for the event described by the verb, which causes the event to be delimited

In Tenny's view these constraints follow from the way aspectual roles are assigned to the different types of arguments. Verbs assign aspectual roles which influence the aspectual interpretation of the sentence. Specific roles are linked to specific arguments, which accounts for the different aspectual properties of the different arguments of the verb. The measure role is linked to the direct internal argument, and the terminus role to a selected PP. It is clear that the linking rules account for the aspectual properties of arguments, but they are quite stipulative themselves. Instead of wondering why the direct object measures out the event, we are now wondering why the measure role has to be assigned to the direct internal argument. I will show below that the syntactic generalizations in (5) follow in a straightforward way from syntactic structure under a SC analysis.

3.1.2   Resultative small clauses

Hoekstra's (1992) analysis of direct objects and their role in determining the boundedness properties of the event capitalizes on the notion of resultative small clause (SC).[28] Some examples of resultatives are given in (6):

(6)   a.   He washed the soap out of his eyes
        b.   He shaved his hair off
        c.   They wrung a confession out of him
        d.   He rubbed the tiredness out of his eyes

Hoekstra argues, that the sentences in (6) contain a SC (cf. Stowell 1981), a combination of a subject and a predicate in the absence of tense: *the soap*

---

[28]   Cf. also Hoekstra (1988). Hoekstra's ideas on resultatives have been further developed and implemented in different contexts by for instance Sybesma (1992), Mulder (1992), Den Dikken (1995) and Voskuil (1996).

out of his eyes in (6a), *his hair off* in (6b) etc. The SC denotes a state that corresponds to the endpoint of the event. The constituent *wash the soap out of his eyes* would be represented as in (7), where the SC is the direct internal argument:

(7)

```
                        V′
                   ╱         ╲
                  V            SC
                  │          ╱    ╲
                wash       DP      PRED
                          ╱╲        ╱╲
                    the soap    out of his eyes
```
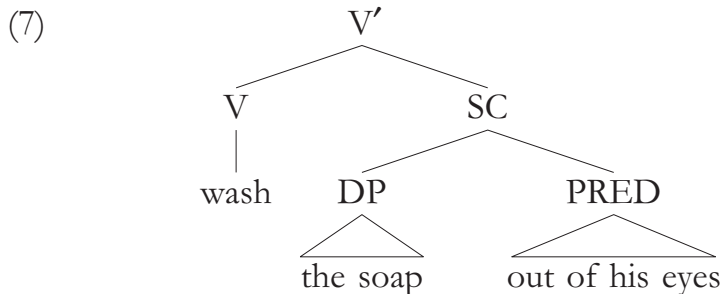
Hoekstra extends the SC structure he assumes for resultatives to cases where no overt SC predicate is present. According to him, the 'direct internal argument' of an accomplishment is actually the subject of an abstract predicate. The sentence *John washed his hands* should be seen as *John washed [$_{SC}$his hands [clean]]* where the position of *clean* is left empty. Within the SC analysis the otherwise mysterious relation between the direct internal argument and the endpoint of the event makes sense; the transition point, which is the moment when the subject of the resultative has reached the state described by the SC predicate, corresponds to the endpoint of the event. The delimiting force comes from the presence of a SC that introduces the endpoint of the event. In case the content of the SC predicate is 'recoverable', or the default result of the action, the predicate position can be left empty.[29]

The generalizations made by Tenny follow nicely from the SC analysis. 'Direct internal arguments' measure out the event if they function as SC subjects. We also expect that the external argument of the verb cannot measure out the event, given that it is external to the resultative SC. Finally, those cases where a selected PP functions as a terminus, as in (4b), this PP can be seen as the SC predicate, and determines the state reached by the subject of the SC (*his car* in (4b)) at the endpoint of the event.[30]

The SC analysis also accounts for cases such as (8). (8) has the same boundedness properties as (4b), even though the SC subject *the car* is left out:

---

[29]   The notion of 'recoverability' is quite vague and needs further investigation. I will briefly come back to this issue below.

[30]   Sentences such as the ones in (4) are remarkable because the direct internal argument alone does not trigger the measuring out effect. I will discuss this issue in 3.3.2.1 below.

(8)   John drove to the garage in ten minutes   *bounded*

According to Hoekstra & Mulder (1990) the subject of the SC predicate *to the garage* is in this case the matrix subject *John*. In this view, (4b) and (8) both contain a SC and differ with respect to the base position of the matrix subject *John*:

(9)   a. John drove [$_{SC}$ his car [to the garage]]   (4b)
       b. John$_i$ drove [$_{SC}$ t_i [to the garage]]   (8)

These structures imply that *to drive* functions as a transitive verb in (4b) and an unaccusative verb in (8). In Dutch auxiliary selection constitutes a test for unaccusativity. Unaccusative verbs (e.g. *komen* 'to come' and *sterven* 'to die') typically select *zijn* 'to be' while unergative verbs (e.g. *lachen* 'to laugh', *vechten* 'to fight') and transitive verbs (*schrijven* 'to write', *lezen* 'to read) select *hebben* 'to have':

(10)   a. Jan is/*heeft gekomen/gestorven
           Jan is/has   come/died
       b. Jan heeft/*is gelachen/gevochten
           Jan has/is   laughed/fought
       c. Jan heeft/*is een brief geschreven/gelezen
           Jan has/is   a letter   written/read

Hoekstra & Mulder observe that the auxiliary *hebben* 'have' is selected in the Dutch counterpart of (4b) and *zijn* 'be' in sentences corresponding to (8):

(11)   a. Jan heeft/*is [$_{SC}$ zijn auto [naar de garage]]   gereden
           Jan has/is   his car   to the garage   driven
       b. Jan is/*heeft [$_{SC}$ t_i [naar de garage]]   gereden
           Jan is/has   to the garage   driven

This suggests that in fact the verb *rijden* 'to drive' in (11b) functions as an unaccusative verb, in accordance with the proposed structure. The SC subject *Jan* measures out the event, as the moment at which Jan reaches the garage constitutes the endpoint of the event. In (4b), the endpoint corresponds to the moment at which the car reaches the garage.

   For Tenny the sentences in (9) are bounded as a result of the presence of the PP which provides a terminus to the event. The direct internal argument *his car* in (9a) does not measure out the event, she states, as (4a) shows that the sentence is unbounded in the absence of the PP expressing a goal. Tenny's view is problematic, however, as it turns out that when such a PP is present, the 'direct internal argument' of *to drive* does measure out

the event, as shown by the contrast between (8) and (12):

(12)   John drove cars to the garage for hours/#in an hour[31]

unbounded

I will further comment on the measuring-out properties of SC subjects in this type of contexts 3.3.2.3. It is clear, however, on the basis of the contrast between (8) and (12), that measuring out plays a role here.

So far we have seen that Hoekstra's SC analysis determines correctly in which syntactic contexts the measuring-out effect is found. Those arguments which provoke the measuring-out effect are identified as subjects of resultative SCs. This throws an interesting light on the measuring-out effect, as it allows us to state that the argument which measures out the event does so because it ends up in a different state. The endpoint of the event corresponds to the moment this state is reached. In what follows I will show that within Hoekstra's proposal the semantics of the measuring-out effect still raises a number of problems. I will develop an alternative theory in which the resultative SC contains an inchoative auxiliary. This slight deviation from Hoekstra's original proposal will allow us to retain the nice results of the SC approach to measuring out, while it will provide an answer to some questions raised by Hoekstra's proposal.

3.2   Two implementations of the SC analysis

3.2.1   Hoekstra's (1992) proposal: Tense Linking

In order to derive the semantics of resultatives, Hoekstra makes use of the concept of TENSE LINKING. Tense linking is a form of theta binding, which was introduced by Higginbotham (1985). A Tense operator discharges or saturates the *event*-position in the theta grid of a verb by means of theta binding (cf. section 1.2). An example, taken from Hoekstra (1992) is given in (13). In the sentence *John drank*, the event argument contained in the verb *drink* is bound by a past tense operator in T (the subject *John* is generated in the VP internal subject position):

---

[31]   The sign # indicates that the sentence is out only under the intended reading, which is that after an hour, the cars are at the garage. The temporal modifier may be interpreted as *an hour per car*, which does not imply that the event as a whole is bounded.

(13)   a.   John drank
        b.   TP$<e*>$

```
          TP<e*>
          /    \
         T      VP<e>
         |      /    \
      Op_past  DP    V<e>
               |      |
             John   worked
```

Hoekstra uses this mechanism to derive the bounded interpretation of resultatives. SCs do not contain an independent tense operator, and Hoekstra argues that the binder of the open e-position in the predicate of a resultative SC is provided by the matrix verb. Verbs such as *to wash* denote dynamic processes that go on over a certain time period. In that sense, they are associated with a tense scale as illustrated in (14):

(14)   Lexical structure of the dynamic process verb *wash*

```
                T
            /  / \  \
          t_1 t_2 ...  t_n
```
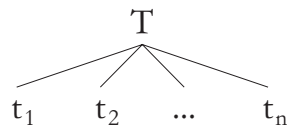
The endpoint t_n of the matrix event can act as a binder of the open e-position in the SC predicate, which establishes a thematic relation between the matrix verb and the SC. Normally t_n is undetermined, but in the presence of a SC, the endpoint of the matrix event is identified with the first moment at which the SC subject is in the state denoted by the SC predicate, as a result of theta binding. Tense linking by t_n is illustrated in (15). Because of tense linking, the washing event ends when the soap is out of John's eyes:

(15)   John washed [$_{SC}$ the soap [out of his eyes]]

```
                T
            /  / \  \
          t_1 ..............  t_n              <e*>
                              |                 |
                              └── θ-binding ────┘
```
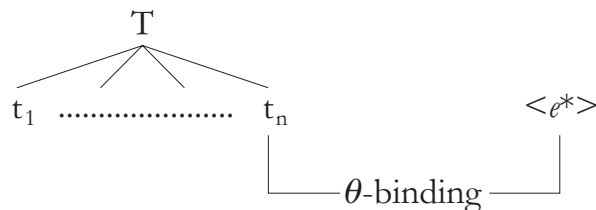
An interesting consequence of the tense linking analysis is that it correctly predicts that both the verb and the SC predicate must be stage-level. According to Kratzer (1989) stage-level predicates differ from individual-

level predicates as the former have an event position in their thematic grid and the latter do not. The absence of an event variable in individual-level predicates makes them incompatible with event modifiers. Event modifiers are supposed to contain an open *event*-position, which is theta identified with the *e*-position in the predicate it modifies. Consider for instance (16):

(16)   a.   John ate an apple in the garden
      b.   *John knew French in the garden

The sentence in (16a) contains the stage-level predicate *to eat an apple*, the *e*-position of which is theta identified with the *e*-position in the event modifier *in the garden*. As a result, the event of John eating an apple is an event that took place in the garden. As the individual-level predicate *to know French* does not have an *e*-role, following Kratzer's claim, the *e*-role of the modifier *in the garden* cannot be theta identified. As a result we cannot interpret *in the garden* in (16b) and the sentence is bad.

The SC predicate must contain an event position that can be bound by t_n. Given Kratzer's approach to the individual/stage-level distinction, the tense linking analysis predicts that only stage-level predicates can occur in the SC predicate, because they contain an *e*-position, which can be bound by t_n. As a matter of fact, individual-level predicates are excluded in the context of SCs, as is shown in the examples in (17):

(17)   a.   *John laughed himself intelligent
      b.   John laughed himself sick

Given that one can be sick in the garden (stage-level), but not intelligent in the garden (individual-level) the contrast in (17) is expected.

The matrix verb in a resultative construction cannot be an individual-level predicate either. Verbs such as *know* and *hate* are not associated with a time scale, and hence are correctly predicted not to license a resultative SC under the tense linking analysis:

(18)   a.   *This encyclopedist knows all books superfluous
      b.   *The rejected lover hated his girlfriend dead

Summarizing, Hoekstra proposes that the endpoint of the time scale associated with the matrix verb is linked to the initial point of the state denoted by the SC predicate as a result of theta binding. The linking process derives the inchoative reading of the SC (the SC subject **ends up** in the state denoted by the SC predicate). Inchoativity is due to tense linking, not to an inchoative operator. I will argue, however, that resultative SCs must

contain an inchoative auxiliary, which is similar to the BECOME operator of Dowty (1979).

3.2.2 An alternative: inchoative SCs

The inchoative auxiliary which I will argue to be present in resultative SCs introduces an event position corresponding to the transition that occurs when the subject of the SC gets into the state corresponding to the SC predicate P (henceforth $\neg P/P$ transition). I assume that the SC is thematically licensed because the event-position in the thematic grid of the inchoative auxiliary is identified with the event variable in the grid of the matrix verb. This analysis has several advantages over Hoekstra's tense linking analysis, even though Hoekstra's analysis is at first sight more attractive as it does not postulate an empty inchoative auxiliary. I will show below that the information introduced by the inchoative auxiliary is necessary, and that tense linking does not give the information we need in order to account for certain phenomena.

The structure I adopt is given in (19). The SC contains an empty inchoative auxiliary, Aux_{inch}. The event position in the grid of the inchoative auxiliary predicate percolates up to the level of the SC, where it is theta identified with the open e-position in V. The resulting position is theta bound by a tense operator in T.

(19)

```
                    TP<eᵢ*>
                   /      \
                  T        VP<eᵢ>
                          /    \
                      V<eᵢ>     SC<eᵢ>
                               /    \
                             DP      Auxᵢₙ𝒸ₕP<e>
                                     /      \
                              Auxᵢₙ𝒸ₕ<e>    PRED
```
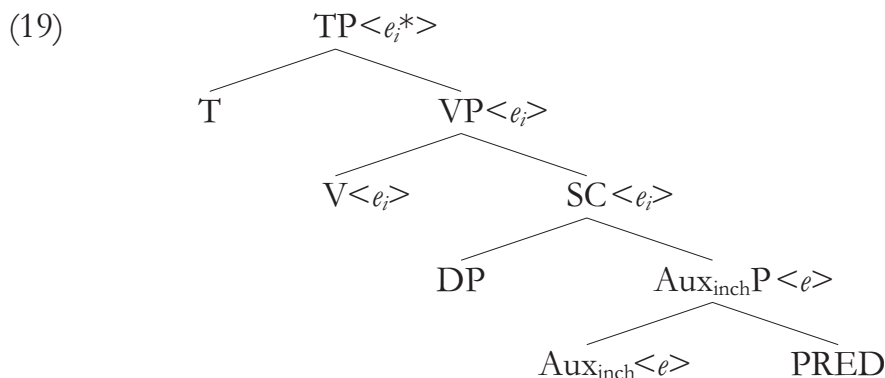
The e-position in the SC predicate PRED does not play a role in the relation between the matrix verb and the SC. I assume that it is saturated by the inchoative in the same way as in sentences such as *John got tired* where the inchoative is overt.

The tense linking analysis and the inchoative event analysis make different predictions in several respects. In the first place, the source of inchoativity is different. In the tense linking approach this is due to the specific process of tense linking and in the inchoative event analysis to the inchoative

auxiliary. In 3.2.2.1 I will present evidence for the inchoative auxiliary based on the form of the SC predicate. In 3.2.2.2 I will discuss the type of inchoativity found in resultative SCs. It will turn out that overt inchoative verbs trigger this same type of inchoativity, while inchoativity caused by an overt tense operator has different properties. Section 3.2.2.3 will focus on the $\neg P/P$ transition. The tense linking approach predicts that the $\neg P/P$ transition is represented as a point in time, while it can be either an interval or a point in time according to the inchoative event analysis. Again it turns out that the data support the inchoative event analysis. In 3.2.2.4 I will discuss a problem for the inchoative event analysis, which is the possibility of certain individual-level predicates in the context of overt inchoative verbs, while resultative SCs never contain individual-level predicates. At first sight the tense linking approach does account for the absence of individual-level predicates, as has been shown in section 3.2.1. I will argue however, that the same cases that are problematic for the inchoative event analysis are problematic for tense linking as well.

3.2.2.1 Evidence based on the form of the SC predicate

A first piece of evidence in favour of the inchoative event analysis is based on languages in which we find serial verb constructions. In the serial verb language Saramaccan, for instance, we find an overt inchoative verb in the resultative, as shown in (20) (cf. Veenstra 1996):[32]

(20) a. mi féfi dí wósu **kó** bè
          1SG paint DET *house come red*
          'I painted the house red'
      b. a sikópu dí bálu **gó** a dí wósu
          3SG kick   DET *ball go* LOC DET *house*
          A: 'he kicked the ball into the house'
          (B: 'he kicked the ball and went into the house')

In non-serial verb languages there is no overt element representing the inchoative verb. There is, however, evidence for the presence of an inchoative verb based on the form of the predicate. In certain resultative SCs we find predicates which, when used in a matrix context, must be combined with an inchoative verb, and are incompatible with the verb *to be*.
  A class of SC predicates which has this property is formed by predicates

---

[32] Veenstra (1996) treats these sentences as cases of secondary predication. A detailed comparison of serializing constructions such as the ones in (20) and the corresponding English sentences in the translations is beyond the scope to this thesis.

of the type *fatter and fatter*. Predicates of this type denote what one could call a dynamic or changing state, not a permanent state. Some Dutch examples of resultative containing a predicate belonging to this class are given in (21):

(21) a. Jan eet zich   dikker en dikker
          Jan eats himself   fatter and fatter
      b. Jan duwt het wagentje   voort
          Jan pushes the cart   forth

The predicates *dikker en dikker* 'fatter and fatter' and *voort* 'forth' cannot be combined with the static *be* in a matrix sentence. They must be combined with an inchoative verb:

(22) a. *Jan is   dikker en dikker
          Jan   is   fatter and fatter
      b. Jan wordt   dikker en dikker
          Jan becomes   fatter and fatter
      c. *De kar is   voort
          the cart   is   forth
      d. De kar gaat   voort
          the cart   goes   forth

The obligatory presence of an inchoative verb in a matrix context and the fact that these predicates may function as resultative SC predicates, indicates that the resultative SC might well contain an (empty) inchoative verb as well. The SC predicates in (21) trigger an unbounded interpretation, independently of the nature of the SC subject. I will come back to this type of predicates in 3.3.

Predicates of the *fatter and fatter*-type are not the only resultative SC predicates that trigger the presence of an inchoative verb in matrix contexts. In English, predicates containing the directional preposition *into* show the same pattern, as shown in (23):

(23) a. John walked into the house
      b. *John is into the house
      c. John got into the house

Again, these data are unproblematic if we assume that the resultative SC contains an inchoative auxiliary. In case the tense linking analysis is adopted the facts discussed in this section need further explanation.

3.2.2.2 Inchoative readings

The tense linking analysis makes crucial use of the point t_n, which binds the *e*-position in the grid of the SC predicate. Through binding by t_n, the event becomes inchoative. I will argue in this section that it is quite unlikely that the inchoative reading we find in resultative SCs is the result of tense linking. Recall that tense linking is seen as an instance of theta binding by a temporal operator, and modelled after the relation between a matrix tense and an event. It will be shown that the type of inchoativity found in resultatives is not found in matrix contexts where a tense operator binds an *e*-position. By contrast, it will be shown that resultative SCs exhibit the same type of inchoativity found in the context of an overt inchoative verb.

There exist tenses which provoke an inchoative reading when combined with a stative predicate. An example is the French simple past tense (*passé simple*). (24) shows that the simple past yields an inchoative reading whereas the imperfect tense (*imparfait*) does not (cf. Togeby 1982-85 and Hoepelman & Rohrer 1981):

(24) a. Elle fut   malade
          she   was PS *ill*
          'She got ill'
      b. Elle était   malade
          she   was IMP *ill*
          'She was ill'

Given these data, one might assume that t_n is similar to the simple past tense, and triggers an inchoative reading in the same way.

However, when looking at some more data, we observe that the type of inchoativity provoked by the simple past differs from inchoativity in a resultative SC. The examples in (25) show that in the context of a simple past the $\neg P/P$ transition must be a quick one. It is not possible to use the modifier *lentement* 'slowly'; only adverbs such as *tout d'un coup* can be used to modify the change:

(25) a. *Lentement, Jean fut   malade
          slowly   *Jean was* PS *ill*
          'Jean slowly got ill'
      b. Tout d'un coup, Jean fut   malade
          suddenly   *Jean was* PS *ill*
          'Jean suddenly got ill'

Turning back to resultative SCs, we notice that the $\neg P/P$ transition is not necessarily instantaneous, and may be a slow change, as in the following

Dutch examples:

(26)   a. Jan at   zich   langzaam ziek
            Jan ate himself   slowly   sick
            'Though his eating, Jan slowly got sick'
        b. Piet praatte zich   langzaam moe
            Piet talked   himself   slowly   tired
            'Through his talking, Jan slowly got tired'

This falsifies the hypothesis according to which the relation between t_n and the SC predicate is similar to the one found in the context of the simple past in French.

In sentences containing an overt inchoative auxiliary, the $\neg P/P$ transition can take a certain amount of time, and hence the inchoative event analysis of resultatives is in accordance with the facts in (26):

(27)   Lentement, Jean devint fatigué
            slowly   Jean got   tired

The question why this type of modification is expected in the context of an inchoative verb and not in the context of tense linking will be addressed in the next subsection.

The data in this section have shown that the type of inchoativity we find in resultative SCs has the properties we would expect under the inchoative event analysis. Certain tenses, such as the French simple past, can introduce an inchoative reading through tense binding in the context of a stative predicate. The type of inchoativity obtained in these cases differs from the type of inchoativity found in resultatives.

3.2.2.3 The nature of the ¬*P/P* transition

The $\neg P/P$ transition has a different status in the two analyses. The linking approach predicts that the $\neg P/P$ transition is represented as a point in time, as the endpoint of the matrix event t_n is linked to the initial point of the state represented by the SC predicate.

In the inchoative event analysis, the $\neg P/P$ transition is represented by the inchoative event. Looking at sentences containing an overt inchoative verb, we see that the $\neg P/P$ transition introduced by an inchoative verb can be either a point in time or an interval. The Dutch examples in (28) show that the inchoative event can be modified by *plotseling* 'suddenly', which indicates a quick change, or alternatively by the adverb *langzaam* 'slowly', in which case the $\neg P/P$ transition takes some time:

(28) a. Het licht ging   plotseling aan
          the light   went   suddenly   on
      b. Het licht ging   langzaam aan
          the light   went   slowly   on
      c. Jan werd   plotseling misselijk
          Jan became   suddenly   sick
      d. Jan werd   langzaam misselijk
          Jan became   slowly   sick
      e. ?Jan werd   plotseling dronken
          Jan became   suddenly   drunk
      f. Jan werd   langzaam dronken
          Jan became   slowly   drunk

The examples in (29) that are similar to the ones in (26) show that the $\neg P/P$ transition in the resultative can correspond to a slow change as well:

(29) a. Piet   at   zich   langzaam ziek
          Piet   ate himself slowly   sick
      b. Piet   praat zich   niet   snel   moe
          Piet   talks himself not   quickly tired

The sentence in (29a) can very well be used for a situation in which Piet is someone who regularly eats too much and too fast. Over a long period of time this has the result that he falls ill. In other words, *langzaam* relates to the process of becoming ill, starting at the moment of the first bad results of Piet's eating habits and being achieved at the moment Piet is really ill. The example in (29b) illustrates the same point. The sentence suggests in fact that Piet is a talker, and is very well compatible with Piet talking very fast. The adverbial phrase *niet snel* 'not quickly' modifies the process of Piet getting tired.[33] If the structure contains no representation of the $\neg P/P$ transition, it is mysterious how the modifier can be interpreted in this way. The data in (29) are expected when the SC contains an inchoative auxiliary. The event variable contained in the inchoative auxiliary, which represents the $\neg P/P$ transition, contains a time scale ranging from the moment the change starts to the moment the change is complete, with respect to which *langzaam* 'slowly' can be understood. As the interval corresponding to the $\neg P/P$ transition is not represented in the tense linking analysis, sentences such as the ones in (29) are problematic, as it is not clear how *langzaam* 'slowly' should be interpreted.

---

[33]   For many speakers, including myself, *niet snel* 'not quickly' cannot modify the verb *to talk* so that the sentence cannot characterize a situation in which Piet got tired quickly while talking slowly. I will leave this issue here.

Within the inchoative event analysis the initial point of the matrix event corresponds to the moment at which the inchoative event represented in the SC starts, as the *e*-position in the matrix verb and the inchoative *e*-position in the SC are theta identified. The initial point of the inchoative event is the moment at which the subject of the SC starts to undergo a change that will eventually lead to the final state described by the predicate. Within the tense linking analysis, the initial point of the event is independent of the moment at which the transition starts. If we refer explicitly to the initial point of the matrix event, we observe that this is the point at which the change starts that the subject of the SC undergoes, as shown in the Dutch examples in (30):

(30)   a.   Plotseling begon Jan   medeweggebruikers in   de berm
            Suddenly started Jan   fellow-road-users   into the shoulder
            te rijden
            to drive
            'Jan suddenly started to drive his fellow road users into the shoulder'
       b.   #Jan begon   om drie uur   de auto total loss te rijden
            Jan   started   at three o'clock the car   total loss   to drive
            'At three Jan started to drive his car total loss'

In the example in (30a) the initial point of the matrix event referred to by the verb *beginnen* 'to begin' is not the point at which Jan started to drive, but the moment at which the first fellow road user was getting into the shoulder. Similarly, the sentence in (30b) cannot mean that Jan started at three the driving event that would eventually lead to the car being total loss. The sentence is strange, which is expected under the inchoative event analysis. The event of the car becoming total loss is punctual, and as the inchoative event in the SC is identified with the matrix event of Jan driving, the matrix event is punctual as well. Punctual events are incompatible with the aspectual verb *to begin*. These examples suggest that the matrix event starts at the moment the $\neg P/P$ transition starts, as predicted by the inchoative event analysis.

Summarizing, I have argued that the inchoative event variable in the SC is referred to linguistically. Event modifiers such as *langzaam* 'slowly' modify the $\neg P/P$ transition, represented by the *e*-position in the inchoative auxiliary. Moreover, I showed that the initial point of the matrix event corresponds to the moment at which the $\neg P/P$ transition starts, which follows from identification of the *e*-position in the matrix verb and the *e*-position in the inchoative auxiliary.

3.2.2.4 Individual-level predicates

As was shown in 3.2.1, one of the nice predictions of Hoekstra's tense linking analysis is the impossibility of individual-level predicates in resultative SCs. The inchoative event analysis makes the same prediction for certain individual-level predicates, but not for all. After discussing the problematic cases, I will argue that their behaviour is not necessarily expected under the tense linking either.

The two types of individual-level predicates we will be concerned with are the adjectival ones and the nominal ones, and will be illustrated by *intelligent* and *an actor*, respectively. Both of these predicates qualify as individual-level predicates. This can be demonstrated, for instance, on the basis of their incompatibility with a locative PP: *John is an actor/intelligent in the garden* is out, showing that the predicates resist event modification, which is a property of individual level predicates (cf. 3.2.1 for discussion). Neither predicate may occur in a resultative SC, as shown in (31):

(31) a. *John laughed himself intelligent   (= (17a))
      b. *Mary talked John an actor

Adjectival individual-level predicates such as *intelligent* cannot function in the context of an overt inchoative auxiliary, from which it follows correctly that they cannot occur in resultative SCs either, as shown in (32a). The nominal predicate *an actor*, however, can be combined with an inchoative verb, and as a result the ungrammaticality of (31b) is problematic for the inchoative event analysis:

(32) a. ?*John got/became intelligent
      b. John became an actor

The tense linking analysis predicts the ungrammaticality of both sentences in (31) under Kratzer's (1989) analysis, according to which individual-level predicates lack an *e*-position in their thematic grid.

It turns out, however, that the type of inchoativity we find in the context of the simple past, discussed in 3.2.2.2, can be found in the context of nominal individual-level predicates of the type *an actor*, but not with adjectival individual-level predicates such as *intelligent*:

(33) a. Du jour au lendemain Jean   fut   comédien
          of-the day to-the next   Jean   was PS   actor
          'From one day to the next Jean was an actor'
      b. *Du jour au lendemain Jean   fut   intelligent
          of-the day to-the next   Jean   was PS   intelligent

The possibility of (33) demonstrates that the initial point of the state of being an actor can be introduced in the absence of an inchoative verb. As tense linking is a relation between the endpoint t_n of the matrix verb and the initial point of the state corresponding to the SC predicate, we would expect this relation to be possible in the context of predicates such as *an actor/comédien*, as this initial point is linguistically accessible. The status of nominal individual-level predicates such as *an actor* and their unacceptability in resultative SCs remains problematic, and I will not address this problem in this thesis. We can conclude, however, that the tense linking analysis does not seem to give a better understanding of the facts than the inchoative event analysis.

3.2.3   Concluding remarks

In the preceding subsections Hoekstra's original tense linking analysis was compared to the inchoative event analysis. Hoekstra claims that there is no need for the presence of an inchoative auxiliary in the SC, as the mechanism of tense linking can account for the inchoative reading. I have given a number of arguments in favour of the presence of an inchoative auxiliary. The form of the SC predicate and the type of inchoativity found in the SC correspond to what one would expect on the basis of the inchoative event analysis, while the data are not expected on (though maybe not incompatible with) the tense linking analysis. An important observation in favour of the inchoative event analysis is that adverbs such as *slowly* may modify the $\neg P/P$ transition, as was shown on the basis of sentences such as (29a) (*Piet at zich langzaam ziek* 'Piet ate himself slowly sick'). This shows that the $\neg P/P$ transition may be an interval, which is expected under the inchoative event analysis where the $\neg P/P$ transition is represented by the inchoative event position. On the tense linking analysis the transition is represented as a point in time, and hence sentences such as (29a) are problematic. The last issue I discussed was the status of nominal individual-level predicates, and the impossibility to use them as SC predicates. This is problematic for the inchoative event analysis, as these predicates may be combined with an inchoative verb, so that we would expect to find them in resultative SCs. Without giving a solution for the problem, which I leave for further research, I argued that the same problem arises for the tense linking analysis.

The next section will contain a final argument in favour of the inchoative event analysis, based on unbounded resultatives.

3.3 Resultatives and measuring out

So far we have been concerned with syntactic configurations in which the measuring-out effect is found, but it has not been shown how the semantics of measuring out can be accounted for on the basis of the proposed syntactic structure. The tense linking analysis easily accounts for bounded resultatives, as the endpoint of the matrix event is set by the process of tense linking. Before going over to my account of measuring out in terms of the inchoative event analysis, I will show in 3.3.1 that unbounded resultatives are problematic within the tense linking approach. In 3.3.2 I will present an analysis of measuring out in terms of theta identification of q-positions. The q-position, which I introduced in the previous chapter, represents the reference properties of nominal and verbal constituents, and I will suggest that there is a direct mapping of the q-position in the noun phrase which functions as the SC subject and the q-position associated with the inchoative event. In this section, I will also comment on SC predicates which force an unbounded reading, such as *fatter and fatter* (cf. 3.2.2.1), and on the boundedness properties of phrases such as *to push the cart*.

3.3.1 Tense linking and unboundedness

The tense linking analysis capitalizes on the derivation of bounded sentences. The endpoint of the matrix event, t_n, binds the initial point of the state described by SC. Hoekstra's (1992) goals in formulating the tense linking analysis are, on the one hand, to establish a thematic relation between the matrix verb and the SC, and on the other, to express the fact that the endpoint in the bounded resultatives is reached at the moment at which the SC subject is in the state described by the SC predicate.

According to the tense linking analysis binding of the e-position in the SC predicate by t_n is responsible for the syntactic relation between the matrix verb and the SC. As we will see below, this role attributed to the endpoint of the matrix event makes the analysis of unbounded resultatives very hard within the tense linking analysis.

As a result of the measuring-out effect, unbounded resultatives are found in the context of SC subjects which have cumulative reference (i.e. bare plurals or mass nouns), as we saw in (1a). Some more examples, which contain an overt SC predicate, are given in (34):

(34) a. They wrung **confessions** out of him all morning
      b. John loaded **hay** onto the wagon for an hour

    c.   Jan heeft de hele ochtend/*in een uur   **mensen**
         Jan has   the whole morning/in an hour   people
         naar   het station gereden   *[Dutch]*
         to   the station   driven
    d.   Jan heeft gisteren   de hele dag/*in een uur **tafels**
         Jan has   yesterday   the whole day/in an hour   tables
         schoongeveegd   *[Dutch]*
         clean-swept

There is a second way in which a resultative can be unbounded, to which I already alluded in section 3.2.2.1 above. In the Dutch examples in (35) the unbounded reading is triggered by the SC predicate, independently of the reference properties of the SC subject. Measuring out does not play a role:

(35)   a.   Jan at   zich   (*in een jaar) dikker en dikker
             Jan ate   himself (in a year)   fatter and fatter
       b.   Jan duwde het karretje (*in een uur) steeds   verder
             Jan pushed   the cart   (in an hour)   ever   further

The state characterizing Jan and the cart changes continuously, without the implication of an endpoint. As a result adding an *in*-adverbial is not possible.

    Recall that within the tense linking analysis the endpoint is implicitly present in the time scale of the main event. The endpoint of the matrix event t_n binds the initial point of the state expressed in the SC and that yields the right interpretation. It is not clear how this should be implemented in the examples in (34) and (35). One could argue that t_n does not bind anything. This yields the desired result that the verb with the SC has the same reference properties as the matrix verb alone. However, binding of the initial point of the state by t_n accounts for the relation between the two events and licenses the SC. In case t_n were not to bind the initial point of the state expressed in the SC there would be no relation between the SC and the main event.

    The alternative is, obviously, that t_n does bind the event represented in the SC, but this would amount to boundedness, contrary to fact. The problem is that tense linking gives rise to the resultative interpretation by fixing the endpoint of the matrix verb. (34) and (35) are problematic because the resultative interpretation is present, but the endpoint is not fixed.

    Let us first consider the cases in (34). According to Hoekstra the unbounded reading can be obtained by quantification. For instance, in the SC *[tafels [schoon]]*, the bare plural takes scope over the event variable in the predicate *schoon*. As there are an indefinite number of tables, there will be an indefinite number of values for t_n as well and the endpoint of the event

is undetermined. There are two serious problems with this solution. In the first place it is not clear how the bare plural could get scope over the verb which contains t_n, as the bare plural is structurally lower than t_n. Contrary to other quantified noun phrases, bare plurals never take scope over a structurally higher quantifier (cf. Carlson 1977 for discussion). This can be illustrated on the basis of the contrast in (36), taken from Carlson (1977):

(36)   a.   John didn't see a spot on the floor
        b.   John didn't see spots on the floor

The sentence in (36a) has two readings. John either saw no spot on the floor at all, or there is one spot on the floor which he did not see. The second reading is missing in (36b), which cannot mean that there are some spots on the floor which John did not see. Similarly, the bare plural in (37) cannot take scope over the subject *a boy*:

(37)   A boy read books

This sentence cannot mean that there are a number of books which have been read by a boy. The data in (36) and (37) make the idea that the bare plural SC subjects in (35) may take scope over the structurally higher t_n quite implausible.

    The second problem is that bare singular mass nouns cannot take anything in their scope, and yet they can trigger an unbounded reading:

(38)   a.   John loaded hay onto the wagon for an hour   (= (34b))
        b.   John washed soap out of his hair for ten minutes
        c.   Sue sprayed paint on the wall for an hour

As a whole, quantification does not seem to offer a way to derive the unbounded reading obtained in the context of a bare plural or mass SC subject.

    As for the unbounded resultatives in (35), the predicate of the SC contains a comparative form: *dikker en dikker* 'fatter and fatter' and *steeds verder* 'ever further'. In these cases there is a continuum of states, each of which is compared to the preceding one. There is not a unique state that determines the endpoint, as for every state there is a next one, and this is the source of the unbounded reading. (35b) contains the quantifier *steeds* 'ever' and (35a) contains a coordinated structure. It has been extensively argued by Postma (1995) that certain types of coordination have quantificational force. A Dutch example of coordination involving universal quantification is given in (39):

(39)   Het schip   verging met   man en muis
            the ship   got-lost   with   man and mouse
            'The ship went down with every thing on it'

Postma lists a striking number of coordinations which are quantificational, to which one could add cases such as *dikker en dikker* 'fatter and fatter'.[34] The coordination seems to have a similar effect as the quantifier *steeds* 'ever', both of which trigger the unbounded reading.

The examples in (35) are problematic for the tense linking analysis basically for the same reason as the unbounded resultatives (34) are. The endpoint t_n of the activity denoted by the main verb either binds an endpoint, yielding the problem that this point does not exist, or, alternatively, it does not bind anything, and in that case there would be no relation between the main verb and the resultative SC. Again, we cannot assume that there is quantification over the final point by the quantificational predicate, because the quantifier is too low to bind t_n. Quantifier raising does not seem to be an attractive option to solve this problem. Recall that the relation between the matrix verb and the SC is the result of t_n binding the *e*-position in the SC predicate, so that quantifier raising of the SC predicate would result in t_n being both the binder and the bindee of the SC predicate.

In this section I showed that the unbounded readings of resultative SCs are problematic in the tense linking analysis. In section 3.3 below I will come back to the examples in (34) and (35) and develop the analysis based on the presence of and inchoative auxiliary so that both bounded and unbounded resultatives can be handled.

3.3.2   Boundedness properties of the inchoative event

In the inchoative event analysis the relation between the matrix verb and the SC is independent of t_n, the endpoint of the event. The event positions in the matrix VP and in the inchoative auxiliary are related to each other by theta identification, and may be either bounded or unbounded.

In the absence of a SC, process verbs are unbounded:

(40)   a. John walked for an hour/*in an hour   *unbounded*
        b. Sue drove for an hour/*in an hour   *unbounded*
        c. Pete rubbed for an hour/*in an hour   *unbounded*

---

[34]   I will not discuss Postma's account of the universal quantificational force found in coordinations.

As noted by Dowty (1979), verbs such as *to eat* allow for a bounded interpretation in the absence of a direct internal argument:

(41)   John ate for an hour/in an hour   *(un)bounded*

In case the *in*-adverbial is used the sentence means more or less that John ate his dinner in an hour. Given that verbs get bounded in the presence of an inchoative SC which contains a subject with quantized reference, we might assume that the VP in (41) contains a resultative SC which has both an empty subject and an empty predicate. In case a default interpretation is available, a covert SC subject can be licensed, in a similar way as a covert SC predicate, which also has a default interpretation. This makes it possible to maintain that boundedness is introduced by the SC, and that reference properties of the inchoative event determine the reference properties of the VP as a whole. If the inchoative event is bounded the matrix event will become bounded as well, and, the other way around, if it is unbounded the *e*-position in the matrix VP will be unbounded. In this section I will develop a system in which the right boundedness properties can be derived.

Section 3.3.2.1 will concentrate on the measuring-out effect. To account for this I will make use of the notion *q*-position, which is associated with the *r*-position in nominals and to the *e*-position in verbs, as argued in the previous chapter. The *q*-position corresponds to the quantity of substance or process, and I will argue that in the context of inchoativity, there is a mapping of the *q*-position associated with the subject of the SC and the *q*-position associated with the inchoative event. The result is that the reference properties of the syntactic arguments carry over to the reference properties of the complex construction, which was Krifka's way of describing the measuring-out effect, cited in the beginning of this chapter.

In 3.3.2.2 I will concentrate on resultative SCs of the *fatter and fatter* type, which are unbounded independently of the reference properties of the SC subject. One has to assume that the predicates in these resultatives block the *q*-identification processes described above, and therefore imply unboundedness.

In 3.3.2.3 I will discuss the verb *to push*. This verb is special, because in case the direct internal argument of *to push* has quantized reference, as in *to push the cart*, the VP can have either a bounded or an unbounded reading. I will argue that the complement of *push* is always a resultative SC, and that the unbounded and bounded readings are the result of the availability of two covert default predicates, one of which necessarily induces unboundedness. In this section I will also come back to the measuring-out properties of the complement of verbs such as *to drive* (cf. (4) and (12) above).

3.3.2.1 Nominal and verbal reference

The sentences in (1), repeated here in (42), illustrate the measuring-out effect:

(42) a. John ate soup/apples *in five minutes/for five minutes (= (1a))
      b. John ate an apple in five minutes/*for five minutes   (= (1b))

According to the inchoative event analysis discussed so far the structure of the VP in (42b) is as in (43). Theta identification of the different e-positions is indicated by subscripts:

(43)

$$VP\!<\!e_i\!>$$

```
              VP<eᵢ>
           /         \
      V<eᵢ>           SC<eᵢ>
        |          /         \
       ate       DP          AuxP<e>
               /  \         /        \
          an apple  Auxᵢₙ𝒸ₕ<e>   PRED (empty)
```
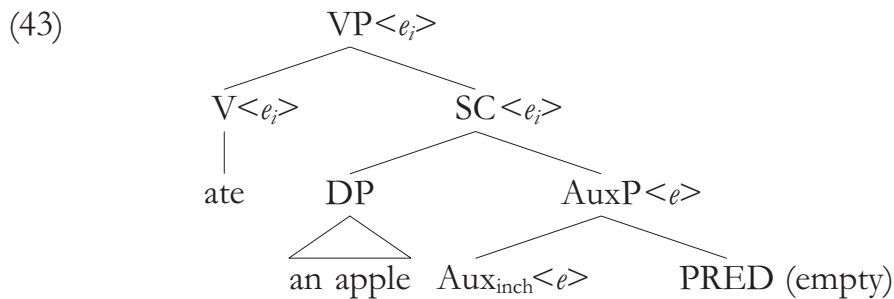
In the previous chapter I introduced the notion of q-position. The q-position is a syntactic realization of the boundedness properties of the event. In case the event is unbounded, the q-position is scalar, in case it is not, the q-position is non-scalar. Through identification of the e-position in the matrix verb *ate* and the e-position in the inchoative auxiliary, the eating event and the event corresponding to the $\neg P/P$ transition correspond to the same time scale so that they share their initial point and their endpoint. If the SC defines a bounded event, the q-position of the SC is non-scalar. The q-position in the grid of the verb *ate* is, initially, a scalar position, given that *ate* is a cumulative predicate. By identification of the e-position in the SC and the e-position in the grid of the verb *ate*, the endpoint of the inchoative event representing the $\neg P/P$ transition becomes also the endpoint of the eating event. As a result we have a bounded eating event, and the q-position associated with this unbounded eating event must be non-scalar. Through mapping of the e-positions in the matrix verb and in the inchoative auxiliary in the SC, the q-positions associated with these e-positions become identical as well. This suggests that e-identification, as in (43), entails identification of the q-positions associated with the identified e-positions, which I assume to be the case.

As illustrated by the sentences in (42), the reference properties of the 'direct internal argument' carry over to the reference properties of the VP. Given that the nominal projection in the subject position of the SC also has

a q-position, the introduction of the q-positions makes it possible to identify the q-position in the SC subject and the q-position in the inchoative auxiliary, as a result of which the q-position associated with the e-position in the matrix VP inherits the properties of the q-position in the grid of the SC subject. This gives the structure in (44):

(44)

$$VP<e_j,q^*_j>$$

$$V<e_j,q_i> \qquad SC<e_j,q^*_i>$$

$$\text{ate} \qquad DP<q^*_i> \qquad AuxP<e,q_i>$$

$$\text{an apple} \quad Aux_{inch}<e,q> \qquad PRED \text{ (empty)}$$
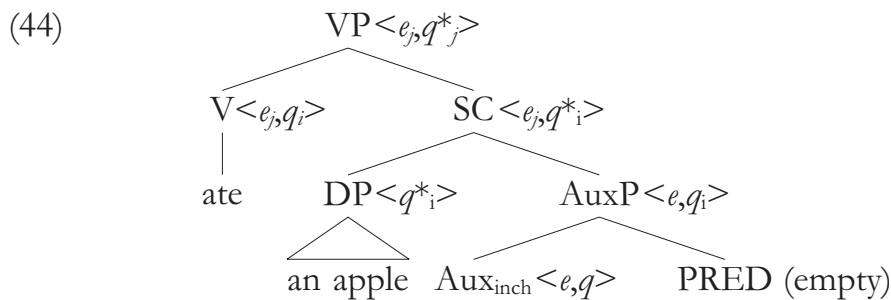
As a result, the reference properties of the subject of the SC carry over to the SC, and to the matrix VP as a whole, so that the material quantity corresponding to the subject DP is mapped onto the temporal quantity represented by the q-position associated with the event.

Given that the q-position in *an apple* is closed by the presence of *an*, this must be an instance of saturation through identification. The q-position in the SC subject is saturated, and via identification this will ultimately saturate the q-position associated with the matrix e-position. This has a number of consequences which will be discussed in chapters 9 and 10. The status of the q-position in bare plurals and French *des NPs* (saturated or not) will be discussed in these chapters as well.

The process of q identification of a nominal q-position and a verbal q-position has to be restricted to the inchoative verbs and their subjects. As the measuring-out effect is triggered by the subject of an inchoative SC we would like to say that the inchoative verb is responsible for the mapping relation of the q-position in the subject and the one in the inchoative auxiliary. Further research is necessary to find out what this property exactly is. The intuition behind the idea is quite simple. If, for instance, ice becomes fluid in a melting process, there is no fixed limit to the process of becoming fluid as long as there is no fixed limit to the amount of ice. If an ice cube becomes fluid, however, there is an endpoint which corresponds to the point at which the whole ice cube has become fluid.

An apparent problem for the analysis in (44) is the availability of an unbounded iterative reading for some sentences which contain a resultative SC with a bounded SC subject. (45a) is bounded, but (45b) has an unbounded, iterative, reading according to which a letter is read more than once:

(45)   a. John read a letter in ten minutes
        b. John read a letter for an hour

The iterative reading is claimed to be possible in measuring-out contexts whenever the sentence does not contain a 'once-only' predicate (cf. for instance Krifka 1992). In the context of *eat an apple*, we do not expect an iterative reading because an apple can be eaten only once. In the context of verbs such as *to read* there is no such pragmatic restriction and this makes the iterative reading available. The structure in (44) does not predict the possibility of this reading. Once the reference of the SC subject is bounded or quantized, the whole sentence is predicted to be bounded, and the *q*-position in the VP is saturated through identification. The possibility of iterative readings might be seen as a reason to reject the derivation in (44), unless it can be shown that iteration is an independent phenomenon.

There are in fact reasons to assume that iteration is an independent operation on the VP denotation, similar to plural. On the basis of the structure in (44) a singular interpretation is obtained. The domain of denotation of this singular event predicate is a set of singular events. Iteration adds to this set of singular events the set of pluralities formed on the basis of the singular events. This means that the domain of denotation of the iterated VP corresponds to a join semi-lattice. The resulting predicate has cumulative reference and contains an open scalar *q*-position. Iteration can be seen as an operation which introduces a new, non-saturated *q*-position. This does not, however, destroy the information encoded by saturation via the identification processes in (44).[35] This information is still present as it determines what counts as a singular event. Iteration seems to be an independent process because it is not automatically available. To show this, I have to say something about degree quantifiers such as *beaucoup/a lot*, which will be extensively discussed in later chapters of this thesis. I will argue that degree quantifiers, or DQs, are adjoined to a maximal projection and bind a scalar thematic position in the phrase they are adjoined to. For the adverbial DQs this means that they saturate the *q*-position in the VP. If this position is saturated already, the DQ cannot be interpreted. As a result, compatibility with a DQ can be seen as a way to test whether the *q*-position in the VP is open or not. The structure in (44) predicts that whenever the subject DP of the SC is saturated, the VP is saturated as well, and cannot accommodate a DQ. When we look at the facts, we see that DQs are sometimes allowed in the context of such VPs and sometimes not.

---

[35]   Allowing for a procedure which does destroy the information introduced by saturation would undermine theta theory. If, for instance, the result of theta binding in *so happy* were wiped out, there would be no means to exclude cases such as **more so happy*, where *more* and *so* compete for the same theta position.

The examples in (46) show this for English and the ones in (47) for Dutch:

(46) a. John goes to the movies a lot
     b. John met Sally a lot lately
     c. ??John gave Peter a black eye a lot
     d. ??Peter beat John black and blue a lot
     e. ??Sally paints her house a lot

(47) a. Jan gaat   veel   naar de film
        Jan goes   a-lot   to the movie
     b. ??Marie heeft haar horloge   veel   verloren
        Marie   has   her watch   a-lot   lost
     c. *?Piet   gooit zijn fiets   veel   op de grond
        Piet   throws his bike   a-lot   on the ground

There is nothing wrong with the intended interpretations of the sentences in (46c,d,e) and (47b,c), as they can be obtained by replacing *a lot* by *often* and Dutch *veel* 'a lot' by *vaak* 'often'. The sentences in (46) and (47) show that iteration is not always available in the context of predicates which do not have the 'once-only' property. I assume that iteration is an independent process, which introduces a scalar q-position resulting from a plural interpretation and the corresponding join semi-lattice structure. I will briefly speculate on factors that might be involved in the availability of iteration in chapter 9, in which I will also comment on other differences between degree quantifiers and adverbs of quantification.

   In this section I argued that theta identification processes are involved in the measuring-out effect. Inchoative auxiliaries have the property that the q-position they contain is identified with the q-position of its subject. As SCs involve an inchoative auxiliary and the e-position of this inchoative auxiliary, with which the q-position is associated, is identified with the e-position in the matrix verb, we find that the q-position in the matrix verb is identified with the q-position in the SC subject. This ensures that the reference properties of the SC subject (quantized reference, cumulative reference) carry over to the verb phrase as a whole. This approach is only possible if cases of iteration, in which the reference properties of the two q-positions do not coincide, are seen as the result of an independent phenomenon. This is actually plausible given the data in (46) and (47), which show that iteration is not always available, not even if we choose the right type of predicate.

3.3.2.2 Unboundedness inducing predicates

In the context of predicates of the type *fatter and fatter* the reference properties of the SC subject do not influence boundedness properties. The sentences in (35), repeated in (48), show that the reference properties of the SC subject *Jan* and *het karretje* do not influence boundedness. The sentences have an unbounded interpretation only.

(48)   a.   Jan at   zich   (*in een jaar)   dikker en dikker
            Jan ate   himself   (in a year)   fatter and fatter
       b.   Jan duwde   het karretje (*in een uur)   steeds   verder
            Jan pushed   the cart   (in an hour)   ever   further

The phenomenon is closely related to Dowty's degree achievements (Dowty 1979). Dowty notes that the sentences in (49) have an unbounded and a bounded interpretation:

(49)   a.   The soup cooled in an hour/for an hour
       b.   The ship sank in an hour/for an hour

The unbounded interpretation, in his view, is related to the comparative. *The soup cooled* can mean that the soup came to be cold or, alternatively, that it came to be cooler (and cooler). The unbounded reading corresponds to the comparative interpretation, which relates to (48a).

A further group of predicates which is interesting in this respect are terminus predicates containing a bare plural noun phrase (cf. Verkuyl 1993:18):

(50)   John drove the car to different garages all week

Again, the reference properties of the SC subject become irrelevant.

It is clear that the presence of unboundedness inducing predicates has to either block the identification process advanced in the previous section or undo its effect. One could assume that combining an inchoative verb and one of the predicates discussed in this section involves identification of q-positions in the inchoative verb and in the predicate, which makes the q-position unavailable for the SC subject. The relation between the q-position in the SC subject and the q-position corresponding to the inchoative event would be blocked, and as a result the measuring-out effect is absent. An alternative, which I find more appealing, is to assume that in the context of these predicates, too, there is identification of the q-positions in the SC subject and in the inchoative auxiliary. The absence of the measuring-out effect might then be explained by the assumption that the SC predicate

performs an operation on the q-position in the inchoative auxiliary which is similar to iteration. Take for instance the example in (48a). Here we find a series of bounded events in each of which John gets fatter than in the previous one. For sentences such as (50) this is even clearer: the sentence is unbounded because the number of events in which John drove the car to a garage is undetermined. As in (46a), where the VP *to go to the movies* is iterated, there is an undetermined number of bounded subevents. The second approach, in which the unboundedness inducing predicate cancels the measuring-out effect in a similar way as iteration does, allows us to generally apply q-identification in the context of an inchoative verb. This suggestion is still sketchy, and evidently more research is necessary.

3.3.2.3 *To push the cart*

In the context of changing state predicates in resultative SCs, such as *dikker en dikker* 'fatter and fatter', it is interesting to reconsider the problematic status of the verb *to push*. So called *'push the cart'* sentences have received a lot of attention in the literature because the reference properties of the object influence the reference properties of the verb phrase as a whole depending on the reading of the verb. The un-bounded reading of *push the cart* is illustrated in (51). Even if *the cart* has quantized reference, we can have a cumulative reading of the event as a whole:

(51)   John pushed the cart for an hour

Next to the unbounded reading of *to push the cart* it is possible to give a bounded, achievement reading, which is illustrated in (52):

(52)   At what moment did it happen that he pushed the cart?

This question is felicitous only in case *to push the cart* is interpreted as an achievement.

   It is possible to account for the two readings by a resultative SC analysis given that the verb *to push* can be combined with different types of small clause predicates:

(53)   a. John pushed the cart into the ditch
       b. John pushed the cart forth/further and further
       c. John pushed the cart away

If we assume that it is possible for a sentence to contain an empty SC predicate that denotes an endpoint, as in *John ate an apple*, there is no reason

to assume that predicates of the *fatter and fatter*-type could not be empty as well. Thus, on a par with an empty SC predicate in the context of the verb *to eat* we can postulate in the context of the verb *to push* either an empty *away* or an empty *forth/further and further*. If the predicate contains an empty *further and further* the event is unbounded and insensitive to the reference properties of the subject of the small clause as in the examples in (35) (cf. Verkuyl 1993, who also assumes that the two possible readings of *to push* are related to the presence of different predicates, though not within a SC analysis).

In this view, the difference between *to eat* and *to push* is that they license distinct types of empty SC predicates. In the case of *to push* this can be either a predicate inducing an unbounded reading such as *forth* or a predicate indicating a final state, and in the context of *to eat* this is a stative predicate, more or less corresponding to *up*. The difference can be attributed to a difference between the meaning of the verb *to eat* and the verb *to push*. In the context of an eating event, we expect things to be consumed. In the context of a pushing event, we expect things to change places. By consuming an object, a natural endpoint (the object is consumed) is reached. For *to push* this is less clear. We do not expect a predicate *to the garage* to be understood. The predicates that seem to represent natural consequences of *pushing* are the most general indication of a terminus *away* (i.e. 'from here to not here') and the changing state that does not imply a terminus, *further and further* or Dutch *voort* 'forth'.

This way of approaching the verb *to push* is more attractive than some alternatives given in the literature. According to Mulder (1992) the unbounded variant of the *to push the cart*-case in (51) and the bounded one in (52) are underlyingly benefactive constructions. The verb form *pushed* contains an incorporated noun that forms the complement of a benefactive SC. The solution he proposes for the difference in boundedness between the two examples is that the incorporated noun can be either a mass noun, resulting in the unbounded reading in (51), or a count noun, resulting in the bounded reading in (52). This solution has a serious problem, as the noun *push* does not function as a mass noun:

(54)   a.   a push
       b.   *a bit of push
       c.   a *(bit of) luck

As we see in (54), the noun *push* can be combined with the indefinite article *a* which is a diagnostic for being count. On the other hand, we cannot quantify over *push* with *a bit of*, which is a mass quantifier. The mass noun *luck* can be combined with *a bit of* and not with *a*. Given that there is no independent evidence for the existence of the mass noun *push* it has to be

stipulated that this noun exists underlyingly in the unbounded variant of *to push the cart*.

A further problem of Mulder's approach is the following. In Dutch, the object of the verb *duwen* 'to push' can be the subject of a SC (cf. (53) for a similar case in English):

(55)   Jan duwde de kar   in de sloot/voort
          Jan pushed the cart   in the ditch/forth

In the light verb variant, which corresponds to the underlying structure Mulder assigns to (55), it is possible to add a PP, but the sentence does not have the intended reading:

(56)   Jan   gaf   de kar   een duw   in de sloot
          John   gave   the cart   a push   in the ditch

In (56) the event of Jan giving the cart a push takes place in the ditch. We see a similar contrast between the examples in (57), showing that the benefactive construction cannot accommodate a resultative SC:

(57)   a. Jan duwde de kar   voort
           Jan pushed   the cart forth
       b. *Jan gaf   de kar   een duw   voort
           Jan   gave   the cart   a push   forth

The data strongly suggest that the *push the cart* sentences are not underlyingly benefactives. Within the approach I sketched above, the data are expected.

Tenny gives yet another account of *push*-verbs. She focuses on the contrast in (58):

(58)   a. John pushed the cart for an hour/*in an hour
       b. John pushed the cart to the garage in an hour/*for an hour

Tenny assumes that *the cart* in (58b) does not measure out the event. The delimitedness effect in (58b) is due to the presence of a selected PP which introduces a terminus, and the object *the car* does not measure out the event (cf. 3.1 above). This is the reason why, according to Tenny, in the absence of the indirect internal argument expressing the terminus and thus delimiting the event, no delimitedness is obtained in (58). Her analysis cannot account, however, for the fact that, as soon as *the cart* in (58b) is replaced by an element having cumulative reference, unboundedness results:

(59) a. John pushed carts to the garage for an hour/*in an hour
      b. John pushed sand into the ditch for an hour/*in an hour

This shows that in these cases the direct internal argument of *push* does measure out the event, contrary to Tenny's claim.

A story similar to the one proposed for *to push the cart* can account for the behaviour of verbs such as *to drive*. In 3.2.1 it was shown that the 'direct internal argument' of *to drive* measures out the event in the presence of a PP expressing a goal, but not in the absence of an overt SC predicate. The relevant data are repeated in (60):

(60) a. John drove his car for ten minutes/*in ten minutes

                                                unbounded/(= (4a))

      b. John drove his car to the garage in ten minutes

                                                  bounded/(= (4b))

      c. John drove cars to the garage for hours/#in an hour

                                                unbounded/(= (12))

The data can be understood if we assume that contrary to *to push*, which licenses empty SC predicates of the two types, the verb *to drive* only licenses an empty SC predicate similar to *forth/further and further*. In (60a) the empty SC predicate forces an unbounded reading. The overt predicate *to the garage* does not, as a result of which the measuring-out effect shows up.

In this section I argued that the presence or absence of the measuring-out effect depends on the type of predicate in the inchoative SC. In the context of *to push* there are two types of empty predicates possible, one which roughly corresponds to *away* and the other similar to *forth* or *further and further*, which accounts for the fact that the sentence *John pushed the cart* has both a bounded and an unbounded interpretation, as predicates such as *forth/further and further* do not trigger the measuring-out effect. The verb *to drive* only licenses an empty predicate of this latter type, which forces an unbounded reading, while an empty predicate licensed by verbs such as *to eat* licenses an empty predicate which triggers the measuring-out effect. Even though the question of what counts as a default predicate for a given verb needs further research, the existence of the three types of verbs and their properties with respect to measuring-out are expected on the basis of Hoekstra's (1992) original proposal (*to eat an apple* contains a resultative SC with an empty predicate) coupled with the observation that there are two types of predicates possible in resultative SCs, only one of which triggers the measuring-out effect.

3.4 Conclusions

In discussing the measuring-out effect and the way VPs inherit the reference properties of the direct internal argument, I have argued that direct internal arguments that measure out the event should be seen as subjects of resultative SCs, in accordance with Hoekstra (1992). It was found that resultative SCs contain an inchoative auxiliary. The event position (*e*-position) in the grid of this auxiliary is theta identified with the *e*-position in the grid of the matrix verb. I showed that this analysis has to be preferred to Hoekstra's tense linking analysis, even if the latter introduces less empty material. In order to account for the measuring-out effect, I made use of the notion of *q*-position, introduced in 2.1.4 and 2.2.5. I argued that the *q*-position in the grid of the noun phrase which functions as the subject of the resultative SC is theta identified with the *q*-position associated with the inchoative event. Given that the *e*-position in the inchoative event and the *e*-position in the matrix verb are identified, the *q*-positions associated with these *e*-positions are identified as well. From this it follows that the reference properties of the SC subject, as represented by the *q*-position, correspond to the reference properties of the VP. Identification of the *q*-position in an NP and the *q*-position associated with an event position should be seen as a property of inchoative verbs. The measuring-out effect resulting from this identification procedure is cancelled in case the SC contains a predicate of the *fatter and fatter* type. A precise formalization of these processes, and an account of which type of predicate may be empty in the context of which verbs are issues I leave for further research.

4   Degree quantifiers and categorial underspecification

DEGREE QUANTIFIERS or DQs operate both in the nominal and in the verbal system. Some French examples are given in (1):

(1)   a.   Jean   a   beaucoup/peu/énormément dan
sé   la salsa
          Jean   has   a-lot/ little/ a-whole-lot   danced   the salsa
      b.   Jean   a   lu   beaucoup/peu/énormément de livres
          Jean   has   read   a-lot/ few/ a-whole-lot   of books

In this chapter I will propose a categorial underspecification analysis for DQs. In the next two chapters this analysis will be further motivated on the basis of the distribution of DQs in the context of VPs and NPs. The analysis of DQs will constitute a reference point in the discussion of other types of Qs in subsequent chapters.

   The possibility to combine the DQ with different categories can be approached in different ways. On the one hand, one could say that the different categories that may be modified by the DQ are specified in the lexicon. On the other, the compatibility with different categories might be attributed to the absence of categorial selection. As announced in the introduction of this thesis, I will defend the idea that the first option is excluded. In case a quantifying expression is compatible with different categories, this is due to underspecification or lack of categorial selection, not to multiple categorial selection. I will argue below that DQs should be analysed as adjuncts and not as heads selecting the phrase they modify (cf. chapter 1). The head-complement structure will be seen as a reflection of the presence of categorial selection.

   Elements which will be called DQs on the basis of their distributional properties may have different forms: the DQ *much* seems to be adjectival while *a lot* is a construction containing an indefinite article and the element *lot*, which I call a classifier (cf. 1.1.2). I will argue that all these elements are XPs which have in common that their thematic grid contains only one,

saturated position. This position expresses a value on a scale. In (1) the relative quantity of dancing and books depends on the choice of Q. The only way in which DQs can be interpreted is by identifying their scalar argument position with an open position in another phrase, which they then saturate through identification, as defined in section 1.2 above. If not, they cannot contribute to the meaning of the sentence and become uninterpretable. As the theta position in the DQ is scalar, DQs can only modify phrases containing a compatible, and hence scalar, open argument position. As such, they can be said to theta select a scalar theta position (cf. chapter 1).[1]

The defining property of DQs is that their distribution is uniquely determined by theta selection of a scalar position, and not by categorial selection. Note that there are degree expressions which do not qualify as DQs. *Many*, for instance, though very close in meaning to the DQ *a lot*, categorially selects a plural NP and belongs to the class of adnominal quantifiers. *Souvent* 'often' is in some contexts almost synonymous to *beaucoup*, but I will argue in chapter 9 that it does not theta select a scalar argument position. Elements such as *so* and *too*, which I will call Deg-heads, categorially select APs, and hence do not fall into the category of DQs either. High degree adverbs, such as *extremely* and *badly*, express high degree but, contrary to DQs, they cannot modify a quantity. **Extremely sand/ books* is out. A detailed comparison between these expressions and DQs follows below and in subsequent chapters.

---

[1]   I will concentrate on non-predicative DQs. DQs can function as predicates in sentences where the subject defines a quantity or a degree, as in (i):

(i)   a.   Two kilos is too much/a lot
       b.   Trop,   c'est   trop   *[French]*
             too-much   that-is   too-much
             'Too much is too much'

Although I will not deal with these cases, I assume them to be compatible with the lexical specification I propose for DQs in the text.

   In some cases DQs may predicate over a subject which does not define a quantity or a degree. The acceptability of this second type of predicative DQ depends on a number of factors, which are not well understood. In French, for instance, certain DQs can be used as predicates with a pronominal plural subject, but others cannot. Furthermore, it is not possible to use a predicative DQ when the subject is a mass noun:

(ii)   a.   Ils   sont   trop/?*énormément
              they   are   too-many/ a-whole-lot
        b.   *Le   sable   est   beaucoup/trop
              the   sand   is   a-lot/ too-much

A full investigation and an explanation of the restrictions on this type of predicative DQs is beyond the scope of this thesis.

As I already mentioned in chapter 1 and 2.1.4, a subset of DQs, such as *more* and *less*, is found in the context of scalar adjectives. This constitutes an important piece of evidence in favour of categorial underspecification. Zwarts (1992) has argued that scalar adjectives contain a *g*-position, where *g* stands for *grade*. The presence of a scalar position is the only selection criterion I ascribe to DQs, and hence the compatibility of DQs and adjectives is expected. I will argue that in case a DQ cannot be combined with an adjective, this is not due to selectional restrictions but to the Elsewhere Condition (cf. Kiparsky 1973).

The chapter is organized as follows. It starts out in 4.1 with a discussion of some basic empirical facts in support of the categorial underspecification analysis. Section 4.2 contains a typology of DQs. In this section I will examine differences between for instance *much*, which has adjectival properties, and *a lot*, which derives from a classifier construction. The topic of 4.3 is the distribution of DQs in the context of adjectives. I will argue against a recent proposal by Corver (1997), who argues that certain DQs (*more* for instance) are generated in a head position and select APs.

4.1   DQs, theta selection and adjunction

French has a rich collection of DQs. The list in (2), though not exhaustive, gives a fair impression:

(2)   *à peine* 'hardly any'; *assez* 'enough', 'a fair number'; *autant* 'as many/much'; *beaucoup* 'a lot'; *combien* 'how much/many' *davantage* 'more'; *énormément* 'a whole lot'; *guère* 'hardly any'; *moins* 'less'; *pas mal* 'a lot' lit. 'not badly'; *peu* 'few'; *plus* 'more'; *rudement* 'a lot', lit. 'rudely'; *suffisamment* 'enough'; *tant* 'so many/much'; *tellement* 'so many/much'; *trop* 'too (many/ much)'; *un peu* 'a bit'; *vachement* 'a lot', lit. '#cowly'

The Qs in (2) indicate a value on a scale. *Beaucoup* 'a lot', *énormément* 'a whole lot', *pas mal* 'a lot' etc. express high degree. *A peine* 'hardly', *guère* 'hardly', *peu* 'little' and *un peu* 'a little' express a low degree. *Plus* 'more', *davantage* 'more', *autant* 'as much', and *moins* 'less' compare two degrees. *Assez* 'enough' and *suffisamment* 'enough' define a degree on the basis of what is required. *Trop* 'too much' indicates excess. *Tellement* and *tant* express high degree and consecution. From a semantic point of view the interpretation of DQs is defined on the basis of a scale, which is in accordance with the restriction on the type of theta position they can saturate.

The different categorial contexts in which the DQ appears have in common that there is always a **scalar** theta position present. When the DQ

is combined with a VP, this VP must have cumulative reference, i.e. it must have either a mass or an iterated interpretation (cf. section 2.2.5 above). In the examples below, *beaucoup* 'a lot' will be used as the standard example of a French DQ. Unless the contrary is explicitly stated, *beaucoup* can be replaced by any of the other DQs in (2).

(3) a. Sylvie va beaucoup au cinéma
         Sylvie goes a-lot to-the cinema
     b. Anne danse beaucoup
         Anne dances a-lot

(3a) contains a count predicate. In the context of *beaucoup* the predicate has cumulative reference and is interpreted as an iteration of 'going to the movies' events. The iterated interpretation corresponds to the presence of a scalar *q*-position, and the number of visits can be modified by the DQ. The singular interpretation of the predicate, in which the *q*-position would not define a scale, is excluded, and the DQ is uninterpretable. *Danser* 'to dance' in (3b) is mass and hence contains a scalar *q*-position.

In the context of nouns the presence of a scalar position is necessary as well. DQs combine with mass nouns and plurals, and not with singulars, which contain a non-scalar *q*-position (cf. section 2.1.4 above):

(4) a. #beaucoup de cheval
         a-lot of horse (SG)
     b. beaucoup de chevaux
         a-lot of horses (SG)
     c. beaucoup de thé
         a-lot of tea

A subclass of DQs is found in the context of adjectives. An example is *trop* 'too much'. Again we see that the adjective must be scalar. The scalar adjective in (5a) is compatible with *trop* 'too much' and the non-scalar adjective in (5b) is not:

(5) a. trop grand
         too-much big
         'too big'
     b. *l'année trop dernière
         the-year too-much last
         'too last year'

In English and Dutch we find the same contextual restrictions on DQs, even though the set of DQs which can be used in combination with

adjectives is different in all three languages. More about that will follow in 4.3.

I analyse DQs as adjuncts. DQs can be adjoined to any projection, provided that they can be interpreted, which means that their saturated scalar theta position is identified with an open scalar argument position. The adjunct status of DQs reflects the absence of categorial selection, which I will argue to be typically found in a head-complement structure.

The syntactic status of the DQ can be motivated on the basis of extraction data. As shown in (6), the DQ *combien* 'how much/many' can be extracted:[2]

(6)   a.   Combien$_i$ as-tu   lu   [$_{NP}$ t_i de livres]?
             how-many   have-you read   of books
             'How many books did you read?'
        b.   Combien$_i$ les enfants ont-ils [$_{VP}$ ri t_i]?
             how-much   the children have-they   laughed
             'How much did the children laugh?'
        c.   Vous verrez   combien$_i$ il   est [$_{AP}$ t_i méchant]
             you   will-see   how-much he   is   evil
             'You will see how evil he is'

The possibility of *wh*-extraction of *combien*, leaving behind the lexical category it modifies, is evidence against an analysis in which *combien* 'how much/many' functions as a head selecting NP, VP or AP, as movement of a head to a specifier position is barred (cf. Chomsky 1986). The data are unproblematic when *combien* has adjunct status.

Adverbially used DQs provide a further argument in favour of their adjunct status. If the adverbial DQ were a head selecting the VP, we would not expect the verb to raise to I given the Head Movement Constraint (Travis 1984), which blocks movement of a head past an intervening head position. The example in (7) shows that V-to-I movement is not blocked by an intervening DQ, in accordance with the adjunction analysis:

(7)   [$_{IP}$ Sylvie [$_{IP}$ danse$_i$ [$_{VP}$ beaucoup [$_{VP}$ t_i la salsa]]]]
        Sylvie   dances   a-lot   the salsa

The adjunct status of DQs is in accordance with the ideas about categorial selection set out in the introduction. Heads categorially select at most one category, and adjuncts are categorially underspecified.

---

[2]   *Combien* can be either exclamative or interrogative. In the context of adjectives only the exclamative reading is available. I will not address the distinction between interrogative and exclamative *combien*.

This section put forward some empirical facts in favour of the idea that what the DQ actually selects is a scalar argument position. The absence of categorial selection corresponds to an adjunction analysis, which receives independent evidence from extraction data and the Head Movement Constraint.
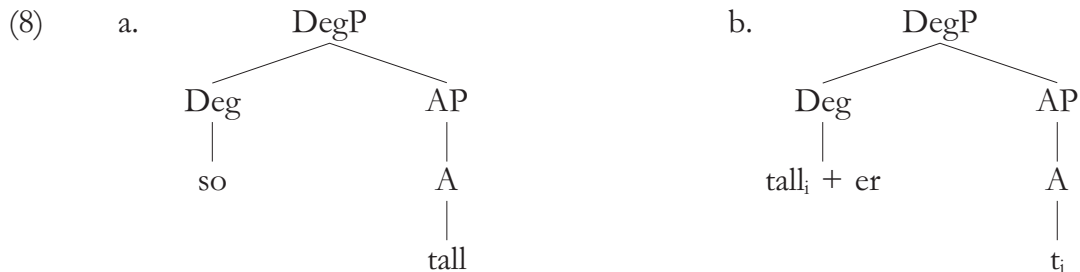
4.2   Types of DQs

As I said in the introduction of this chapter, a quantifying expression falls in the class of DQs on the basis of its external distribution. In this section it will be shown that the class of DQs is not a homogeneous one, but contains elements with clearly distinct properties. The different types of DQs have in common that they do not categorially select, and that their theta grid contains exactly one saturated, scalar argument position, which determines their distribution as I stated above.

I will examine four classes of DQs: adjectival DQs (4.2.1), complex DQs (4.2.2), DQs which are derived from classifier constructions (4.2.3), and DQs derived from high-degree adverbs (4.2.4). In establishing the typology, Deg-heads (*so*, *too*), which categorially select adjectives, play an important part. Adjectival DQs, such as English *much*, can be detected by their compatibility with Deg-heads. Complex DQs are formed on the basis of a Deg-head and an adjectival DQ, which in many cases turns out to be incorporated. Examples are English *more* and French *plus* 'more'. Classifier constructions which function as DQs usually contain an indefinite article. In the default case, classifiers categorially select NPs. Loss of this categorial specification, which turns the classifier construction into a DQ, turns out to be a two step process, in which the classifier first loses part of its meaning. An example of the last type of DQ, which derives from high degree adverbs, is *énormément* 'enormously/a whole lot'. Whereas the first three types of DQs are found in all of the three languages I examined, the last type of DQs typically occurs in French. 4.2.5 contains a schema of the different types of DQs.

4.2.1   Deg-heads and adjectival DQs

The English expressions *how*, *so*, *as*, comparative *–er*, superlative *–st* and *too*, are analysed by Corver (1990) and Zwarts (1992) as heads of a DegP. Deg-heads, as I call these elements, cannot be combined with expressions other than adjectives (or adverbs). Instead of **so water*, **to dance as* and **dresseser* we have to say *so much water*, *to dance as much* and *more dresses*. The sensitivity to the categorial properties of the phrase they modify is a first indication that

they function as selecting heads and not as adjuncts. The structure adopted for DegPs is given in (8). (8a) is the standard case, where the Deg-head and the AP are two separate lexical items, and (8b) illustrates incorporation of the adjective into a suffixal Deg-head:

(8)   a.   DegP   b.   DegP

            Deg   AP   Deg   AP
             | | | |
            so   A   tall$_i$ + er   A
                           | |
                          tall   t$_i$

Corver (1990, 1996) gives a convincing argument in favour of head status of the Deg-heads on the basis of extraction. His argument, which was briefly mentioned in section 1.2, is based on so called left branch effects (cf. Ross 1967). Deg-heads cannot be extracted stranding an adjective, as the paradigm in (9) shows:

(9)   a.   *How$_i$ is Peter [t$_i$ sane]?
         b.   *Too is Peter [t$_i$ tall]!
         c.   *How do you think he is [t$_i$ dependent] on his sister?

The ungrammaticality of this type of sentences has been explained by Ross (1967) in terms of the Left Branch Condition, which bans extraction from a left branch. (10) shows, however, that extraction from a left branch is possible:

(10)   How heavily$_i$ do you think he is [*t$_i$* dependent] on his sister?

On the basis of (10) Corver rejects the Left Branch Condition and argues that the elements in (9) cannot be extracted because they are heads.

The existence of suffixal Deg-heads in which an adjective incorporates is a further argument in favour of head status. In order to make incorporation possible the suffixes must be reachable for the adjective via head-to-head movement. This is possible in the adopted configuration in (8b), where the suffix is generated in the head position of a dominating DegP, but not in (11), where DegP is adjoined (cf. Corver 1997):

(11)   *[$_{AP}$ [$_{DegP}$ [$_{Deg0}$ −er]] [$_{AP}$ tall]]

Movement of *tall* to Deg^0 in (11) would move the adjective to a non-c-commanding position, which is not allowed. In the structure in (8b) A-to-

Deg movement is possible.

The French degree expressions *si* 'so', *aussi* 'as' and *très* 'very' are restricted to adjectives and adverbs and will be analysed as Deg-heads:

(12) a. si/très/aussi   beau
          so/very/as   beautiful
      b. *si/très/aussi de livres
          so/very/as   of books
      c. *Marie a   si/très dansé
          Marie   has so/very danced
      d. *Marie a   aussi dansé   que Pierre
          Marie   has as   danced   as Pierre

Note that there are no suffixal Deg-heads in French.[3] Some Dutch examples of Deg-heads are *te* 'too', *–er* '–er', *–st* '–st' and *even* 'as'.
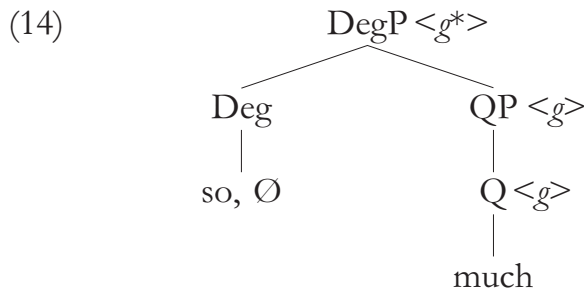
Some DQs can be preceded by a Deg-head, suggesting that they are adjectival in nature. Examples are French *peu* 'little', English *much*, *little* and Dutch *veel* 'much' and *weinig* 'little':

(13) a. si peu;   aussi peu;   très peu
          so little   as little   very little
      b. so much; as much; too much
      c. so little; as little; too little
      d. even veel;   te veel
          as much   too much
      e. even weinig; te weinig
          as little   too little

The assumption that the Qs in (13) are adjectival in nature is also made by Corver (1997), who refers in turn to Bowers (1975), Klein (1982) and Brame (1986).

Adjectival DQs which combine with Deg-heads can be seen as a special type of scalar adjective, containing a *g*-position. The theta criterion requires that every position be discharged (cf. 1.2). In accordance with Zwarts (1992), I assume that in the absence of an overt Deg-head, the *g*-position in scalar adjectives can be bound by an empty Deg. (14) represents binding of the *g*-position in the DQ by either an overt or a covert Deg-head:
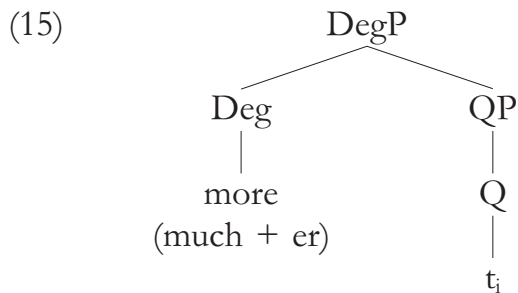
---

[3]   As in English, there exist cases where the comparative is derived from an adjective by suppletion: *bon* 'good' and *meilleur* 'better'; *mauvais* 'bad' and *pire* 'worse'.

(14)   DegP $<g*>$

                 Deg   QP $<g>$
                  | |
                 so, Ø   Q $<g>$
                                         |
                                        much

The default interpretation of the adjectival DQ is found in the context of an empty Deg.

4.2.2 Complex DQs

The idea that *more* and *most* are the comparative and superlative forms of *much* is quite commonly accepted in traditional grammar, and adopted within a generative framework by Selkirk (1970) and Bresnan (1973). I will treat *more* and *most* as amalgams consisting of a DegP and an incorporated adjectival DQ (cf. (8b) and (14)). From a syntactic point of view, these DQs are complex, on a par with *so much*. The analysis will be extended to some other forms, which are morphologically less transparent than *more* and *most*. The structure I adopt for complex DQs is given in (15) and corresponds to the structure for *taller* in (8b):

(15)   DegP

                 Deg   QP
                  | |
                 more   Q
               (much + er) |
                                        t_i

Stacking of two DegPs is not possible as the ungrammaticality of **so too much* illustrates. Therefore we expect that complex DQs, contrary to the adjectival ones, cannot be preceded by a Deg-head. The impossibility of **très plus* 'very more' and **si trop* 'so too much' in French is correctly predicted under the complex DQ analysis of *plus* 'more' and *trop* '. A number of French DQs are plausibly analysed as complex DQs, consisting of a DegP and an adjectival DQ. This incorporating adjectival DQ never surfaces in French, given that there is no adjectival DQ in French corresponding to

English *much*.[4]

In this view, the French comparative forms *davantage* 'more', *plus* 'more' and *moins* 'less' contain an abstract Deg-head corresponding to English *–er* which never surfaces in French (the comparative in French is always expressed by a DQ, never by a suffix); *autant* 'as much' contains the Deg-head *aussi* 'as' and *tant* 'so much' contains *si* 'as'. I also assume the presence of an abstract degree in *assez* 'enough' and *suffisamment* 'enough', which stands for sufficiency, and an abstract *too* in *trop* 'too much'. There are more simplex lexical items that structurally form complex DQs in French than in English. The English translations of the French forms often consist of a Deg-head and *much*, reflecting the complex underlying representation.

Complex DQs differ from the Deg-words they contain, because they can modify verbs and nouns, due to the presence of the QP. As I said in the beginning of the previous section, we must use *so much water*, *to dance as much* and *more dresses* instead of **so water*, **to dance as* and **dresseser*. The choice of a complex DQ instead of a Deg-head is syntactically determined. Deg-heads categorially select AP. They cannot be used in the context of other categories, unless the categorial selection requirement is satisfied by the presence of an adjectival DQ such as *much*. Insertion of *much* in *so much water* can be seen as a way to fulfil the selectional requirements of *so*, without changing the interpretation. The resulting expression is categorially underspecified, and can modify any category.

4.2.3 Classifier constructions

Quite a different class of DQs involves a special type of classifier construction, consisting of a classifier and an indefinite article.[5] An example is *a lot*. Normally classifiers are exclusively found in the context of NPs, but under certain conditions classifier constructions can turn into DQs. A necessary property for this is that the classifier can indicate a non-specific amount. This type of interpretation of a classifier is incompatible with the presence of a cardinal numeral. Consider for instance the English example *a lot*. It does not make sense to talk about two lots or seven lots, unless *lot* is interpreted in its original sense of 'parcel'. The non-specific interpretation of *lot* does not allow us to count. The possibility to use a classifier to express a non-specific quantity can be seen a first step in the process of becoming a DQ. The classifier turns from an expression indicating a specific

---

[4]   French *beaucoup* does not have the properties of an adjectival DQ and will be discussed in the next subsection.

[5]   Cf. section 1.1.2 for my use of the notion 'classifier'.

amount only (for instance the amount put together in a parcel) into an expression which can also be used to indicate a non-specific quantity, which is either relatively big (*a lot*) or small (*a bit*).

It is not the case, however, that when a classifier construction can be used to indicate a non-specific small or big amount, it automatically functions as a DQ. Take for instance the French examples *une montagne* 'a mountain' et *un tas* 'a pile', both of which refer to 'a big quantity' without implying that a concrete heap of stuff/objects is formed, as shown in (16):

(16) a. Pierre a   toute une montagne   de travail à faire
          Pierre has   all   a mountain   of work   to do
          'Pierre has a whole lot of work to do'
      b. Pierre a   eu un tas   de problèmes
          Pierre has   had a lot   of problems

Still *une montagne* and *un tas* do not function as DQs as they cannot be used adverbially:

(17)   *Pierre a   une montagne/un tas travaillé
           Pierre   has a mountain/ a heap   worked

In Dutch there is a difference between, on the one hand, *een hoop* 'a pile' and *een boel* 'a lot'/ *een heleboel* 'a whole lot' (*boel* originally means 'belongings') and, on the other, *een berg* 'a mountain'. Whereas *een hoop* and *een boel* are DQs, the use of *een berg* is restricted to the nominal system:

(18)   We hebben een boel/   een hoop/ *een berg   gepraat
           we have   a lot/   a pile/   a mountain talked
           'We talked a lot'

It cannot be the case that *een berg* is impossible in (18) because it has not completely lost its literal meaning. *Een berg* is used for a non-specific, big quantity in (19):

(19)   Jan heeft een berg   geld   verdiend met zijn louche zaakjes
           Jan has   a mountain   money   gained   with his louche affairs
           'Jan gained a lot of money with his louche affairs'

This sentence does not presuppose the existence of a concrete 'mountain' of money. In this respect Dutch *een berg* is similar to French *une montagne* 'a mountain' and *un tas* 'a heap'.

In general, non-specific classifier constructions which do not function as DQs cannot combine with any noun, contrary to DQs. They impose lexical

restrictions, which have an idiomatic flavour.[6] Whereas *een berg geld* 'a mountain of money' and *veel/ een hoop geld* 'a lot of money' are both possible, and have roughly the same meaning, *een berg* is quite strange in (20):

(20)   Er waren   veel/   een hoop/   ??een berg   mensen op de receptie
         there were   many/   a pile/   a mountain   people at the reception

The same obtains for *een schep* 'a shovel(ful)', which can be used in the sense of 'a lot' in the context of some nouns only, and is completely excluded in non-nominal contexts. *Een schep geld* 'a lot of money' is fine, according to some sources it is possible to say *een schep mensen* 'a lot of people', but *een schep koekjes* for me means 'a spoonful of cookies' and not 'a lot of cookies'. Again this shows that a non-specific classifier construction which cannot be used as a DQ imposes lexical restrictions on the choice of NP.

The process by which a classifier construction becomes a DQ is a gradual one. First the concrete meaning of the classifier gets lost in certain uses of the classifier. At this stage, classifiers still select an NP, and impose some further lexical restrictions on this NP. In a second stage they lose their property of being a categorial selector, and can be used in combination with other categories than NPs.

In Dutch there are quite a few classifier constructions which function as DQs: *een hoop* 'a lot', *een boel* 'a lot', *een beetje* 'a little bit' and *een (ietsie)pietsie* 'a bit'. English examples are *a bit* and *a lot*. In French there are several DQs which etymologically form classifier constructions, even though this is not always relevant from a synchronic point of view. *Un peu* 'a bit' is the only French DQ which clearly has the form of a classifier construction, even though *peu* 'little' alone functions as an adjectival Q.[7] The DQ *trop* 'too much' finds its origin in a classifier, and is etymologically related to *troupeau* 'flock, troop'. As shown in the previous subsection, *trop* functions as a complex DQ from a synchronic point of view. *Beaucoup* 'a lot' is also derived from a classifier construction, and originally means 'good strike'.

There are reasons to believe that *beaucoup* still functions as a classifier construction, even though the indefinite article is missing. DQs that are formed by classifier constructions cannot be combined with a DegP:

---

6   In general, the distribution of classifiers involves quite some idiosyncratic behaviour; cf. for instance the overview of Mandarin classifiers and the nouns they can be used with in Chao (1968).

7   We see the same in English *a little* and Dutch *een weinig* 'a little'. These cases suggest that an adjectival DQ can become a classifier, and that the resulting classifier construction can be used as a DQ as well.

(21) a. French: *si   un   peu
                     so *a* *little*
      b. English: *too a lot
      c. Dutch: *te een   hoop
                     too *a*   *lot*

This is in accordance with the categorial selection properties of DegP. *Beaucoup* is incompatible with the Deg-heads *très*, *si* and *aussi*:

(22)   *si   beaucoup; *aussi beaucoup; *très beaucoup
           so *much*   *as*   *much*   *very* *much*

Plausibly the reason for these restrictions is that *beaucoup* still counts as a classifier construction for the DegP, and not as an adjective.

4.2.4   High degree adverbs

In French there are a number of DQs which correspond to high degree adverbs in other languages. High degree adverbs express a high degree but cannot act as quantifiers. Consider for instance the English example *enormously*. This adverb can modify a scalar adjective, as in for instance *enormously happy*, but it cannot be used as a quantifier in the context of NPs and VPs. **Enormously books* is excluded as is **John went enormously to the movies last week*. Dutch *enorm* is similar in this respect to English *enormously*. French *énormément*, however, has the distribution of a DQ, as shown in the examples in (23):[8]

(23) a. Anne était   énormément   contente
          Anne was   enormously   happy
      b. Anne a   énormément de livres
          Anne has enormously of books
          'Anne has a whole lot of books'
      c. ?Anne va   énormément   au   cinéma
          Anne   goes   enormously   to-the cinema
          'Anne goes to the movies a whole lot'

Some more cases are *étonnamment* 'amazingly', *drôlement* 'funnily' and *infiniment*

---

[8]   (23c) was accepted, marginally accepted and rejected depending on the informant. In general, speakers do not like the use of *énormément* as an adverbial DQ as much as its use as an adnominal DQ. Further empirical study is necessary, as the judgments vary from speaker to speaker, and as individual speakers would not judge all sentences in which *énormément* functions as an adverbial DQ alike.

'infinitely' (cf. Gross 1977:242), though it seems to be the case that some of these former high degree adverbs are more easily accepted as DQs than others. My informants did not agree, for instance, on the status of *rudement* 'rudely', which some of them accepted in contexts such as (23b,c) and others did not.

In English and Dutch I did not find this type of DQ. I will come back to high degree adverbs in the next chapter, though the cross-linguistic differences will remain a puzzle for further research.

4.2.5   An overview

In the schema below an overview is given of the different types of Deg-heads and DQs discussed in this section, which means that it is not intended to be a complete inventory. Adjectival DQs (e.g. *much*) contain a hidden DegP, which can contain an overt Deg-head (e.g. *so*), yielding a complex DQ (e.g. *so much*). The complex DQs in the schema are amalgams of a Deg-head and an adjectival Q (e.g. *more*). As the Deg-position is filled, and stacking of DegPs is excluded, complex DQs cannot be preceded by another Deg-head, as shown by the impossibility of **so more*. The third class of DQs consists of a special type of classifier constructions (e.g. *a lot*). Again, these cannot be combined with Deg-heads, as Deg-heads select an AP. These DQs are formed on the basis of classifiers that have lost their selectional properties. The last type of DQs discussed above, exemplified by *énormément* 'a whole lot', only exists in French, and derives from high degree adverbs.

Deg-heads
(categorially select AP)

   French: *si* 'so'; *aussi* 'as'; *très* 'very'
   English: *too*; *–er*; *–st*; *so*; *as*
   Dutch: *te* 'too'; *–er* '–er'; *–st* '-st'; *even* 'as'

Degree Quantifiers
(lack categorial selection and combine with phrases containing an open scalar argument position which they saturate through identification)

simplex/ adjectival
(selected by a covert or overt Deg-head)

      French: *peu* 'little'
      English: *much*; *little*
      Dutch: *veel* 'much'; *weinig* 'little'

complex
(contain a Deg-head)

      French: *plus* 'more'; *davantage* 'more'; *moins* 'less'; *trop* 'too much'; *autant* 'as much'; *tant* 'so much'; *tellement* 'so much'; *assez* 'enough'; *suffisamment* 'enough'
      English: *more*; *enough*
      Dutch: *meer* 'more'; *minder* 'less'; *genoeg* 'enough'

classifier constructions
(lost the property of categorially selecting an NP)

      French: *beaucoup* 'a lot'; *un peu* 'a bit'
      English: *a lot*; *a bit*
      Dutch: *een hoop* 'a lot'; *een boel* 'a lot'; *een heleboel* 'a whole lot'; *een beetje* 'a bit'; *een ietsiepietsie* 'a bit'

former high degree adverbs
(may be used as quantifiers, contrary to high degree adverbs in other languages, cf. 5.2.1.1)

      French: *énormément* 'enormously; a whole lot'; *vachement* '#cowly; a whole lot'; *rudement* 'rudely; a whole lot'; *pas mal* 'not bad; a lot', *drôlement* 'funnily; a whole lot'; *infiniment* 'infinitely; a whole lot'; *étonnamment* 'amazingly; a whole lot'
      English: —
      Dutch: —

4.3 DQs in the context of adjectives

Given the presence of the *g*-position in scalar adjectives, the possibility to combine DQs with adjectives follows from my analysis, and yields evidence for the categorial indifference of DQs. I will defend the idea that in principle all DQs can adjoin to an AP headed by a scalar adjective and saturate the *g*-position and that the reason why a subset of DQs is excluded in the context of adjectives is the Elsewhere Condition (cf. Kiparsky 1973, and Di Sciullo & Williams' 1988 discussion of 'blocking'). The use of a DQ is blocked in case a more specific, competing form exists. Deg-heads, which are only found in the context of APs will in many cases supersede a semantically equivalent DQ. Distributional gaps in the adjectival domain and an explanation in terms of the Elsewhere Condition will be the topic of section 4.3.1.

The proposed analysis of DQs and its implementation in the domain of adjectives is close to Bresnan's (1973) split degree system hypothesis, in which the degree is set by a combination of a degree expression (in my analysis the Deg-head) and a Q. Jackendoff (1977) rejects the split degree system in the domain of adjectives, and I will argue he is right as far as the Deg-heads are concerned, which directly combine with adjectives. Recently, Corver (1997) has made yet another proposal which makes use of a split degree system. Corver only looks at the degree system of adjectives, and his analysis of DQs such as *more* cannot be extended to the use of *more* in other contexts, which obviously is a serious disadvantage. The different systems will be discussed in the context of the present proposal in section 4.3.2.

The most important piece of evidence for Corver's analysis is the phenomenon of *much*-support. *Much*-support is illustrated in (24):

(24)   John is fond of Sue. Maybe he is even too *(much) so.

Even though the Q *much* must be absent in *too (*much) fond*, it obligatorily shows up in (24), where the adjective is replaced by the pronominal form *so*. I will propose an alternative to Corver's analysis in terms of the Elsewhere Condition in section 4.3.3.

4.3.1 Elsewhere

It is clearly not the case that all DQs can be combined with adjectives. Though *more intelligent* is fine, **much intelligent* is out. In French, *trop grand* lit. 'too much big' and *plus grand* lit. 'more big' are fine, but **autant grand* 'as much big', **tant grand* 'too big' and **beaucoup grand* 'much big' are excluded. In Dutch we find *minder groot* 'less big' but not **meer groot* 'bigger'.

All impossible cases have in common that the DQ corresponds to a Deg-head which expresses the same value on a scale. The DQ is underspecified with respect to the categorial properties of the phrase it modifies, while the corresponding Deg-head categorially selects an AP. I will argue that the existence of a competing form is the source of the ungrammaticality of DQ-AP combinations such as *much intelligent* and *autant grand* 'as much big', not a lexical specification of the DQ itself. For example, the fact that the form *très* has the lexical property that it can only occur in the context of APs, blocks the use of the DQ *beaucoup* in this context, as the DQ is not categorially specified.

The idea that if two linguistic rules can apply in the same context the more specific rule supersedes the more general one goes back to the Indian scholar Pāṇini (± 6th century BC). Kiparsky (1973) develops this idea, which he calls the Elsewhere Condition, for rule ordering systems in phonology. In morphological paradigms we find phenomena that can be explained by the Elsewhere Condition as well. An example is the distribution of the third person suffix *−s* in English. According to Halle and Marantz (1993) the absence of the suffix *−s* corresponds to the absence of person specification. The unspecified 'elsewhere' form corresponding to the stem cannot be used for third person because of the existence of the more specific form *−s*.[9]

Accounting for the distribution of pairs such as *très* 'very' and *beaucoup* 'much' in terms of the Elsewhere Condition implies that the condition is active in certain domains of syntax as well. The forms *très* and *beaucoup* have exactly the same function and both indicate a neutral high degree. They differ only in terms of the lexical specification of the context in which they can be used. *Très* can only modify adjectives, while the DQ *beaucoup* is found 'elsewhere'. In the morphological example of the suffix *−s* in English, 'elsewhere' means elsewhere in the morphological paradigm. In the case of French *très* and *beaucoup* it means in other, less specific, syntactic contexts. *Beaucoup* adjoins to XP, unless XP is AP, the context in which *très* prevails.

This way of approaching the distribution of *beaucoup* and *très* is similar to Di Sciullo & Williams' (1987) account of the complementary distribution of *more* and *−er* in terms of 'blocking'. The term 'blocking' has been introduced by Aronoff (1976), and was originally used to account for processes in lexical morphology. For instance, the existence of the form *gloriousness* is said to block derivation of a form *gloriosity* with the same meaning. According to Di Sciullo & Williams the use of *more* is blocked in those contexts where *−er* is possible, in a similar way. They add that 'it remains a mystery what blocking actually is, and it is quite unclear under what circumstances it obtains' (Di Sciullo & Williams 1987:13). Looking at the distribution of *more*

---

[9]   See Ferdinand (1996) for an account of the acquisition of the French verbal paradigm in terms of the Elsewhere Condition.

and *–er* in terms of the Elsewhere Condition seems to solve at least part of this mystery. The blocked form is the elsewhere form, which is the less specific form. *More* is blocked by *–er* and not the other way around, because *more* is the underspecified elsewhere form, which we also find in nominal and verbal contexts, while *–er* categorially selects an AP headed by an adjective with certain prosodic properties.

The 'elsewhere' explanation of the distribution of *très* 'very' and *beaucoup* 'a lot' makes the prediction that we do not find a stable system in which a neutral high degree expression restricted to adjectives and a neutral high degree DQ are both freely available in the context of adjectives. In many languages we find the same type of complementary distribution as in French. Spanish has *muy* to express a neutral high degree with adjectives and the morphologically related form *mucho* in the other DQ contexts. In English *very* alternates with *much* in the same way.[10] Portuguese is particulary interesting in this respect. The DQ *muito* 'much' is used in the context of adjectives as in *muito bom* 'very good'. The form *mui* 'very' exists as well, and is restricted to the adjectival system. At first sight the mere existence of the form *mui* is evidence against an elsewhere account. However, the form *mui* 'very' is archaic, excluded in oral communication and not very common in written Portuguese (João Costa p.c.). Looking at the morphological paradigms in terms of which the Elsewhere Condition has been formulated, one can see that the loss of the more specific form and restoration of the less specific form is a frequent phenomenon. Strong past tense forms that supplant the weak form because of the Elsewhere Condition, for instance, may diachronically be substituted by the more general weak form. An example of this is the past tense of the Dutch verb *raden* 'to advice/guess'. This verb used to have a strong, irregular, past tense form, *ried* 'adviced/guessed', which has been supplanted by the regular past tense form *raadde* 'adviced/guessed' (the elsewhere form). The change of a two case system to a one case system for noun phrases in the history of French is another example (cf. Foulet 1977). In Old French there used to be a distinction between subject case and oblique case. The Old French oblique form can be seen as the Elsewhere form, and is used in all contexts except when the noun phrase is the subject of the sentence. In modern French only the elsewhere form survived, and is used for subjects as well. The Portuguese data can be interpreted as an example of a similar diachronic process.

The story for *très* 'very' and *beaucoup* 'much' can be extended to the other

---

[10]   There is a small class of adjectives which can be combined with both *very* and *much* (cf. for instance Bresnan 1973). For example, *very different* alternates with *much different*. I will come back to these adjectives, and their unexpected compatibility with *much* in 5.2.2.

cases mentioned in the beginning of this section. In 4.2.2 I argued that *tant* 'so much' and *autant* 'as much' are amalgams formed on the basis of *si* and *aussi*, respectively, and an abstract adjectival DQ corresponding to English *much*. The complex DQs *plus* 'more' and *trop* 'too' contain a Deg-head which does not surface as an independent lexical item. Under the assumption that the presence of the Q-element does not alter the interpretation, but only the distributional properties of the degree expression, we correctly predict that *plus* 'more' and *trop* 'too' can occur with adjectives, while *tant* 'so much' and *autant* 'as much' are blocked by the Elsewhere Condition, as they have to compete with the more specific Deg-heads *si* 'so' and *aussi* 'as':

(25) a. plus grand; trop grand
          more big   *too much big*
      b. *tant grand; *autant grand
          so much big   *as much big*
      c. si grand;   aussi grand
          so big   *as big*

Similarly, as we have seen above, the possibility of *bigger* rules out **more big*. We find *more* only in the context of those adjectives that for phonological reasons cannot combine with the suffix *-er*. In Dutch *minder groot* 'less big' is possible while **meer groot* 'more big' is excluded, because *minder* does not alternate with a Deg-head, while *meer* corresponds to the comparative suffix *–er* '–er'.

The elsewhere account of the incompatibility of certain DQs with adjectives is in accordance with the aim to keep the lexical specification of DQs maximally general. The only lexical restriction a DQ imposes on the phrase it combines with is the presence of an open scalar theta position. Other restrictions are not due to properties of the DQ itself but to the Elsewhere Condition. I will argue in section 5.2.2 that the Elsewhere Condition is responsible for some distributional idiosyncrasies of DQs in the context of verbs as well.

4.3.2 The degree system of adjectives in the literature

The degree system of adjectives has received quite some attention in the literature. In this section I will briefly discuss three proposals: Bresnan (1973), Jackendoff (1977) and Corver (1997). Each of these approaches has something in common with the proposal presented here, but none of them makes a principled distinction between elements that are restricted to the adjectival system and elements that are not.

Bresnan (1973) defends the hypothesis that degree expressions constitute

a split system. In her view, there is a difference between quantifiers (Qs) such as *much* on the one hand, and degree terms such as *as* and *too* and the comparative suffix *–er* on the other. The latter function as determiners of Q, and correspond roughly to the set of Deg-heads. The comparative form *more* is the result of combining the Det *–er* with the Q *much* (cf. also Selkirk 1970). Bresnan assumes that the Det and the Q positions are always present, but that either position can remain empty. For her, *so intelligent* and *as intelligent* contain an empty Q position. French *peu intelligent* 'little/not very intelligent' would be a case of an empty Det. The example in (26) illustrates Bresnan's proposal:

(26)

```
                          AP
                     ┌─────────┴──────┐
                    QP               AP
                 ┌───┴───┐            │
                Det      Q            A
                 │       │            │
                -er     much      intelligent
              →more
                 so       Ø        intelligent
                 Ø       peu       intelligent
```
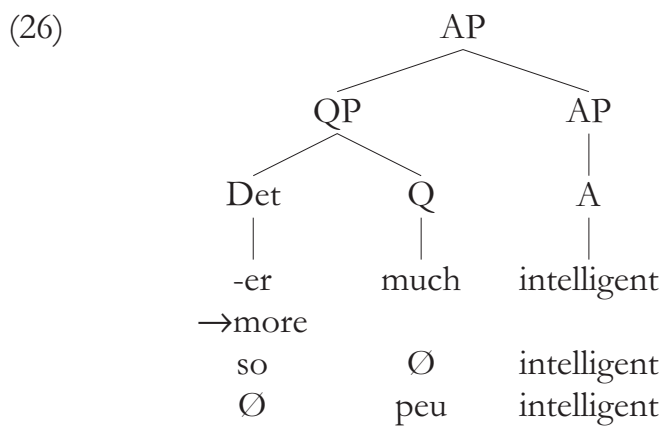
According to Jackendoff (1977) Bresnan's split degree system is mistaken. According to him all degree words are DegPs, and occupy the specifier position of AP.[11] His main argument is that adjectives usually do not combine with Qs. Bresnan's empty Qs are, according to him, non-existent. Jackendoff assumes that words such as *more* and *less* occupy the same position as *too* or *as*, and that these are not formed by combining a degree expression and a Q.

The analysis proposed above combines both Bresnan's split degree system and Jackendoff's insight that we do not seem to need Qs when combining a DegP and an AP. DQs, which often introduce a split system, are available in those cases where the corresponding Deg-head is not, as discussed in the previous section. Hence I assume with Bresnan that *more* consists of a Deg-head (Bresnan's Det) and a Q (cf. (15)), and that *peu intelligent* contains an empty Deg/Det-position (cf. (14)). In accordance with Jackendoff, however, I assume that *so intelligent* does not contain an empty Q, as the Deg-head directly combines with the adjective (cf. (8)). The approaches of Bresnan and Jackendoff have in common that they represent Deg-heads in the same way as DQs. This leaves the important distributional differences between

---

[11]   I changed Jackendoff's original terminology A′′′ and Deg′′′ into AP and DegP, respectively.

Deg-heads and DQs unexplained. A principled syntactic distinction between Deg-heads and DQs throws light on the question why we can say *more dresses* next to *more intelligent*, but not **so tea* next to *so intelligent*.

   Recently, Corver proposed an alternative to Bresnan's version of the split degree system hypothesis. Corver (1997) distinguishes a DegP and a Q and generates both projections as part of the functional superstructure of the adjective. The DegP is the highest projection and its head position is filled by elements such as *too* and *so*. This part of his proposal has been adopted above in 4.2.1. Corver's proposal diverges from mine where the QP is concerned, which in his view is part of the functional superstructure of AP as well. Corver's version of the split degree system is given in (27):

(27)   [$_{DegP}$ Deg [$_{QP}$ Q [$_{AP}$ A]]]

The main argument Corver puts forward for adopting this structure is based on a phenomenon he calls *much*-support, which is illustrated in (24) above, and repeated here in (28):

(28)   John is fond of Sue. Maybe he is even too *(much) so.

                                                                                      (= (24))

The obligatory presence of *much* in the context of *so* is explained as follows. The element *too* occupies the head position of the DegP. Given the structure in (27) *too* is separated from the adjective by the QP. Theta binding is a local operation, which cannot take place when the binder is separated from its bindee by an intervening XP. Corver argues that the required configuration is obtained by A-to-Q movement:

(29)
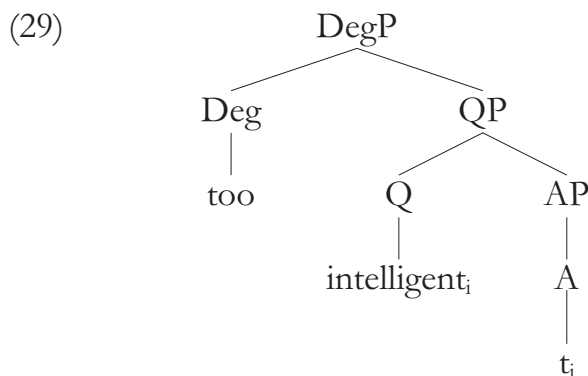
Under the assumption that pronominal *so* cannot undergo movement to Q, the interpretive relation between *too* and *so* cannot be established. Insertion of the dummy element *much* saves the structure, as it functions as a bridge between *too* and *so*. *Much*-support is similar to *do*-support. In verbal *so*-pronominalization contexts, the dummy verb *do* must be inserted to

establish a relation between the VP and tense:

(30)   John ate an apple and Sue *did* so too

According to Corver, the DQs *more*, *less* and *enough* occupy the Q position, which correctly predicts that *much*-support does not apply in the context of these elements:

(31)   Of all the careless people, noone is more (*much) so than Bill

Corver's account of *much*-support is attractive, but there is a significant drawback. Taking Corver's proposal seriously would mean that the hypothesis according to which DQs combine with all lexical items in the same way cannot be maintained. As I have shown in section 4.1, we do not want to project the DegP and the QP as part of the superstructure of VP, as this would prevent the verb from getting out of the VP via head movement. An analysis which generalizes over all the different contexts in which DQs are found is obviously preferable.

Moreover, extraction facts are in accordance with the adjunct status of *more*, though at first sight, they constitute evidence against an adjunction analysis. Corver argues that the Qs *more* and *less* cannot be extracted, similarly to the Deg-heads *how* and *too* in (9). The data supporting Corver's claim are given in (32):

(32)   a.   (?)How many IQ-points$_i$ is John [t$_i$ less smart (than Bill)]?
        b.   *How many IQ-points less is John smart (than Bill)?
        c.   How many IQ-points less smart (than Bill) is John?

The contrast between (32a) and (32b) can be taken as evidence that *how many IQ-points less* is not a constituent. This is in accordance with Corver's structure under the assumption that *less* occupies the Q position and the phrase *how many IQ-points* is generated in the specifier of QP. The impossibility of (32b) is not expected when this QP, with *less* in its head position and *how many IQ-points* in its specifier, is adjoined to AP.

However, the evidence is not conclusive. Corver suggests that adjectives such as *tall* have a measure phrase in their complement position, on a par with measure verbs such as *to weigh*, following the analysis of measure verbs of Koopman and Sportiche (1986). This complement has been moved to the left in for instance *[five feet$_i$ [tall t$_i$]*. The adjective *smart* in the examples in (32) is similar in this respect to *tall*. The phrase *how many IQ-points* should be seen as a measure phrase originating as the complement of the adjective *smart*. In that case the data in (32) follow independently of the position of *less*. Whether the QP containing *less* is adjoined or not, the string *how many*

IQ-points less does not form a constituent.

   Looking at adjectives that do not have an internal measure argument, we see that extraction facts support an adjunction analysis. In (33) *how much more* is extracted as a whole:

(33)   a.   (?)How much more is he [t_i afraid] of cats than of rats?
       b.   *How much is he more afraid of cats than of rats?

These data show that *more* in (33) cannot be a head selecting the AP, because this would block its movement along with *how much*.

   Summarizing, the proposals found in the literature have in common that they do not make a clear difference between Deg-heads and DQs on the basis of their distribution. Bresnan proposes that all adjectival degree expressions contain a Q element, which rises the question why only the ones with an overt Q occur in quantificational contexts. Jackendoff proposes that Qs do not occur in the adjectival degree system at all, which makes us wonder why certain adjectival degree expressions can function in quantificational contexts while others cannot. Corver makes a distinction between two categories of degree expressions. Roughly speaking, the elements I call Deg-heads are generated in the Deg position in his view as well, and the DQs (*more*, *enough* etc.), which do not trigger *much*-support, are generated in Q. However, the structure he proposes cannot account for the distribution of DQs in general.

4.3.3   *Much*-support in terms of Elsewhere

Much support is not an English-specific phenomenon. In the French example in (34) we see that when an adjective is pronominalized by *le* 'it', the DQ *autant* 'as much' has to be used instead of the Deg-head *aussi* 'as', while in the context of a real adjective only *si* is possible:

(34)   a.   Marie est aussi/*autant nerveuse que sa mère
            'Marie is as nervous as her mother'
       b.   *Marie est très nerveuse pour l'examen et sa mère l'est aussi
            qu'elle
            'Marie is very nervous for the exam, and her mother is as so as
            she is'
       c.   Marie est très nerveuse pour l'examen et sa mère l'est autant
            qu'elle
            'Marie is very nervous for the exam, and her mother is as much
            so as she is'

The way to save (34b) is not to insert an element such as *much*, but to replace the Deg-head *aussi* by the complex DQ *autant*, which was analysed above as an amalgam of *aussi* 'as' and an abstract Q corresponding to English *much*.

Quite in general, the elements that trigger *much*-support are Deg-heads (*as*, *so*, *too*), and the ones that do not are DQs (*more*, *enough*), as illustrated by the English *much*-support cases discussed above:

(35) a. John is fond of Sue. Maybe he is even too *(much) so. (= (24))
      b. Of all the careless people, noone is more (*much) so than Bill
                                                                    (= (31))

Given these distributional facts, *much*-support could be described as interchanging a Deg-head for the corresponding DQ. If we assume that there is no DegP present in the superstructure of *so* and its French counterpart *le*, the phenomenon of *much*-support follows from the Elsewhere Condition. In (34b) and (35a) the Deg-heads *aussi* 'as' and *too* cannot be used in combination with *le* and *so* respectively, which clears the way for the DQ. In sentences where the original adverbial modifier is a DQ, we expect *much*-support to be absent, as the DQ is insensitive to the categorial properties of *so* and *le*. Recall that for Corver (1997), as well, *so* has a special status. In Corver's view, *much* has to be inserted because *so* cannot move to Q.

The DegP is found in the context of adjectival projections only. It might be the case that *so* is a DegP itself, given that the form *so* also functions as a Deg-head. This immediately predicts the incompatibility of *so* with another Deg-head, as stacking of DegPs is excluded. In that case, **too so* is out for the same reason as **so too intelligent*. The French pronominal form used for adjectives is the clitic *le*. This form also functions as a pronominal clitic and a definite article. Given that pronominal clitics and the definite article are usually analysed as D-heads (cf. Raposo 1973, Uriagereka 1988), it is plausible that the pro-form *le* used for adjectives is of the category D as well. This would prevent it from being selected by a Deg-head as well. In brief, from the motivated assumption that the pro-forms used for adjectives *so* and *le* are not APs and the fact that DegPs exclusively select APs follows that the pro-forms cannot be selected by Deg-heads, and the impossibility of **as so* and **aussi le* 'as it' is expected. Obviously, modification by a DQ is still possible, because the DQ is not sensitive to the categorial properties of the phrase it modifies.

The account of *much*-support in terms of Elsewhere has an important advantage over Corver's analysis. It allows us to relate the behaviour of DQs in *much*-support contexts to the large distribution of DQs. DQs do not trigger *much*-support and they replace a corresponding Deg-head in a *much-*

support context exactly because they have such a large distribution, which makes them function as an elsewhere form. Within Corver's approach these facts are unrelated.

In this section I argued that *much*-support is due to the impossibility to modify the forms *so* and *le* by a Deg-head. On the basis of the Elsewhere Condition, we expect that as a result of the impossibility to use the more specific Deg-head, the corresponding DQ (the elsewhere form) can be used. This accounts for the alternations in (34) and (35).

4.4   Conclusions

In this chapter I proposed an analysis for degree quantifiers (DQs). I started out with the observation that DQs are found in the context of both nouns and verbs, whereas other Qs are restricted to either the nominal or the verbal system. I argued that the occurrence of the DQs in different categorial contexts is not the result of multiple categorial selection, but of the lack of categorial selection, corresponding to an adjunction structure. DQs theta select their host on the basis of the availability of a scalar theta position which can be saturated through identification by the DQ. I distinguished four different types of DQs: adjectival DQs such as English *much*, which may be preceded by a Deg-head (e.g. *so much*); complex DQs such as English *more* and French *tant* 'so much', which consist of a Deg-head and an adjectival DQ; classifier constructions, such as *a lot*; and finally former high degree adverbs such as *énormément* 'enormously', which are only found in French. The idea that DQs are insensitive to the categorial properties of their host is reinforced by the occurrence of a subset of DQs in the context of adjectives. I have argued that compatibility with adjectives is the normal case, but that many DQs are superseded by a Deg-head, which expresses the same scalar value. Deg-heads only combine with adjectives, and as a result of the Elsewhere Condition, they supersede the more general DQs in case they have the same lexical specification. Finally, I gave an analysis of *much*-support based on the Elsewhere Condition, which makes it possible to relate the phenomenon of *much*-support to the large distribution of DQs and the more restricted distribution of Deg-heads.

5　　　　　　　　Degree quantifiers
in the context of VPs

The possibility of combining DQs with verbs, in addition to their compatibility with nouns and adjectives, is one of the reasons not to assume that they function as selecting heads, but as adjoined phrases, insensitive to the categorial properties of their host. Adjunct status is in accordance with the fact that the verb is not hindered by the presence of a DQ on its way to a higher functional head position, as argued in section 4.1. In this chapter, I will discuss the distribution of DQs in the context of VPs in the light of the analysis proposed in chapter 4.

　In section 5.1 I will discuss the syntactic position of the DQ, and argue that it is adjoined to VP. In 5.1.1 I will show that the adverbial DQs are in fact adverbs, and do not derive from adnominal quantifiers. This discussion is relevant in the light of some recent proposals on the nominal origin of certain classes of verbs. In 5.1.2 I will discuss the linear position of the DQ with respect to VP in French, English and Dutch. In French the DQ either precedes or follows VP, in English the DQ is VP final, and in Dutch VP initial. The different orders can be derived maintaining adjunction to VP, given current theories of adverb placement, V movement and VP movement.

　Section 5.2 concerns the interpretation of adverbial DQs. I will show that different interpretations are found depending on properties of the predicate they modify. In 5.2.1 I will focus on properties of the scalar position found in VPs modified by a DQ. In the preceding chapters, I made use of two different scalar argument positions: the scalar q-position (quantity) and the g-position (grade). The q-position, which I introduced in chapter 2, is associated to the event position in the grid of a VP or to the r-position in the grid of an NP. The q-position is scalar in case the predicate has either a mass or a plural interpretation. The g-position is found in scalar adjectives; cases where DQs saturate a g-position were discussed in 4.3. It will be shown that VPs modified by a DQ may contain either a scalar q-position or a g-position. I will argue that stage-level VPs contain a q-position and in

some cases also a *g*-position, while individual-level VPs only contain a *g*-position. The distinction between *g*-positions and *q*-positions will be made on the basis of selection properties of different types of degree expressions. Whereas DQs are insensitive to the distinction between *g*- and scalar *q*-positions, another class of degree modifier, the high degree adverbs only saturate *g*-positions. The distribution of high degree adverbs will offer evidence that the two types of scalar theta positions are in fact different from a grammatical point of view. A DQ saturating a *q*-position is analysed in more traditional approaches as a quantifier, while a DQ which saturates a *g*-position is traditionally seen as an intensity marker.

In 5.2.2 the interaction between DQs and iterative interpretation will be discussed. According to Obenauer (1983, 1984) the DQ has an '*x*-times' reading, where *x* corresponds to the DQ. According to this view *beaucoup* would have a 'many times' reading, similar to *souvent*. I will show that this is not a reading of the DQ, but an interpretation triggered by the presence of a count predicate. The '*x*-times' reading is only found in the context of predicates which introduce minimal events.

5.1   The syntactic position of the adverbial DQ

In the preceding chapter I proposed that DQs are adjuncts, and may adjoin to any category containing a scalar argument position. Recently there have been some proposals that derive lexical verbs from nouns in a light verb construction. This raises the question of whether the adverbial DQ is in fact a modifier of VP and not adjoined to the NP hosting the trace of the incorporated noun. The question is important, because if there were evidence that the 'adverbial' DQ is in fact adnominal in its base position, this could be an argument against the idea that DQs lack categorial selection. In 5.1.1 I will show that the adverbial DQ is not related to an incorporated noun, and base generated in an adverbial position. Section 5.1.2 will briefly discuss the different linear orders of DQ and VP and how these can be derived within the VP adjunction analysis.

5.1.1   Adverbial DQs are adverbial

The idea that (certain) lexical verbs can be derived from light verb constructions containing an incorporated noun has been explored by several linguists (cf. for instance Hale & Keyser 1993, Khalaily 1997 for different implementations of this idea). Hale and Keyser claim that verbs such as *to laugh* and *to work* are lexically derived from the corresponding nouns by syntactic processes. The initial lexical projection contains an empty V which

has the base noun as its complement. The noun incorporates into V via head movement, yielding the structure in (1):

(1)

```
                          V′
                      ╱        ╲
                    V            NP
                 ╱     ╲          │
              Nᵢ          V        tᵢ
```
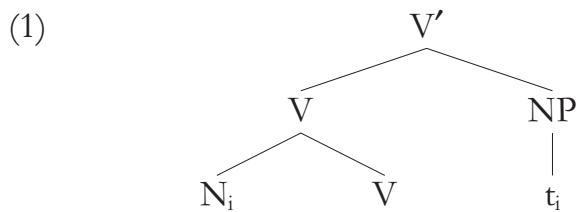
In this view, the initial syntactic structure of denominal verbs corresponds to what we find overtly in languages such as Basque, where *to sleep* translates as *lo egin* 'sleep do'.

Within a theory which derives denominal verbs in syntax, it could be argued that an adverbial DQ is the stranded modifier of the incorporated noun, as in (2):

(2)   a.   Jean a   [travail]ᵢ -é   [**beaucoup** *eᵢ*]
            Jean has   work   -ed   a-lot
            'Jean worked a lot'
       b.   Jean a   fait **beaucoup** de travail
            Jean has   done a-lot   of work
            'Jean did a lot of work'

Beaucoup 'a lot' in (2a) occupies the same position as in (2b), and hence it is only apparently an adverb. The question arises, then, whether DQs can act as adverbs at all. If the stranding analysis were tenable whenever the DQ is combined with a VP, one could argue that DQs select a category which is [+ N] (NP or AP) and that after all the DQs are sensitive to categorial properties of their host.

There is evidence, however, that a stranding analysis of the adverbial degree quantifier is not correct and that DQs must, at least in some cases, be generated in an adverbial position.

The first argument against the stranding analysis is based on the distribution of the adverbial DQ. Adverbial DQs show up in contexts where no possible nominal source is present. Consider the example (3):

(3)   Jean est   beaucoup à la maison
           Jean is   a-lot   at the house
           'Jean is at home a lot'

There is no noun incorporation in these examples, and yet adverbial *beaucoup* can be used. The absence of a nominal host for the DQ makes a stranding analysis for this sentence unavailable.

The second argument is semantic in nature and based on English. If we analyse the verb phrase *to box apples* as syntactically parallel to the phrase *to put apples in a box* as has been proposed by Hale and Keyser (1993), and if, moreover, we assume that adverbial *a lot* modifies the incorporated noun *box* we would expect the meaning of (4a) to be similar to the meaning of (4b). This is not the case. Instead, the meaning of (4a) is similar to one of (4c), where, as in the example in (3), we cannot indicate a noun which could be the underlying host of *a lot*:

(4)   a. John is boxing apples a lot
       b. John is putting apples in a lot of boxes
       c. John is putting apples in boxes a lot

We can conclude that it must be possible to generate DQs as adverbs in addition to their adnominal use, in accordance with the categorial underspecification analysis.

5.1.2   The position of DQs with respect to VP

The basic configuration I assume for the adverbial DQ is illustrated in (5):

(5)   VP
                         /\
                        / \
                      DQ   VP
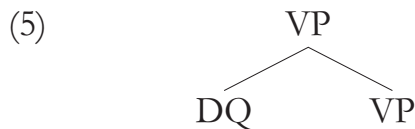
The linear position of the DQ with respect to the VP shows a lot of variation. I will not discuss the different orders in detail, but restrict myself to showing that within current theories of verbal and adverbial positions the different orders can be derived from the configuration in (5).

In French the DQ is ordered quite freely with respect to the elements of the VP. The only restriction seems to be that it cannot occur to the left of the inflected verb:

(6)   a. *Jean   beaucoup voit   Marie
           Jean   a-lot   sees   Marie
       b. Jean voit beaucoup Marie
           Jean sees   a-lot   Marie
       c. Jean   beaucoup a   vu sa petite soeur
           Jean   a-lot   has   seen his little sister
       d. Jean a   beaucoup vu   sa   petite soeur
           Jean has a-lot   seen his   little sister

    e. ?Jean a vu beaucoup sa petite soeur
        Jean has seen a-lot his little sister
    f. Jean a vu sa petite soeur beaucoup
        Jean has seen his little sister a-lot

The DQ always remains to the right of the finite verb, it precedes or follows the direct object, and can be either to the right or to the left of past participles and infinitives. Under Pollock's (1989) analysis of VP-adjoined adverbs the judgements for the sentences in (6a) to (6e) follow. These positions correspond, for instance, to the ones that may be occupied by *presque* 'almost' and *souvent* 'often', which Pollock analyses as VP adjuncts. Pollock assumes that the finite verb in French always moves to the higher functional projection T(ense)P. After verb movement, the VP adjoined adverb is to the right of the verb and to the left of the direct object. Past participles and infinitives, Pollock argues, optionally move to the Agr(eement)P projection, which is an additional functional projection in between TP and VP. This yields the two orders (6d) and (6e), the structures of which are given in (7):

(7)   a. [$_{Agr}$ [$_{VP}$ beaucoup [$_{VP}$ vu sa petite soeur]]
        b. ?[$_{Agr'}$ vu$_i$ [$_{VP}$ beaucoup [$_{VP}$ t$_i$ sa petite soeur]]]

The order in (6f), which is not allowed for *presque* and *souvent*, where the DQ follows the direct internal argument, is the only possible one in English:

(8)   a. *John a lot visited his sister
        b. *John visited a lot his sister
        c. John visited his sister a lot

The position of the DQ to the right of the verb and the direct object can be derived by assuming that adverbial DQs can or must adjoin to the right of VP. The possibility of right adjunction has recently been questioned by Kayne (1994), as mentioned in chapter 1. An interesting alternative to a right-adjunction account of sentence final adverbials has been developed by Barbiers (1995) and worked out for adverbs by Costa (1997). These analyses involve movement of the whole VP to the specifier of a left adjoined VP adjunct.[12]

---

[12]   Barbiers' motivation for movement is the need to form a structure in which the adjunct functions as a qualifier of the phrase which moves to its specifier. Movement is driven by semantic factors, which Barbiers makes precise in his Principle of Semantic Interpretation. I focus here on the structures created by Barbiers, which offer an alternative to right adjunction, and will not investigate the role of this principle with respect to DQs (but cf. section 6.2 below).

In Barbiers' framework it is possible to move the VP to the left of the DQ, yielding a VP final DQ. The resulting structure is given in (9):

(9)

```
                        VP
                      /    \
                   QP        t_i
                  /   \
               VP_i    QP
              / | \     |
        visited his sister  a lot
```
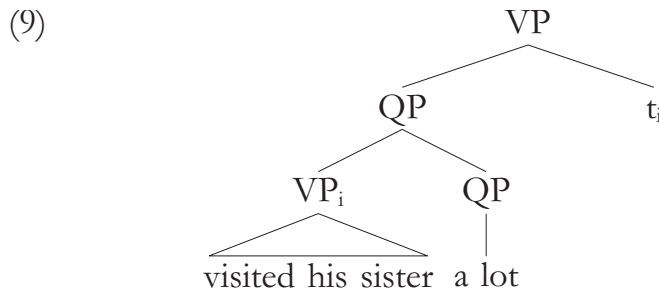
The trace t_i is bound by its antecedent given the slightly modified version of c-command Barbiers assumes.[13]

In Dutch the DQ has the same distribution as the VP adjoined adverb *vaak* 'often', as shown in (10):

(10)   a. Jan heeft [$_{VP}$ veel/vaak [$_{VP}$ zijn moeder   bezocht]]
           Jan has   a-lot/often   his mother   visited

       b. Jan heeft [$_{VP}$ zijn moeder$_i$ [$_{VP}$ veel/vaak   [$_{VP}$ t_i bezocht]]]
           Jan has   his mother   a-lot/often   visited

       c. *Jan heeft [$_{VP}$ [$_{VP}$ zijn moeder   bezocht] veel/vaak]
           Jan has   his mother   visited   a-lot/often

The finite verb in Dutch moves to a higher functional projection in matrix contexts (cf. Zwart 1997 and references cited there for discussion) and the direct object can be either within the VP or scrambled out of the VP, yielding the orders in (10a) and (10b), respectively. Contrary to what we see in French and English, the VP final order is not available.

In this section I have shown that the different orderings that are found for DQs in the context of VPs can be derived under a VP adjunction analysis given recent theories of adverb placement. A more detailed study of the different word order patterns, which aims to explain different order possibilities within each language and cross-linguistically, is beyond the scope of this thesis.

---

[13]   Within such an approach, it has to be stipulated that movement to a position adjoined to the specifier of QP is necessary in English, while this is optional in French. Similarly, if the right adjunction solution is chosen, it has to be stipulated that English DQs are right adjoined in the context of VPs. The DQ data do not make it possible to choose between a right adjunction analysis and a qualifier analysis in the spirit of Barbiers. See Barbiers (1995) for discussion of a number of phenomena that do. Costa (1996) discusses other cases of adverbs in sentence final position and claims that the right-adjunction analysis makes the wrong predictions. He shows that sentence final adverbs sometimes lack interpretations that the same adverbs do have if they occur to the left of the verb.

5.2   The interpretation of adverbial DQs

In characterizations of adverbial DQs in dictionaries we find terms such as *intensifier*, *durative adverb* and *expression of frequency*. In this section I will argue that the type of interpretation depends on the nature of the predicate, and is not due to ambiguity of the DQ.

5.2.1   Grades and quantities

I have assumed in the preceding chapters that scalar adjectives contain a *g*-position in their thematic grid which can be saturated through identification by a DQ or theta bound by a Deg-head. Plurals and mass nouns as well as VPs with a plural or a mass interpretation can be combined with a DQ due to the presence of a scalar *q*-position, which reflects the cumulative reference property of the predicate. While introducing the *q*-position in 2.1.4, some differences between the *q*-position and the *g*-position were discussed. The *q*-position depends on the presence of an *r*-position or an *e*-position and can be either scalar or non-scalar. Singular count nouns and VPs with a singular interpretation contain a non-scalar *q*-position, while NPs and VPs with a mass or plural interpretation contain a scalar *q*-position, which makes them compatible with DQs. The *g*-position, introduced by Zwarts (1992), is an inherently scalar position, corresponding to a lexical property of the predicate it is found in. Scalar adjectives, such as *friendly* and *intelligent*, contain a *g*-position, as a result of which they are compatible with a degree modifier.

We have seen so far that the distinction between *g* and *q* does not play a role for degree quantifiers. One could imagine, then, that the difference between the two types of scalar positions does not influence selection at all. In this section I will show that this is not the case. The distribution of degree modifiers in the context of VPs will provide evidence that the distinction between the two types of scalar positions is grammatically pertinent for selection. Evidence for this grammatical distinction between *g* and *q* comes from the distribution of DQs as compared to the distribution of high degree adverbs. High degree adverbs constitute a third class of words that set a degree, next to Deg-heads and DQs. Examples are *badly* in English, *erg* 'badly, very' and *verschrikkelijk* 'terribly' in Dutch and *terriblement* 'terribly' in French, and their properties will be discussed in 5.2.1.1. I will show that high degree adverbs are sensitive to the presence of a *g*-position, and cannot saturate a *q*-position. It will turn out that individual-level VPs, among which many VPs containing a psych verb, are similar to adjectives, and contain a *g*-position. Stage-level VPs, on the contrary, contain a *q*-position, and possibly also a *g*-position. In those cases where a DQ saturates

a *g*-position, it is analysed in more traditional approaches as an intensity marker. DQs saturating a *q*-position are usually called quantifiers.

In 5.2.1.2, I will give further evidence for the distinction between *g*-positions and scalar *q*-positions on the basis of the distribution of the DQ *veel* 'a lot' and the high degree adverb *erg* 'badly' in Dutch. As do other high degree adverbs, *erg* 'badly' selects a *g*-position, and cannot saturate a *q*-position. In Dutch, DQs expressing high degree can only saturate *q*-positions. This restriction is not a general property of DQs, as we have seen in the preceding chapter that a subset of DQs are found in the context of adjectives. I argued then that all DQs are compatible in principle with adjectives, but that some DQs are ruled out in adjectival contexts by the Elsewhere Condition (section 4.3.1). Below I will extend this approach and argue that DQs are always insensitive to the distinction between *g* and *q*. The fact that in Dutch high degree expressing DQs are not found in the context of expressions containing a *g*-position will be attributed to the existence of the neutral high degree adverb *erg* and the Elsewhere Condition. High degree adverbs theta select a *g*-position, and cannot combine with an expression containing a scalar *q*-position. The high degree DQ *veel* 'a lot' has the same meaning as the neutral high degree adverb *erg* 'badly', and is less specified, as it is compatible with both types of scalar positions. As a result *veel* 'a lot' functions as the elsewhere form, and can only be used in the context of expressions containing a scalar *q*-position.

5.2.1.1   High degree adverbs

High degree adverbs have a more restricted distribution than DQs, even though the two classes of degree expressions are close to each other in terms of their meaning. The example in (11) shows that the distribution of the English high degree adverb *enormously* is more restricted than that of the DQ *more*:

(11)   a.   enormously friendly
       a'. more friendly
       b.   John appreciated the movie enormously
       b'   John appreciated this movie more than the one he saw last week
       c.   *enormously books
       c'. more books
       d.   *Anne goes enormously to the movies
       d'. Anne goes more to the movies than Peter

Other degree expressions that behave like *enormously* are for instance *terribly*, *awfully* and *outrageously*. Dutch high degree adverbs, such as for instance *erg*,

have the same distribution as in English:

(12) a. erg   vriendelijk
          very   friendly
      b. Jan waardeerde de film   erg
          Jan appreciated   the movie   badly
          'Jan appreciated the movie a lot'
      c. *erg boeken
          badly books
      d. *Anne is   erg   naar de bioscoop   gegaan
          Anne   is   badly   to   the cinema   gone
          'Anne went badly to the movies'

As we have seen in 4.2.4, French is in this respect special. In French there are a number of former high degree adverbs, such as *énormément* 'enormously; a whole lot', which have the distribution of DQs:

(13) a. énormément   gentil
          enormously   friendly
      b. Jean a   énormément apprécié ce film
          Jean   has enormously   appreciated this movie
      c. énormément de livres
          enormously of books
      d. Anne va énormément au   cinéma
          Anne goes enormously   to-the   cinema
          'Anne goes to the movies a whole lot'

I will reserve the term 'high degree adverb' for expressions such as English *enormously* and Dutch *erg* 'badly', which do not have the distribution of DQs.

It is important to stress that high degree adverbs such as *enormously* and *erg* differ from Deg-heads (e.g. *too*), given that their compatibility with psych verbs such as *to appreciate*. Deg-heads only combine with adjectives, as has been shown in 4.2.1 above.[14]

(14) a. *Jan waardeerde Marie   te/even
          Jan   appreciated   Marie   too/as
          'Jan appreciated Marie too/as much'

___
[14] Dutch *zo* 'so' is possible, but has a larger distribution than the other degree words in other respects as well. It can, for instance, be used in combination with an indefinite noun *zo'n boek* 'so a book/such a book'. The third French Deg-word *aussi* 'as' can be used in this context but not with the intended meaning 'as'. *Jean a aussi apprécié Marie* means 'Jean appreciated Marie as well'. To get the intended meaning, the DQ *autant* has to be used.

    b.   *Jean a   si/très apprécié Marie
         Jean has so/very appreciated Marie
         'Jean has appreciated Mary very much/so much'
    c.   *John appreciated Mary as/too

Contrary to Deg-heads, high degree adverbs can undergo extraction, which shows that they must be maximal projections and not selecting heads (cf. sections 1.2 and 4.1):

(15)   Hoe erg ik hem ook   waardeer
       how badly I   him   ever appreciate
       'No matter how much I appreciate him'

The selection properties of high degree adverbs can be understood if we assume that they are not categorial selectors, on a par with DQs, but that they can only saturate a *g*-position, contrary to DQs which are insensitive to the difference between *g* and *q*. The argumentation leading to this idea is as follows. Scalar adjectives, such as *tall*, contain a *g*-position, and can combine with both Deg-heads (*too tall*) and high degree adverbs (*enormously tall*). Deg-heads are only found in the context of adjectives, and hence it is plausible to assume that their distribution is determined by categorial selection. High degree adverbs are also found in the context of psych verbs, which suggests that categorial selection does not play a role. Let us assume then that the distribution of high degree adverbs is the result of theta selection. It cannot be the case that high degree adverbs are compatible with both types of scalar positions, as we have seen that high degree adverbs cannot function as quantifiers in combination with plural and mass NPs and scalar stage-level VPs. We know that these predicates contain a scalar *q*-position, as they are compatible with DQs. A plausible explanation is that high degree adverbs are sensitive to the difference between *g* and *q* and theta select a *g*-position. English *enormously* and Dutch *erg* 'badly' are hence restricted to contexts providing a *g*-position. This implies that *g*-positions are not only found in scalar adjectives, but also in psych verbs. In the next section I will show that there are reasons to believe that individual-level predicates never contain a scalar *q*-position, and that degree modification of such predicates always involves saturation of a *g*-position.

   A striking property of words such as Dutch *erg* 'bad(ly)', when used as high degree adverbs, is that they lose part of their lexical meaning.[15] The word *erg* 'bad(ly)', when not used as a high degree adverb, has a negative connotation as in *het is erg* 'it is bad'. When used as an intensifier the

---

    [15]   In Dutch there is no formal distinction between an adverb and the uninflected form of the corresponding adjective.

negative connotation is absent: in *erg aardig* 'very nice', for instance, the term is neutral. Dutch has a rich collection of high degree adverbs. Next to *erg* some other items belonging to this class are *verschrikkelijk* 'terrible/ly', *ontzettend* 'dreadful(ly)' and *geweldig* 'marvellously'. These words originally have a negative or positive connotation, which disappears in the context discussed in the previous section. For instance, *geweldig* 'marvellous(ly)' has a positive connotation in *het is geweldig* 'it's great', but not in *geweldig vervelend* 'terribly annoying'. Similarly, *enorm* 'enormous(ly)' exchanges its original meaning 'very big' for a high degree interpretation, for instance in *ik verveel me enorm* 'I am enormously bored'. All words that can be used as high degree adverbs are scalar, and seem to imply a high degree in their normal use as well (i.e. when the literal meaning and connotations are present). English high degree adverbs such as *enormously*, *incredibly*, *awfully*, *terribly* and *outrageously* share this property.

Similar phenomena in which expressions lose part of their lexical meaning and are interpreted in terms of quantification or high degree are discussed in Postma (1995, 1996). Postma observes that coordinated structures can function as universal quantifiers or high degree expressions (cf. also section 3.3.1 above). Some examples are given in (16):

(16) a. Het schip   verging met   man en muis
          the ship   got-lost   with   man and mouse
          'The ship went down with everything on it'
      b. Hij klaagde   steen en been
          he   complained stone and bone
          'he complained terribly'

In (16) the lexical meanings of *steen* 'stone' and *been* 'bone' and to a lesser extent of *man* 'man' and *muis* 'mouse' have disappeared making place for universal quantification or expression of high degree. Postma shows that this typically occurs when two bare singular terms are coordinated.

High degree adverbs resemble Postma's coordinations in the sense that they involve expression of high degree and partial loss of lexical meaning. Contrary to the cases Postma discusses, the lexical counterparts of the high degree adverbs also imply high degree. The *g*-position corresponding to high degree seems to be what persists in the high degree adverb. Consider, for instance, the difference between lexical *verschrikkelijk* 'terrible/ly' and high degree *verschrikkelijk* in the examples in (17):

(17) a. de verschrikkelijke sneeuwman
          the abominable   snowman
      b. de verschrikkelijk   aardige sneeuwman
          the terribly   nice   snowman

Lexical *verschrikkelijk* in (17a) contains two open positions. The *g*-position is bound by an empty default Deg, and the other position is identified with the *r*-position in *sneeuwman*, yielding an individual who is both abominable and a snowman. The high degree adverb *verschrikkelijk* in (17b) contains only a *g*-position. If it also contained a second open position, the *sneeuwman* in (17b) would be as abominable as the one in (17a), which is clearly not the case. The difference between the two manifestations of *verschrikkelijk* follows. The high degree adverb *verschrikkelijk* only contains a scalar position, and cannot function as a qualifying adjective.

5.2.1.2 The difference between *g* and *q* and the Elsewhere Condition

Whereas in many cases DQs and high degree adverbs have a partially overlapping distribution, the Dutch DQ *veel* 'a lot' is in complementary distribution with the high degree adverb *erg* 'badly'.[16] In verbal contexts, *veel* is used with stage-level predicates while the high degree adverb *erg* is found in the context of the individual-level psych verbs (cf. Obenauer 1983, 1984 on the same distinction between German *viel* 'a lot' and *sehr* 'intensely'). Noun phrases combine with *veel* and not with *erg*, while *erg* is found in the context of adjectives, which do not allow for modification by *veel*. This first rough sketch of the distributional differences between *veel* and *erg* is illustrated in (18) and (19):

(18) a. STAGE-LEVEL VERBS (*veel*/ **erg*)
          Jan wandelt veel/*erg de laatste tijd
          'Jan walks a lot lately'
      b. NOUNS (*veel*/ **erg*)[17]
          Jan heeft veel/*erg boeken
          'Jan has a lot of books'

(19) a. PSYCH VERBS (*erg*/ **veel*)
          Jan waardeert Marie erg/*veel
          'Jan appreciates Marie a lot'

---

[16]   Some contexts where both are allowed will be discussed below. I will argue there that the choice between *veel* and *erg* has an effect on the interpretation of the sentence.

[17]   The use of *erg* with an NP is possible in cases such as *een erge idioot* 'a terrible idiot'. Here, *erg* modifies the degree of idiocy, not the number of idiots. For the time being I abstract away from these cases, to which I will come back in the next chapter.

b. ADJECTIVES (*erg/ *veel*)
   Jan is erg/*veel slim
   'Jan is very clever'

The distribution of *erg* 'badly' is typical for high degree adverbs, but *veel* has a more restricted distribution than DQs, as it cannot be combined with psych verbs. This is not a general property of Dutch DQs. The comparative and the superlative DQs *meer* 'more' and *het meest* 'most' can be used with psych verbs, and so can the DQs *weinig* 'little' and *een beetje* 'a bit', which express low degree:[18]

(20) a. Jan vertrouwt Marie   meer/minder dan Paul
          Jan trusts   Marie   more/less   than Paul
          'Jan has more/less confidence in Marie than in Paul'
      b. Pauls komst   verraste   me het meest
          Paul's coming   surprised   me the most
          'The fact that Paul came surprised me most'
      c. Jan waardeerde Marie   maar weinig/een beetje
          Jan appreciated   Marie   only   little/ a bit
          'Jan did not appreciate Marie a lot'

Other Dutch DQs expressing a high degree, *een heleboel* 'a whole lot' and *een hoop* 'a lot', seem to be less resistant to the psych verb context than *veel*, but still they show a clear contrast with *erg* in (21):

(21) a. Ik verveel me erg/*een heleboel/*een hoop
          I   bore   me   badly/ a whole-lot/ a lot
          'I am badly bored'
      b. Het   heeft me erg/*een heleboel/*een hoop verrast
          it   has   me badly/ a whole-lot/ a lot   surprised
          'It surprised me a lot'

Incompatibility with psych verbs seems to be a property of DQs expressing high degree in Dutch.

In other languages we do not find a similar restriction for DQs expressing high degree. In French, for instance, the high degree DQ *beaucoup* 'a lot' does not have the distributional restrictions found for Dutch *veel*. As the example in (22a) shows, *beaucoup* can be combined with psych verbs. The same obtains for English *a lot* in (22b):

---

[18] The status of *weinig* 'little' seems to be somewhat intermediary between *veel* and *more*. In many contexts that do not allow for *veel*, *niet erg* 'not badly' is preferred over *weinig*. I will leave the particular behaviour of *weinig* aside.

(22)   a. Jean a   beaucoup apprécié   ce film
            Jean has a-lot   appreciated this movie
        b. John appreciated this movie a lot

Both are examples of DQs which can be combined with psych verbs but not with adjectives (*beaucoup fatigué/ *a lot tired*).

   If we are right in assuming that high degree adverbs such as *erg* only combine with expressions containing a *g*-position, the complementary distribution of *erg* and *veel* shows that *veel* cannot saturate a *g*-position, and can be seen as a diagnostic for the presence of a *q*-position. Some stage-level predicates are compatible with both *veel* and *erg*. Those cases are interesting because the choice of either *veel* or *erg* influences the interpretation, reinforcing the idea that a distinction between two types of scalar argument positions determines the distribution of *veel* and *erg*:[19]

(23)   a.   Jan hoest veel
             Jan coughs a-lot
             'Jan coughs a lot'
        a'. Jan hoest erg
             Jan coughs badly
             'Jan has a bad cough'
        b.   Jan heeft Marie   veel   beledigd
             Jan has   Marie   a-lot offended
             'Jan offended Marie a lot'
        b'. Jan heeft Marie   erg   beledigd
             Jan has   Marie   badly offended
             'Jan offended Marie deeply'
        c.   We hebben samen   veel   gelachen
             we have   together a-lot laughed
             'We laughed a lot together'
        c'. We hebben samen   erg   gelachen
             we have   together badly laughed
             'We had great fun together'

The different implications of the paired sentences in (23) are rather subtle, but in general *veel* seems to modify quantity, and *erg* quality. Take for instance the sentences in (23b) and (23b'). The sentence in (23b) implies that Jan offended Marie frequently, not that he offended her deeply. The sentence in (23b') implies that Mary was deeply offended, but says nothing about the frequency of the offences. The opposition is even clearer in the

---

[19]   Cf. also Bennis & Wehrmann (1990) for discussion of the expression of high degree in the context of this type of predicates.

context of certain adjectival predicates:

(24) a. Jan is   veel   afwezig (de laatste tijd)
     Jan is   a-lot   absent   (the last time)
     'Jan is absent a lot (lately)'

a'. Jan is   erg   afwezig
    Jan is   very   absent-minded
    'Jan is very absent-minded

b. Jan is   veel   thuis   (de laatste tijd)
   Jan is   a-lot   at-home (the last time)
   'Jan is at home a lot (lately)'

b'. Jan is   erg thuis   in de taalkunde
    Jan is   well at-home in the linguistics
    'Jan knows his way well in linguistics'

c. Jan is   veel   aanwezig (de laatste tijd)
   Jan is   a-lot   present   (the last time)
   'Jan is present a lot (lately)'

c'. Jan is   erg   aanwezig
    Jan is   clearly   present
    'Jan shows his presence clearly'

In some of these cases the choice of *veel* or *erg* changes the interpretation of the predicate. Consider for instance (24a) and (24a'). In the former the predicate *afwezig zijn* 'to be absent' is understood as a stage-level predicate, and the sentence means that Jan is hardly ever there. In its stage-level interpretation, the adjective *afwezig* is not scalar, and does not contain a *q*-position. The individual-level interpretation of *afwezig* 'absent-minded' is scalar. In the context of the individual-level reading of the predicate only *erg* can be used. The examples in (24b) and (24b') show the same alternation between a stage-level and an individual-level interpretation dependent on the choice of high degree expression. In (24c') *aanwezig* 'present' has a scalar stage-level interpretation.[20]

----

[20]   One would expect that there are some contexts in which the two degree expressions can cooccur, namely if the high degree adverb specifies the intensity of an eventive predicate. However, sentences of this type are very strange, even though one has the feeling of understanding what the sentences should mean:

(i) a.   ?*Jan is veel   erg   ziek de   laatste tijd
          Jan   is a-lot   badly   ill   the   last   time
          'Jan suffers a lot from bad illnesses lately'

b.   ?*We hebben   veel   erg   gelachen de   laatste tijd
      we   have   a-lot   badly   laughed   the   last   time
      'We have had a lot of great fun lately'

We can conclude that *erg* but not *veel* combines with individual-level predicates. Stage-level predicates combine with *veel* or with both *veel* and *erg*, in which case *veel* indicates a high degree of quantity and *erg* intensity. The incompatibility of *veel* and individual-level predicates can be accounted for if individual-level predicates do not contain a scalar *q*-position. In chapter 2, I argued that the *q*-position is associated to the *e*-position in verbs, and to the *r*-position in nouns. This turns out to account for the absence of a scalar *q*-position in the context of individual-level predicates.

The status of the event argument in individual-level predicates is a matter of debate. According to Kratzer (1989), individual-level predicates are non-eventive and do not contain an event argument. This is, according to Kratzer, the reason why they cannot normally be quantified by an adverb of quantification:

(25)   *Mary often knows French

According to others (Higginbotham 1985 and De Swart 1991) all verbs are eventive in the sense that they contain a Davidsonian argument position. De Swart argues that the reason why sentences such as (25) are excluded in the context of individual-level predicates is the existence of a uniqueness presupposition on the Davidsonian argument of individual-level predicates, which she formulates as follows:

> **Uniqueness presupposition on the Davidsonian argument**
> The set of spatio-temporal locations that is associated with an individual-level or a 'once-only' predicate is a singleton set for all models and each assignment of individuals to the arguments of the predicate
>
> De Swart (1991:59)

Both approaches predict that individual-level predicates do not contain a scalar *q*-position and as such cannot be modified by *veel*. If we assume, as does Kratzer, that individual-level predicates lack an event position, we do not expect to have a *q*-position either, because the *q*-position depends on the presence of the event argument. If we follow De Swart, individual-level predicates contain an event variable but function as 'once-only' predicates, which means that they are similar to singular expressions. As a result they do not have cumulative reference, and hence contain a non-scalar *q*-position, on a par with singular noun phrases and other 'once-only' predicates. Non-

---

Marcel den Dikken points out to me that the sentences improve when *veel* is modified (*best wel veel* 'quite a lot'), or when *veel* and *erg* are separated from each other by an adverbial phrase (e.g. *zonder aanleiding* 'without any reason'. It might be the case that the impossibility of **veel erg* 'very badly', where *veel* would be the modifier of *erg*, influences the judgements of the sentences in (i).

scalar *q*-positions cannot be saturated by a DQ, from which the incompatibility of *veel* and individual-level follows.

The distinction between *g*- and *q*-positions can also account for the behaviour of a number of English adjectives which can be modified by either *very* or *much*. Next to *very different*, for instance, *much different* can be formed. I argued in 4.3.1 that *much* is normally ruled out in the context of adjectives by the Elsewhere Condition, as its counterpart *very* is more selective. Under the assumption that *very* is not only restricted to adjectives but also to *g*-positions, the lexical property of *different* which makes it compatible with *much* next to *very* can be characterized as follows. Next to *different[1]*, which contains a *g*-position on a par with other scalar adjectives, there exists *different[2]*, which contains a *q*-position. Depending on which *different* is chosen, either *very* or *much* is the appropriate degree expression to use. *Very* blocks the use of *much* with *different[1]* as a result of the Elsewhere Condition, and only *much* can be used to saturate the *q*-position in *different[2]*.

In the previous chapter we have seen quite a number of pairs similar to *very* and *much* whose complementary distribution was accounted for by the Elsewhere Condition. In this light it is appealing to attribute the complementary distribution of Dutch *veel* and *erg* to the Elsewhere Condition as well. Assume that *veel* and *erg* have exactly the same specification (namely neutral high degree). The DQ *veel*, like other DQs, is compatible with any scalar position (*g* or *q*), whereas *erg*, like high degree adverbs in general, is restricted to contexts providing a *g*-position. The Elsewhere Condition states that in case one can choose between two forms, the more specific form wins. This yields the right result for *veel* and *erg*. High degree adverbs are combined with grades, while high degree DQs are combined with quantities and are ruled out in the context of grades because of the existence of the more specific high degree adverb *erg*.

It needs to be stressed that *veel* is the elsewhere form, not *erg*. This is justified, because the distribution of *erg* is standard for a high degree adverb, while *veel* has a more restricted distribution than other DQs. The data suggest that it is possible for elements to refer specifically to a *g*-position, and exclude other scalar theta positions, but that it is not possible to specifically require the presence of a scalar *q*-position. This asymmetry can be related to the fact that the *q*-position is not an inherently scalar position. Singular count nouns, for instance, contain a non-scalar *q*-position. The *g*-position, to the contrary, is inherently scalar, and hence can be seen as a special type of scalar position.

The high degree adverb *erg* is neutral if compared to the other high degree adverbs in Dutch. *Verschrikkelijk* 'horribly', *ontzettend* 'dreadfully', *geweldig* 'marvellously' etc. all correspond to a very high degree and are stylistically marked. The form *erg* corresponds to a neutral high degree and is not stylistically marked. In this respect it corresponds more precisely to *veel* than

the other high degree adverbs. Plausibly, the presence of two perfectly neutral forms which have the same functional interpretation is a necessary condition for the Elsewhere Condition to apply. This can be motivated on the basis of Portuguese, where no neutral high degree adjective exists. In Portuguese high degree adverbs are restricted to grades and alternate with the high degree DQ *muito* 'a lot' in the context of psych verbs and adjectives:[21]

(26)   a.   Esse filme   afradou-me terrivelmente/muito
             this movie   pleased-me   terribly/ a-lot
             'I liked this movie a (whole) lot'
       b.   Este livro   é   terrivelmente/muito bom
             this book   is   terribly/ much   good
             'This book is terribly/very good'
       c.   Dormi   terrivelmente
             I-slept   terribly
             'I slept very badly'
             NOT 'I slept a lot'
       d.   Dormi   muito
             I-slept   a-lot
             'I slept a lot'

The data in (26) show that in Portuguese the high degree adverb *terrivelmente* 'terribly' cannot bind the *q*-position of an eventive predicate. However, in the context of a *g*-position both the high degree adverb and the high degree DQ *muito* can be used. Contrary to what we see in Dutch, the high degree DQ in Portuguese is not in complementary distribution with high degree adverbs, and has its maximal distribution, ranging from adjectives to stage-level VPs. The absence of a neutral high degree adverb in Portuguese, corresponding to Dutch *erg*, seems to be the reason why Elsewhere does not apply.

   In French, too, we find high degree DQs in the context of psych verbs (cf. (22a)). As in Portuguese there is no neutral high degree adverb corresponding to Dutch *erg*, hence the overlap in distribution of high degree adverbs and DQs in the context of psych verbs is expected. Contrary to French, Portuguese does not have, however, DQs such as *énormément* 'enormously/a whole lot', which derive from high degree adverbs. The class of DQs consisting of former high degree adverbs, presented in 4.2.4, seems to be a typically French phenomenon.

   A naïve way to account for these DQs is by assuming that in French high degree adverbs are not sensitive to the *g/q* distinction, and hence form a

---

21   Thanks to João Costa for the Portuguese judgements and data.

subclass of DQs. This view is too simple, however. It is not the case that all high degree adverbs are equally well accepted in quantificational contexts, even if the tendency of high degree adverbs to develop into DQs is clearly present. *Rudement* 'rudely', for instance, is not accepted by all speakers as a DQ, which shows that the g/q distinction plays a role in French as well. I will leave the question of why French high degree adverbs tend to turn into DQs for further research.

In this subsection I gave further evidence for the idea that the distinction between g-positions and scalar q-positions is relevant for selection. The g-position is found in adjectives, psych verbs and a small set of stage-level verbs while scalar q-positions are introduced by eventive verbal predicates and NPs with a mass or plural interpretation. High degree adverbs only combine with expressions containing a g-position, while DQs are in principle insensitive to the distinction between g and q. In Dutch there is a complementary distribution between high degree adverbs and high degree DQs, which I attributed to the Elsewhere Condition. The overlapping distribution of high degree adverbs and high degree DQs in French and Portuguese correlates with the lack of a maximally neutral high degree adverb in these languages.

The blocking effects introduced by the Elsewhere Condition in the domain of neutral high degree expressions are summarized in table 1 (EW stands for Elsewhere, DQs are put in italics).

context	Dutch	French	English	Portuguese
g-position/AP	erg	très	very	*muito*
g-position/EW	erg	*beaucoup*	*much* *a lot*	*muito*
scalar pos/EW	*veel* *een hoop*	*beaucoup*	*much* *a lot*	*muito*

<div align="right">TABLE 1</div>

The less specific the context, the more languages use a DQ to express neutral high degree. The most specific elements, *très* and *very*, only combine with APs containing a g-position. The Dutch high degree adverb *erg* is not sensitive to categorial properties of its host, but it does depend on the presence of a g-position. DQs, finally, are only sensitive to a scalar position, and therefore can be used in all three contexts unless a more specific form is available. Two neutral high degree forms may have the same distribution if they are equally specific (e.g. *a lot* and *much*), as in that case the Elsewhere Condition does not apply.

5.2.2   Iteration

As I said at the beginning of section 5.2, DQs are characterized in dictionaries as adverbs of intensity, durative adverbs and iterators. In 5.2.1 I showed that the expression of intensity does not depend on the DQ itself, but on the context in which the DQ is found. In this section I will give a similar explanation for the difference between durative and iterative 'readings' of DQs, illustrated in the French examples in (27a) and (27b), respectively:

(27)   a.   Jean   a   beaucoup dormi   *durative*
            Jean   *has*   *a-lot*   *slept*
       b.   Jean   a   beaucoup rencontré Marie   *iterative*
            Jean   *has*   *a-lot*   *met*   *Marie*

Obenauer (1984, 1985, 1994) qualifies DQs as inherent iterators. According to him the DQ has a so-called '*x*-times' interpretation, where X stands for the quantifier. Thus *beaucoup* 'a lot' corresponds to 'many times', *peu* 'little' to 'few times' etc.   *Beaucoup* and *peu* have, according to Obenauer, an interpretation which is very close to the one borne by the adverbs of quantification *souvent* 'often' and *rarement* 'seldom'. I will show in this section that the '*x*-times' interpretation is not a property of the DQ, but depends on the presence of a count predicate. The term count is used here for predicates which introduce minimal parts. Next to the presence of a count predicate, there is a second source of iterative readings in the context of DQs. This second type of iteration results form pragmatic factors, and does not involve an '*x*-times' reading. The examples discussed will be from French, which in this respect is essentially the same as Dutch and English.[22]

Before tackling the different types of iteration in the verbal system, I will briefly comment on the effect of mass and count predicates in the context of nouns. The choice of either a plural or a mass noun has clear repercussions for what the DQ evaluates.[23] In the context of a count noun, DQs evaluate the number of objects, and in the context of a mass noun, they give an indication of the global amount of stuff. The difference is illustrated in (28):

---

[22]   This section is based on parts of Doetjes (1994, 1995), where the interaction of DQs and the mass/count distinction is discussed in relation to quantification at a distance.

[23]   Count mass nouns behave like plurals in this respect.

(28) a. Jean a vu plus de films que Pierre
          Jean has seen more of movies   than Pierre
      b. Jean a mangé moins de chocolat que Pierre
          Jean has eaten   less of chocolate   than Pierre

(28a) is true in a situation in which Pierre has seen two very long movies, and Jean four short ones which all together took less time than the two movies Pierre saw. Even though the total quantity of 'movie' Pierre has seen is larger, the sentence true, because it states something about the number of movies, not about the quantity of 'movie', and the number of movies Jean has seen is larger than the number of movies Pierre has seen. (28b) illustrates the opposite. If Jean has eaten ten small chocolates, and Pierre one big chocolate bar which contains more chocolate than the ten chocolates Jean ate, the sentence is still true. Jean ate less chocolate than Pierre did, even if Jean ate ten chocolate objects and Pierre only one. In chapter 2, the difference between count plurals and mass nouns such as *chocolate* was formalized as a difference between atomic structures and atomless structures, following Bunt (1985) and Landman (1989). Atomic structures provide a criterion for counting and non-atomic ones do not. The DQ evaluates the number of atoms if the atoms are provided by the predicate. Otherwise the global amount is taken into account, for which a proper measure (e.g. weight or volume) has to be chosen. The number of items may be an appropriate measure only in case the items are comparable in form and weight. In the context described above, where Jean eats small pieces of chocolate and Pierre eats one big one, they are not. The interpretive differences of atomic and atomless predicates in the context of DQs show that it is not the DQ which individuates. Individuation has to be present in the predicate, it is not introduced by the DQ.[24]

---

[24]   Child language data show that young children prefer to count objects. Gathercole (1985a) has conducted an experiment that evaluated the children's understanding of the degree quantifier *more*. She let the children evaluate two sets of stimuli on a piece of paper for a series of mass and count nouns, where one set would have a greater number of objects and the other a greater overall mass. The children where asked which piece of paper contained *more X*, and the correct response would be the one with the greater overall mass in the context of a mass noun and the one with the greater number in the context of a count noun. Children between 3 1/2 and 5 1/2 clearly performed better on count nouns than on mass nouns, and showed a strong tendency to evaluate the number of objects and not the overall mass. This is interesting in the light of other findings of Gathercole's with respect to the mass/count distinction. Gathercole (1985b) shows that children make the mass/count distinction at first on the basis of morphological information, and not on the basis of semantic information (cf. also Gordon 1982). At a later stage the systems become more flexible and semantics starts to come into play. It is hence plausible that younger children do not take into account different semantic structures for mass and count nouns yet. Cf. also Gathercole (1986).

Similarly, it can be shown that the 'x-times' interpretation and durativity are not inherent features of ambiguous DQs, but depend on the nature of the predicate. The 'x-times' interpretation is provoked in the context of a count predicate, whereas duration is found in the presence of a mass predicate. The examples in (29), taken from the *Grand Robert*, illustrate, according to the dictionary, the expression of 'frequency' (29a) and 'duration' (29b), respectively, and can be compared to the ones in (27):

(29)   a.   Il va   beaucoup au   cinéma
            he goes   a-lot   to-the   cinema
            'He goes to the movies a lot'
       b.   Il a   beaucoup plu
            it has a-lot   rained
            'It rained a lot'

In (29a) the predicate is count. In chapter 3 I argued that the bounded reading is due to the presence of a resultative SC containing an empty inchoative event variable and an operation of iteration. Count predicates provide us with minimal parts. The DQ evaluates the number of occasions at which a minimal going-to-the-movies event by a certain person took place, yielding a 'many-times' interpretation. In (29b) the predicate is mass, and does not provide us with minimal events. For (29b) to be true, there must have been a lot of raining. The sentence is vague with respect to the number of times it has rained. This does not mean, however, that (29b) cannot be true in a situation in which there have been a lot of showers. As a lot of showers usually produce a lot of rain, (29b) does not exclude such a situation, but the situation in which there are many showers is not a separate reading of the sentence. This is confirmed by (30), where a comparative DQ is used:

(30)   Aujourd'hui   il a   plu   davantage   que hier
       today   it has rained more   than yesterday
       'Today it rained more than yesterday'

If there were three short showers today, while it has rained constantly for 5 hours yesterday, (30) is false. The total amount of rain is evaluated and not the number of times it rained. Using *souvent* 'often' instead of *beaucoup*, the 'many-times' reading shows up independently of the predicate:

(31)   a.   Il va   souvent   au   cinéma
            he goes   often   to-the   cinema
            'He often goes to the movies'

b. Il a   plu   souvent
   it has rained often
   'It rained often'

In (31b) there it has been raining many times. The examples show that *souvent*, contrary to *beaucoup*, is an inherent iterator. Only in the context of a count predicate adverbial is *beaucoup* similar to the inherent iterator *souvent* (cf. chapter 9 for a comparison between *beaucoup* and *souvent*). The 'many-times' interpretation is the result of the interaction between the DQ and a predicate having atomic events in its domain of denotation. The differences in interpretation in the context of mass and count predicates are parallel in the nominal and verbal systems, and depend on the presence or absence of minimal parts in the denotation of NP and VP.

Obviously it is not necessary for a mass expression to refer to a single portion of matter or process. A mass can be divided into arbitrary portions. The context described for (28b) illustrates this for nouns. A mass of chocolate consisting of many small portions can be less chocolate than a mass consisting of one big portion. The same obtains for verbal predicates. A lot of raining can consist of a lot of showers or but may also correspond to a long raining interval or anything in between. This would be quite an uninteresting observation if the iterated reading were not strongly preferred or even required under certain conditions. These cases should not be confused with the '*x*-times' interpretation in the context of a count predicate. Consider, for instance, the sentence in (32), which has, according to the *Trésor de la langue française*, a 'frequency' interpretation, and as such illustrates the possible confusion:

(32)   Télémaque, il est beaucoup sur le quai [...]   on l'y
       Télémaque   he is a-lot   on the quay   one him-there
       trouve à toute heure
       finds   at every hour
       'Télémaque is on the quay a lot, one finds him there all the time'

The predicate in (32) is mass, but still we interpret Télémaque's being on the quay not as constant, but as a situation which repeats itself. Note, however, that the interpretation is distinct from the 'many-times' interpretation. There is a difference between Télémaque being on the quay many times and him being there a lot. It is still the total amount of being on the quay which is relevant for the evaluation of the DQ, not the number of times he is there.

The difference between the 'many-times' interpretation in the context of a count predicate and the multiple events interpretation in (32) can be described as a distinction between non-arbitrary and arbitrary individuation

of events. In the context of a count predicate the individuation is non-arbitrary, and corresponds to minimal events. In examples such as (32) individuation is arbitrary, and the number of events is undetermined.

The source of the multiple event interpretation of (32) seems to be the habitual interpretation of the sentence. Télémaque has the property of being on the quay a lot, and if we take an arbitrary time interval, we will see that during a large part of this time interval Télémaque is in fact on the quay. The sentence suggests that Télémaque is not continuously present on the quay, which would yield the single, continuous event interpretation. This can be explained through pragmatic factors, making use of Grice's (1975) theory of conversational implicatures. Grice states that we always try to be as informative as possible. If a less informative form is used, this implies that the more informative form does not correspond to the situation, which can be seen as a pragmatic Elsewhere effect. In a situation in which we know Télémaque is on the quay all the time, the sentence in (32) is true in principle, but the use of *toujours* 'always' instead of *beaucoup* will be strongly preferred, being more informative as it excludes those situations in which Télémaque is a lot, but not always on the quay. As we have chosen to use the less informative form *beaucoup*, we implicate that there are moments at which he is not on the quay yielding a form of iteration. Conversational implicatures do not affect the truth value of a sentence and hence the effect can be cancelled, as illustrated in (33):

(33)   Pierre est   beaucoup à la maison,   en fait, il ne   sort
        Pierre is   a-lot   at the house   in fact   he NEG *leaves*
        plus   jamais
        anymore ever
        'Pierre is at home a lot, in fact, he doesn't go out at all'

The multiple event reading in (32), where an arbitrary individuation of events is found, can be seen as the result of conversational implicatures, and is not the result of an '*x*-times' reading of the DQ.

In this section I have argued that iterativity and durativity do not constitute separate readings of the DQ. Count predicates introduce minimal parts and mass predicates do not. In the nominal system the DQ evaluates the number of objects in the context of a count predicate only. Similarly, in the verbal system the interaction with a count predicate triggers an '*x*-times' interpretation in Obenauer's (1984) sense. This has the result that in these contexts, *beaucoup* 'a lot' roughly corresponds to the frequency adverb *souvent* 'often'. The '*x*-times' interpretation is absent in the context of a mass predicate, though the interaction between habituality and conversational implicatures can produce a multiple event interpretation, in which case the number of events is still irrelevant.

5.3   Conclusions

In the preceding sections I have argued that the distribution of DQs in the context of verbs follows from the underspecification analysis of DQs presented in chapter 3. A DQ must be adjoined to a maximal projection which contains a scalar argument position that can be saturated through identification by the DQ. In the first part of the chapter I have shown that the adjunction analysis of the adverbial DQ is plausible from a syntactic point of view. The second part focused on interpretive issues. I discussed the necessity of a distinction between *g*- and *q*-positions. *G*-positions are found in scalar adjectives and scalar psych verbs, and scalar *q*-positions in stage-level VPs and NPs with a mass or plural interpretation. High degree adverbs theta select a *g*-position. DQs are in principle insensitive to the distinction between *g* and *q*. I argued that DQs can be excluded in the context of a *g*-position as a result of the Elsewhere Condition. In Dutch the use of DQs expressing high degree (*veel* 'much', *een hoop* 'a lot') cannot saturate a *g*-position, due to the existence of the neutral high degree adverb *erg*. *Veel* and *erg* share part of their lexical specification (neutral high degree) but *erg* is more specific because it theta selects a *g*-position, and hence prevails over *veel*. The type of position saturated by the DQ influences the interpretation. In phrases with a *g*-position the DQ expresses the degree of intensity, and in the context of a *q*-position it expresses a degree of quantity. Mass and count properties of the predicate that the DQ combines with also influence the interpretation. I argued that the difference between an '*x*-times' interpretation and a global quantity interpretation depends on the mass or count properties of the predicate, and is not the result of lexical ambiguity of the DQ. In general we have seen that the DQ has a constant interpretation, and that apparent different 'readings' are provoked by the context.

6   Degree quantifiers in the context of NPs

In this chapter I will discuss some issues concerning the combination of DQs and NPs. The aim is to keep the specification of DQs maximally simple, and to attribute the peculiarities of the distribution and behaviour of DQs in nominal contexts to characteristics of the nominal system, not to the DQ.

In 6.1 I will again address the distinction between *g*-positions and *q*-positions, elaborating on the discussion in the previous chapter. As in the verbal system, both types of scalar positions play a role in the nominal system, though it turns out that there are some interesting differences between NPs and VPs in this respect. In 6.2 the position of DQs with respect to adjectives will be discussed. French is a language with postnominal adjectives, which are, according to several linguists, the result of movement of the noun to the head of the functional projection Num(ber)P (cf. Valois 1991 and Bernstein 1993). Given this approach to adjective placement, the fact French DQs always occur to the left of the noun would imply that DQs are adjoined to NumP, not to NP. I will argue that the evidence for N-to-Num movement is not conclusive, which will allow me to maintain that the DQ is adjoined to NP. A further peculiarity of French DQ-NP combinations is the obligatory presence of *de* 'of' as in *beaucoup de livres* 'a lot of books'. This phenomenon will be studied in 6.3 and I will argue that *de* has to be inserted to ensure case marking on the NP (cf. Chomsky 1981). Section 6.4 concentrates on partitive noun phrases containing a DQ, such as *beaucoup de ces livres* 'many of these books'. Partitives trigger a proportional reading in the context of some DQs. I will argue against Partee's (1988) proposal that the proportional readings are due to ambiguity of the quantifier. Section 6.5 recapitulates the main points of the chapter.

6.1   Grades and quantities in the nominal system

In chapter 2 it was argued that mass nouns and plurals contain a scalar *q*-position, while singular count nouns contain a non-scalar *q*-position. In accordance with this, DQs combine with mass nouns and plurals, not with count singulars (cf. 4.1):

(1)   a.   #beaucoup de cheval
               a-lot   of horse
       b.   beaucoup de chevaux
               a-lot   of horses
       c.   beaucoup de thé
               a-lot   of tea

This section examines properties of the *q*-position found in NPs. I will show that the distinction between the *g*-position found in adjectives and the scalar *q*-position in NPs is a matter of linguistic representation, and is not based on a conceptual difference between grades and quantities.

   Comparing argumental noun phrases with lexically related adjectives shows that in certain cases the same conceptual scale can be realized as a quantity or as a grade, depending on the way it is syntactically realized. In order to show this I will make use of the distribution of *erg* 'badly' and *veel* 'a lot' in Dutch. In section 5.2.1 it has been argued that *erg* and *veel* are diagnostics for the presence of a *g*-position, corresponding to a **grade**, and a *q*-position, representing a **quantity**. *Erg* combines with grades, and *veel* with quantities. On the basis of the distribution of *erg* and *veel* I will argue that grades and quantities are linguistic notions that are clearly distinct from their conceptual counterparts. A quantity is associated to either an *e*-position, in verbs, or to an *r*-position, in NPs. Adjectives, no matter what type of conceptual scale they define, linguistically represent a grade.

   Intuitively the difference between a grade and a quantity might be described by stating that a grade is abstract and a quantity is concrete. We would talk about a grade or degree of happiness and a quantity of sand, not the other way around. Looking at language, both the situation in which something that intuitively is a grade behaves like a quantity and the opposite one, where an intuitive quantity is represented as a grade, occur.

   The paradigm in (2) is an example of an abstract scale that intuitively seems to be a **grade**:

(2)   a.   Jan heeft veel geluk   in de liefde
               Jan has   much luck   in the love
               'Jan has a lot of luck in love affairs'

b. Jan is   erg gelukkig   in de liefde
   Jan is   very lucky   in the love
   'Jan is   very lucky in love affairs'

There is no obvious difference in meaning between these sentences, but given the use of *veel* 'a lot' in (2a) and *erg* 'very' in (2b), we want to call the scalar argument position in (2a) *q* and the one in (2b) *g*. The difference between a *q*-position and a *g*-position does not correspond in this case to a conceptual difference, but to a syntactic difference. The word *geluk* 'luck' is an argumental noun phrase, and hence it contains an *r*-position to which a *q*-position is associated. The word *gelukkig* 'lucky' is a scalar adjective, which means that it has an open *g*-position in its grid. The two scales in *geluk* 'luck' and *gelukkig* 'lucky' are conceptually the same, but their representation in syntax differs.

The opposite situation is illustrated in (3). In these sentences a scale which would qualify as a quantity from a conceptual point of view is represented by either *g*-position or a *q*-position:

(3)   a.   Dit gerecht bevat   veel   zout
            this dish   contains a-lot   salt
            'This dish contains a lot of salt'
       b.   Dit gerecht is   erg zout
            this dish   is   very salty

Again the sentences have very similar meanings. In both cases we have the impression that we are talking about an important **quantity** of salt, and yet, when *zout* is used as an adjective as in (3b), this 'conceptual quantity' is represented as a grade. Given that adjectives cannot be argumental and contain neither an *r*-position nor a *q*-position, the scale has to be represented as a *g*-position.

The abstract noun/adjective pair in (2) and the concrete noun/adjective pair in (3) show, on the one hand, that a conceptual grade (*luck/lucky*) can be projected in language as a quantity, and, on the other, that a conceptual quantity (*salt/salty*) can be projected as a grade in an adjective.

In certain expressions nouns do not function as arguments. As the *q*-position depends on the presence of the *r*-position and referentiality, we expect no *q*-position in predicative nominals. Predicative nominals are hence expected to be similar to adjectives, which will turn out to be correct.

In French non-argumental nominals can be detected by the absence of the indefinite determiner. Bare plurals and mass nouns cannot function as arguments in French and have to be marked by an indefinite article. In the example in (4a) the indefinite article *du* 'of the, some' is lacking, which I take to be evidence for the predicative status of the noun. If the noun is an

argument, as in (4b), the indefinite article must be present:

(4)   a.   Jean   a   (*du)   peur
           Jean   has   (of-the)   fear
           'Jean is afraid'
      b.   Jean   a   *(du)   fric
           Jean   has   (of-the)   money
           'Jean has money'

This correlates with the lack of *de* in constructions with a DQ. Normally *de* has to be present (cf. 6.3 below):

(5)   a.   Jean   a   trop   (*de)   peur
           Jean   has   too-much   (of)   fear
           'Jean is too much afraid'
      b.   Jean   a   trop   *(de)   fric
           Jean   has   too-much   of   money
           'Jean has too much money'

In some cases the noun phrase is ambiguous between argument and predicative use, indicated by optionality of *de*:

(6)   a.   Cela   me   fait   (du)   plaisir
           that   me   does   (indef art)   pleasure
      b.   Cela   me   fait   énormément   (de)   plaisir[25]
           that   me   does   enormously   (of)   pleasure
           'That gives me (much) pleasure'

The Dutch sentence corresponding to (6b) can contain either *veel* or *erg*, without clear difference in meaning:

---

[25]   Predicative nouns are adjective-like in French, as they can combine with Deg-heads (cf. 4.2.5):

(i)   Cela   me   fait   très   plaisir/   si   plaisir
           this   me   does   very   pleasure/   so   pleasure
           'This gives me a lot of pleasure/so much pleasure'

In Dutch Deg-heads cannot be used in this context:

(ii)   *Dat   doet   me   even/te   plezier
           that   does   me   as/too   pleasure

(7)   Dat   doet me veel/erg   plezier
           that   does   me a-lot/ badly   pleasure
           'That gives me much pleasure'

If we assume that *plezier* 'pleasure', as in the French example in (6) can either function as an argument or as a nominal predicate, the choice between *veel* and *erg* can be interpreted as follows. In case *plezier* is an argument it contains an *r*-position and a *q*-position associated to it. In case it is a predicate, the *r*-position is absent, and the conceptual scale corresponding to the noun *plezier* is realized as a *g*-position. The difference in syntactic status of *veel plezier* 'a lot of pleasure' and *erg plezier* 'badly pleasure' is supported by the observation that *veel plezier*, as other argumental noun phrases, may be extracted in order to obtain a focus interpretation, while extraction of *erg plezier* is bad (Helen de Hoop, p.c.):

(8)   a. Veel plezier doet me dat
             a-lot   pleasure does   me   that
         b. *Erg plezier doet me dat
             badly   pleasure does   me   that
             'It gives me really much pleasure'

In the examples discussed in (2) to (8) scales introduced by *g*-positions and by *q*-positions seem to be conceptually the same. The way in which the scale is represented is determined by syntactic considerations.

In certain cases *g* and *q* can coexist in nominals. The examples in (9) illustrate nouns containing a *g*-position which is independent of the argument status and the quantity referred to by the noun:

(9)   a. Jan is een   verschrikkelijke mazzelkont
             Jan is a   terrible   lucky-dog
         b. Jan is   een   erge opschepper
             Jan is   a   bad   braggart
         c. Er   lopen   hier   veel verschrikkelijke mazzelkonten
             there   walk   here   a-lot terrible   lucky-dogs
             rond
             around
             'There are a lot of terrible lucky dogs around'

A *mazzelkont* 'lucky dog' is a lucky person and an *opschepper* 'braggart' someone who is swanky. This property is scalar and the degree of luck and swankiness is modified by *erg* 'bad' or *verschrikkelijk* 'terrible', which has nothing to do with the quantity of lucky dogs and braggarts, respectively. The example in (9c) shows that the *g*-position and the *q*-position can be

independently saturated by a high degree adjective (*verschrikkelijk*) and a DQ (*veel*) respectively.

Instances of a conceptual scale that can be represented as a grade or as a quantity has so far been illustrated by opposing argumental noun phrases to adjectives or non-argumental noun phrases. The same phenomenon can be found comparing the *q*-position in a VP to a *g*-position in an adjective. Consider the Dutch examples in (10):

(10)   a. Jan kletst veel
           Jan talks a-lot
       b. Jan is erg kletserig
           Jan is very talkative

This example is parallel to (3). The adjective is derived from the verb, and, intuitively, *erg* in (10b) modifies the quantity of talking. Syntactically the scale is represented by a *g*-position.

Interestingly the opposite situation, which for nouns was illustrated in (2) on the basis of the pair *geluk* 'luck'/*gelukkig* 'lucky', does not seem to exist. In section 3.3.2.2 it was argued that stage level verbs combine with *veel* and contain a *q* position, while individual level verbs contain a *g*-position which can be modified by the high degree adverb *erg*. What we see for a noun such as *geluk* 'luck' is that if it plays a certain role in the sentence (the role of argument), the conceptual scale it is associated to (degree of luck) can be represented as a quantity. This is impossible for individual-level verbs.

In section 5.2.2 I argued that individual-level verbs, which are similar to abstracts nouns, never contain a scalar *q*-position, either because there is no *e*-position present, or because of a uniqueness presupposition on the event argument. Both options imply that there is no scalar *q*-position possible. Only a *q* associated to an *r*-position can define an abstract scale.

In this section I have shown that in many cases the difference between *g*- and *q*- positions is not conceptual, but determined by syntax. Argumental noun phrases contain an *r*-position and a *q*-position associated to the *r*-position. This *q*-position may correspond to a conceptual grade as in (2a). On the other hand, it is possible that a conceptual quantity is represented by a *g*-position in an adjective as in (3b) and (10b).

## 6.2   NPs, adjectives and NumP

In French, as in other Romance languages, adjectives occur both to the left and to the right of a noun:

(11)   l'ancien   professeur   sympathique
            the-former   professor   pleasant
            'the pleasant former professors'

DQs indifferently precede the noun and all adjectives:

(12)   a.   beaucoup d'anciens professeurs sympathiques
             a-lot   of-former   professors   pleasant
             'many pleasant former professors'
        b.   *anciens beaucoup (de) professeurs sympathiques
        c.   *anciens professeurs beaucoup (de) sympathiques

According to several linguists the opposition between prenominal and postnominal adjectives has to be explained by N(oun) movement to the head of a Num(ber)P dominating the NP (cf. Valois 1991, Bernstein 1993 and Cinque 1994). If this view is correct, we have to assume that the DQ does not adjoin to NP but to NumP, as in the structure in (13). In this structure I abstract away from the position of *de* 'of', which will be discussed in the next subsection, and also from the status of the prenominal adjective *ancien* 'former':

(13)
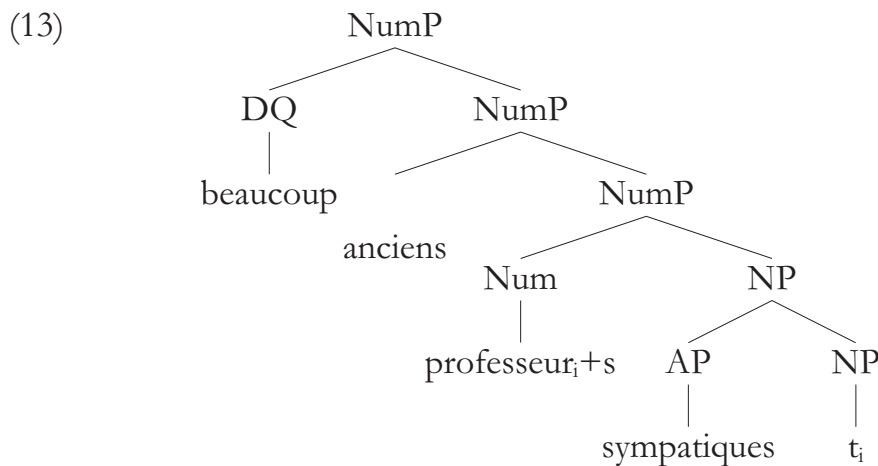
The question raised by this structure is why the DQ adjoins to NumP and not to NP. As for the ungrammatical sentences in (12b) and (12c), the impossibility of adjoining the DQ to the NP may be understood if we assume that all adjectives have to be within the scope of the DQ. The DQ specifies the relative quantity of pleasant individuals who at a certain time in the past were professors, and hence must have scope over all the adjectives, including *ancien* 'former'. One could say that the position of the adjectives forces the DQ to adjoin to a higher functional position. A similar explanation does not account, however, for the ungrammaticality of (14b) and (15b), as these examples only contain an adjective which is adjoined to

the NP, which would not force a higher adjunction site:

(14) a. beaucoup de professeurs   sympathiques
         a-lot   of professors   pleasant
         'many pleasant professors'
     b. *professeurs beaucoup (de) sympathiques

(15) a. beaucoup d'eau   chaude
         a-lot   of-water warm
         'a lot of warm water'
     b. *eau beaucoup (de) chaude

The impossibility of (14b) and (15b) is problematic because there is no reason to assume that the noun cannot have moved from out of the c-command domain of the DQ. In (16) is illustrated that the DQ can be structurally lower than a verb which is modified by the DQ:

(16)   Jean travaille beaucoup
           Jean works   a-lot

The verb *travaille* 'works' moves out of the VP to the higher tense or agreement projection. The DQ still has scope over the verb. This sentence is parallel to the examples in (14b) and (15b), where the noun moves to Num. In brief, if the analyses of adjective placement are correct, DQs must — for some mysterious reason — adjoin to NumP and not to NP.

Excluding the uninteresting option that DQs have a lexical specification which ensures that they combine with NumP and not with NP, there are two ways in which this problem can be approached. In the first place, one could argue that there is an independent reason why the DQ cannot adjoin to NP but has to adjoin to NumP. This could be, for instance, that the q-position is only available at the NumP level. For plurals this story is actually quite convincing. Under the assumption that the plural is formed in syntax and the plural features are located in Num, it is likely that the scalar q-position distinguishing the singular from the plural form is not available at the NP level. For mass nouns as in (15b) this account is less convincing, as mass nouns are inherently scalar. Still, the unavailability of a scalar q-position at the NP level might offer an explanation of the higher adjunction site of the DQ in the context of nouns.

The second way of attacking the problem, which I will pursue here, is to argue that post-nominal adjectives are derived without making use of the NumP. If *eau chaude* in *beaucoup d'eau chaude* 'a lot of hot water' can be analysed as an NP and not a NumP, even though the adjective comes after the noun, we can assume that the DQ adjoins to the NP, from which the

impossibility of cases such as (14b) and (15b) will follow.

Most evidence against the N to Num raising analyses has been collected by Lamarche (1991). Lamarche observes that when several postverbal adjectives are used, their ordering is the mirror image of the ordering we find in languages where adjectives precede the noun, such as English. He draws the conclusion that postnominal adjectives are right-adjoined to the noun. The adjectives are structurally ordered in the same way to the left of the noun in English and to the right in French, resulting in a mirror image effect. According to Lamarche the APs are all part of the NP. Under his analysis the position of the DQ, exemplified in (12), (14) and (15) is unproblematic. The DQ is always directly adjoined to the lexical projection. I will discuss an alternative to Lamarche's right adjunction analysis below, based on Barbiers (1995). Before discussing this alternative, I will go over the evidence against N-to-Num movement.

The N-to-Num analysis predicts that the order of adjectives in French is the same as in English. This looks plausible when we look at the paradigm in (17) (cf. Hetzron 1978). The evaluating adjective precedes the size adjective which in turn precedes the colour adjective:

(17)   a.   a beautiful big red ball   *[English]*

       b.   een   mooie   grote rode bal   *[Dutch]*
            a   beautiful big   red   ball

       c.   un joli   gros ballon rouge   *[French]*
            a   beautiful big   ball   red

       d.   una   bella   grande palla rossa   *[Italian]*
            a   beautiful   big   ball   red

The data in (17) suggest that the only difference between the Germanic languages with prenominal adjectives and the Romance languages with both pre– and postnominal adjectives is the position of the noun.

Lamarche shows, however, that if there is more than one postnominal adjective, the ordering of the post-nominal adjectives is the mirror image of what we expect under the N- to-Num analysis:

(18)   a.   une   femme   canadienne enceinte
            a   woman   Canadian   pregnant
            'a pregnant Canadian woman'

       b.   une   voiture blanche   rouillée
            a   car   white   rusty
            'a rusty white car'

In these cases the order of the adjectives in French is the mirror image of their order in the English translations. The examples illustrate the neutral

order of adjectives, and a special interpretation or focus is necessary to change this order.

The mirror image pattern is also found in the context of event nominals, as is shown in (19):

(19) a. l'invasion   américaine   instantanée de l'Irak
          the-invasion American   sudden   of the-Iraq
          'the sudden American invasion of Iraq'
      b. #l'invasion   instantanée américaine   de l'Irak
          the-invasion sudden   american   of the-Iraq
          '#the American sudden invasion of Iraq'

This is an important observation because the two adjectives precede the NP complement *de l'Irak* 'of Iraq'. The fact that adjectives can occur between a noun and its complement has been one of the principal motivations for adopting N-to-Num movement (cf. Valois 1991). The data in (19) show that this solution is not obvious, and that an extraposition analysis might be preferable.

A different problem for the N-to-Num analysis discussed by Lamarche is the fact that an NP complement may precede the postnominal adjective as in (20):

(20)   les producteurs de pétrole   indépendants
          the producers   of petrol   independent
          'the independent producers of petrol'

As the postnominal adjectives are derived via N-to-Num movement, the possibility of (20) is surprising.[26]

One can add a further problem to the ones signalled by Lamarche, which is that the prenominal adjective can be both within or outside the scope of

---

[26]   According to Cinque (1994) Lamarche's counterevidence to N-to-Num movement is only apparent. Cinque argues that postnominal adjectives in Romance are not ordered with respect to each other because they constitute a different type of adjectival modification. Next to the standard attributive adjectives, which in English must precede the noun, nouns can be modified by predicative adjectives. Predicative adjectives can occur postnominally in English as well, and their order is much freer than the order found for attributive adjectives (cf. Sproat & Shih 1988). An English example containing predicative adjectives is *a man bruised and battered* which is not distinct from *a man battered and bruised*. I do not agree with Cinque's criticism. If the two adjectives were predicative, we would expect that we can freely order them without any difference in meaning, which is not the case. Moreover, examples such as (19) cannot be explained along Cinque's lines. In (19) the adjectives exhibiting the mirror image effect intervene between an event nominal *invasion* 'invasion' and its complement *de l'Irak* 'of Iraq'. As predicative adjectives can never intervene between an event nominal and its complement, Cinque's alternative analysis is not available for this type of sentences.

a postnominal adjective. Consider for instance (21):

(21)   un ancien   président américain sympathique
          a   former   president American pleasant
          'a pleasant former American president'

Taking the English translation to be a reflection of the neutral scope order, this example shows that the adjective *ancien* 'former' has scope over *américain* 'American' but falls within the scope of *sympathique* 'pleasant'. This cannot be accounted for within the N-to-Num movement analysis. To see why, we need to take a closer look at prenominal adjectives first.

Valois (1991) and Lamarche (1991) analyse prenominal adjectives as heads which are incorporated into N. Bernstein (1993) also gives head status to prenominal adjectives, but generates them in an AP dominating the NumP. The arguments used to motivate head status of adjectives such as prenominal *ancien* 'former' are incompatibility with a degree modifier and the impossibility of predicative use:[27]

(22)   a.   *un   très   ancien président
             a   very   former president
       b.   *le président   est ancien
             the president   is   former

Not all prenominal adjectives have these properties. *Une très petite église* 'a very little church' and *cette église est petite* 'this church is small' are fine. This shows that the arguments for head status do not apply to all obligtorily prenominal adjectives.
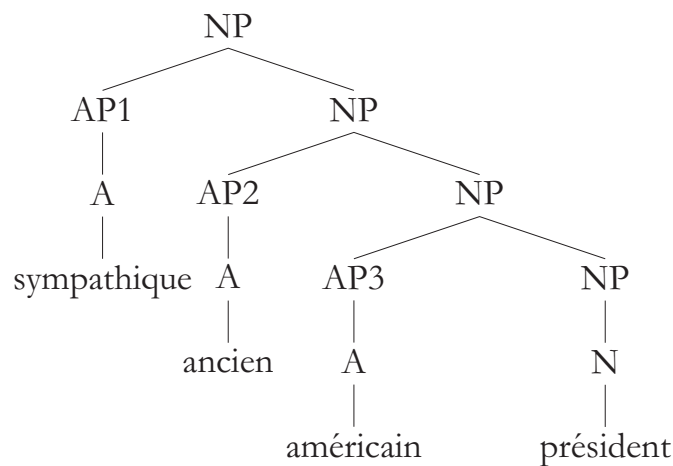
Neither an analysis in which the prenominal adjectives are incorporated in N, nor the alternative analysis in which they are generated in an AP dominating NumP, as proposed by Bernstein, can account for the scope relations in (21). On the one hand, if *ancien* 'former' were to be incorporated into N, we would expect that it always gets narrowest scope with respect to postnominal adjectives. On the other hand, if *ancien* were the head of an AP dominating NumP, we would expect that it always has wide scope over all other adjectives. Both predictions are wrong, given the scope relations in (21). In what follows I will treat all attributive adjectives as adjuncts. The special behaviour of prenominal adjectives such as *ancien* 'former', illustrated in (22), will be attributed to the way these adjectives are interpreted.

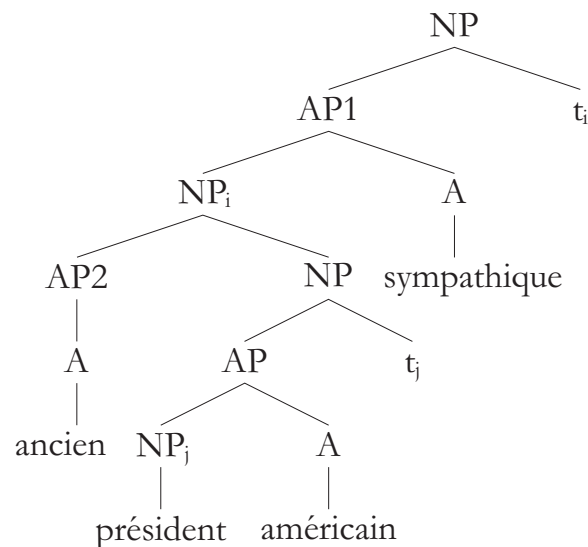The scope relations can be derived from the hierarchical order if we

---

[27]   The examples are ungrammatical in the intended reading, where *ancien* translates as 'former'. Postnominal *ancien* 'ancient' can be modified and used as a predicate: *une église très ancienne* 'a very old church' and *cette église est très ancienne* 'this church is very old.

accept both left and right adjunction. Right adjunction, as mentioned in the chapter 1, is banned within the Antisymmetry framework of Kayne (1994). An interesting alternative to right adjunction has been developed by Barbiers (1995) (cf. section 5.1.2, where this theory was used to derive postverbal adverbial DQs). Within Barbiers' framework an XP which seems at first sight right-adjoined to YP is derived by left adjunction to YP and subsequent movement of YP to the specifier of XP. Making use of Barbiers' theory, the right scope relations, based on hierarchical structure, and the right word order of (21) can be derived. The deep structure, in which the scope relations are established, is given in (23a) and the resulting surface structure in (23b):
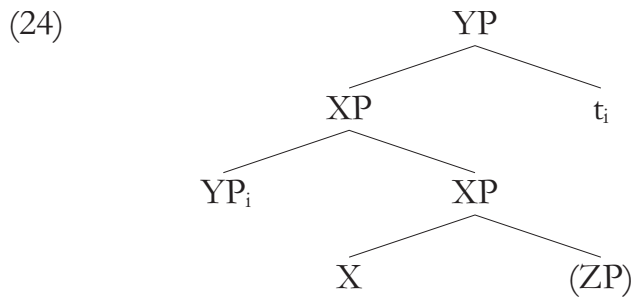
(23)   a.   DEEP STRUCTURE

```
                      NP
            ┌─────────┴─────────┐
          AP1                   NP
           │          ┌─────────┴─────────┐
           A         AP2                   NP
           │          │          ┌─────────┴─────────┐
      sympathique     A         AP3                   NP
                      │          │                    │
                    ancien       A                    N
                                 │                    │
                             américain             président
```

   b.   SURFACE STRUCTURE

```
                         NP
               ┌─────────┴─────────┐
             AP1                   t_i
        ┌─────┴─────┐
      NP_i           A
   ┌───┴───┐         │
  AP2      NP    sympathique
   │    ┌───┴───┐
   A   AP       t_j
   │ ┌──┴──┐
 ancien NP_j  A
   │     │    │
président américain
```

According to Barbiers, the trigger for movement to the specifier of an adjunct is the need to establish what he calls a qualification relation, which I will take to be a relation in which a theta identification is established. In

the structure in (24) the XP functions as a 'qualifier' or a predicate of YP:

(24)

```
                              YP
                         /          \
                       XP            tᵢ
                    /       \
                 YPᵢ         XP
                          /      \
                         X        (ZP)
```

The configuration in (24) can be created by overt or by covert movement. The choice between covert and overt movement could be seen as the source of the existence of prenominal and postnominal adjectives, respectively. Prenominal adjectives such as *petit* 'small' trigger movement at LF, while post-nominal adjectives such as *sympathique* 'pleasant' trigger movement before LF.

This approach might throw light on the behaviour of adjectives such as *ancien*, which radically differ in meaning depending on whether they are used pre– or postnominally. A small list of examples is given in (25) (cf. Bernstein 1993 for discussion of these adjectives in different Romance languages):

(25) a. une   ancienne église   une   église ancienne
         a   former   church   a   church old
         'a former church'   'an old church'
     b. un   simple   soldat   un   soldat   simple
         a   mere   soldier   a   soldier   simple-minded
         'a mere soldier'   'a simple-minded soldier'

When used prenominally, these adjectives have an interpretation which does not involve theta identification (cf. Higginbotham 1985:566). An old church is both a church and old as compared to other churches, a simple-minded soldier is both a soldier and a simple-minded individual, but a mere soldier is not a soldier and a mere individual. (cf. section 1.2). Let us assume that the configuration in (24) indicates theta identification. In that case the non-intersective interpretation of prenominal *ancien* and *simple*, which does not involve theta identification, corresponds to the absence of the configuration in (24) at all levels, i.e. also at LF. If the configuration is established, theta identification must take place, and the adjectives must be interpreted as 'old' and 'simple-minded', respectively. As the postnominal position is the result of the configuration in (24), these adjectives can never be interpreted as 'former' and 'mere' when used postnominally.

The examples in (22) showed that *ancien* in the sense of 'former' resists

degree modification and cannot be used predicatively, which has been argued in the literature to be due to head status of these adjectives in prenominal position. I showed that the assumption that these adjectives are heads is problematic in view of scope relations between different adjectives (cf. (21)). In the approach sketched above, the impossibility of predicative use was attributed to the lack of a theta identification relation between the subject *le professeur* 'the professor' and the predicate *ancien* 'former'. The presented account of the interpretation differences in terms of the configuration introduced by Barbiers makes it possible to relate the behaviour of *ancien* NP internally to its behaviour as predicate, without making the assumption that prenominal *ancien* 'former' is a head: *ancien* in the sense of 'old' may be predicative and postnominal because its interpretation involves theta identification, *ancien* in the sense of 'former' must be prenominal and may not be used as a predicate, because its interpretation does not involve theta identification. The second argument for head status of prenominal *ancien* 'former', which is the impossibility of degree modification, can be accounted for in an alternative way as well. Non-scalar adjectives, such as *next* cannot be modified by a degree expression as they do not contain a *g*-position. Prenominal *ancien* 'former' seems to be a non-scalar adjective, which accounts for its incompatibility with degree modifiers without assigning the adjective head status.

The approach presented here is rather sketchy. I did not address the question how prenominal *ancien* 'former' is interpreted, and what kind of configurations this involves. Moreover, the status of prenominal adjectives such as *petit* and *vieux*, which in spite of their being prenominal do not share any of the other properties with prenominal *ancien* 'former', has not been elaborated on. One might assume, as I did above, that these adjectives trigger movement of the NP at LF only, which accounts for the observed word order. The reason why movement is covert in some cases and overt in others is a problem that needs further investigation. What is important, however, is that this way of accounting for the order of adjectives within the NP does not make use of N-to-Num movement, which makes it possible to account for the position of DQs with respect to nouns and adjectives in a straightforward way.

In this section I discussed the order of DQs, adjectives and NPs. I argued against the N-to-Num analysis, mostly on the basis of Lamarche (1991), and proposed an analysis based on Barbiers (1995). Within this analysis, all APs are adjoined to NP. The DQ precedes all adjectives, as it must be structurally higher for reasons of scope. The analysis makes it possible to maintain the idea that the DQ adjoins to any lexical category containing a scalar position without making specific assumptions about the availability of a scalar *q*-position in NPs, which would be necessary under an N-to-Num raising analysis of postnominal adjectives.

6.3   The role of *de*

In French, the preposition *de* 'of' has to be inserted when a DQ modifies an NP:

(26)   beaucoup *de* livres; énormément *de* sucre; peu   *de* chance
          a-lot   *of books* *a-whole-lot*   *of sugar* *little* *of* *luck*
          'a lot of books; a whole lot of sugar; little luck'

This construction is commonly called pseudo-partitive because of its resemblance to the partitive construction:

(27)   beaucoup de ces   livres
          a-lot   *of* *these* *books*
          'many of these books'

In this section I will mostly restrict myself to pseudo-partitive *de*. The partitive construction will be examined in section 6.4 below.

There are several constructions in French in which a mysterious *de* shows up and the many accounts in the literature have not reached an agreement on its status. According to Hulk (1996) *de* is a quantificational head, Den Dikken (1995) calls *de* a nominal copula, and Kayne (1994) recently analysed *de* as a complementizer introducing a subject-predicate connection, to cite but some of the recent accounts offered in the literature. Traditionally *de* is seen as a genitive case marker, a view which has recently been defended by Battye (1991), and which I will follow here. I want to stress that there are many unsolved and thorny problems concerning the status of *de*, which call for extensive cross-linguistic study of *de* and genitive in different contexts, and which are beyond the scope of this thesis (cf. Englebert 1992, 1993 for a comprehensive study concerning the history and distribution of *de* in French).

There are two reasons to consider that the need for case is the reason *de* has to be inserted. The first is the similar distribution of *de* and genitive case marking. In French *de* is inserted between a DQ and an NP while in other languages, such as older varieties of Dutch and modern Russian, the NP bears a genitive case ending in the context of a DQ. Given that genitive is case, we would like *de* to be case as well. The second argument is that we find *de* only when DQs combine with a noun. In the context of APs and VPs *de* is absent. As the need for case is a typical property of NPs, the fact that we find *de* with nouns is an indication that case might be the relevant

factor.[28]

The necessity to insert a *de*-like element in the context of NPs depends on a number of factors, and languages differ with respect to the contexts in which a *de*-like element is required. In French all DQs trigger *de*-insertion, but in English only classifier constructions DQs do. *A lot* triggers *of*-insertion, but *much* does not: *a lot *(of) soup* and *much (*of) soup*. Many Romance languages are similar to English in this respect. In Portuguese, for instance, we find *um monte *(de) libros* 'a pile of books' and *muitos (*de) libros* 'many books'. As far as I know there do not exist any languages in which DQs trigger genitive marking on the noun they modify while classifier constructions do not.

Next to the French type (all nominal DQ constructions are pseudo-partitives) and the English type (classifier constructions give rise to pseudo-partitivity) there is a third possibility, which is exemplified by modern Dutch. In modern Dutch neither DQs nor classifier constructions trigger *van*-insertion or genitive marking, as shown in (28):

(28) a.   veel   (*van)   soep(*s)
           much   (of)   soup(GEN)
           'a lot of soup'

---

b. een   hele   hoop (*van)   soep(*s)
a   whole   lot   (of)   soup(GEN)
'a whole lot of soup'

The genitive preposition *van* 'of' does show up in the real partitive construction: *veel/ een hele hoop *(van) deze soep* 'much of this soup'. As far as I know there is always a *de*-like element or genitive present in the real partitive construction. I will argue in section 6.4 below that the status of the *de*-phrase in partitives and pseudo-partitives is different, and I will concentrate in the rest of this section on pseudo-partitives.

Looking at properties of DQs which trigger *de*-insertion or genitive marking, we find a correlation between the presence of *de*/genitive and the absence of agreement on the DQ (cf. also Bovee 1995). French DQs do not agree with the NP they combine with, and *de* is necessary. Portuguese is an example of a language in which the determiner agrees with the NP and where *de* is absent:

(29) a. peu   de   femmes   peu   d'hommes   *[French]*
          little   of   women F.PL   *little   of-men* M.PL
          peu   de   soupe   peu   de   pain
          little   of   soup F.SG   *little   of   bread* M.SG
      b. muit**as**   mulheres   muit**os**   homens   *[Portuguese]*
          many F.PL   *women* F.PL   *many* M.PL   *men* M.PL
          muit**a**   sopa   muit**o**   pão
          much F.SG   *soup* F.SG   *much* M.SG   *bread* M.SG

Spanish and Italian pattern with Portuguese, and older varieties of Dutch (up to the 19th century) were similar to French. In these varieties of Dutch the NPs are marked for genitive: *veel verdriet**s*** 'much sorrow+GEN'. The genitive *-s* has dropped in Modern Dutch, but can still be found in some fixed expressions: *niet veel soep**s*** 'not much of a thing'.

Martí (1995) discusses the relation between the presence of *de* and agreement in Catalan. The Catalan data offer some nice evidence for the correlation between the presence of *de* and the absence of agreement. In Catalan *de* is found in the context of masculine nouns, but not with feminine nouns:

(30) a. molta   (??de) calor
          much F   *of*   *heat*
          'a lot of heat'
      b. molt (d') oli
          much (of-) oil
          'a lot of oil'

The feminine form in (30a) is marked by the suffix *-a* while the masculine form in (30b) is unmarked and could be seen as a non-agreeing form. The preposition *de* can be added when the DQ has the unmarked form but is very marginal in the context of the overtly agreeing feminine form. This is strong evidence for the existence of a correlation between the presence of *de* and the absence of agreement.[29]

As I noted above, *de*/genitive seems to be more frequent in the context of classifier constructions than in the context of adjectival and complex DQs. DQs which derive from classifiers, such as *a lot*, are nominal themselves, given that they contain an indefinite article. Therefore it can be assumed that they need case. **A lot books* then contains two expressions in need of case. In a sentence such as *John read a lot of books* the verb assigns case to the object. Let us assume that this case is used by *a lot*, which leaves the NP *books* without case. *Of-* insertion can be seen as a last resort (Chomsky 1981).

In French all DQs trigger *de* in the context of NPs. We would like to assume that these DQs trigger *de*-insertion for the same reason as classifier constructions. This explanation hinges on the assumption that the non-agreeing DQs use case, and raises the question why they would need case.

---

[29]   The correlation is not absolute. There exist languages in which agreement and *de* are both present, and there are agreement-less languages that do without genitive case. Martí (1995) reports about an exception of the first type. In Majorcan the preposition *de* is present next to agreement on the quantifier:

(i)   molta   d'aigua
           much   of-water
           'a lot of water'

According to Joanna Rossello (p.c.) *de* is obligatory with a masculine noun and optional with a feminine or plural noun. In other words, if the quantifier bears agreement morphology insertion of *de* is optional, when it does not, *de* is required, which shows that still the same tendency we find in other languages is present. A clear example of a language in which the NP accompanying an uninflected DQ bears no genitive case is standard German. (ii) shows that the case on the noun is determined by the preposition *mit* 'with', which governs dative case. In case the DQ does not agree the NP still bears dative, not genitive:

(ii)   a.   mit   vielen   Kindern
                with   many DAT.PL   children DAT.PL
          b.   mit   viel   Kindern
                with   many   children DAT.PL
          c.   *mit viel   Kinder
                with   many   children NOM/GEN/ACC.PL

I will not try to accommodate the exceptions to the correlation between the absence of agreement and the presence of *de*/genitive.

This question is related to another one, which is why DQs in some languages must agree with the noun they modify. Agreement on a DQ could be seen as a way to syntactically license the DQ as an adjective. In case the DQ does not agree it should be licensed otherwise and I propose that this can be done by using the case of the noun phrase in which it occurs. This yields a caseless NP, which can be saved by *de*-insertion.

A similar proposal has been made by Battye (1991). However, Battye assumes that the quantifier heads an NP which selects the *de NP* as its complement. The element *de* is adjoined to the NP and provides the NP with genitive case. Arguments against a selecting head analysis of the DQ in the context of APs and VPs have been extensively discussed above, and given the desirability of a uniform analysis of DQs in the different contexts in which they occur, these arguments also apply to the nominal system. Extraction data give direct evidence against a selecting head analysis for DQs in the context of nouns, given the possibility of *combien*-extraction:

(31)   Combien$_i$ a-t-il lu   [e_i de livres]?
          how-much   has-he read   of books
          'How many books did he read?'

Analysing *combien* 'how much' as a head selecting the *de NP*, as does Battye, would prevent *combien* from being extracted, contrary to fact.

In this section I argued that *de* is inserted as a last resort to provide the NP with case. DQs that do not agree with the NP they modify cannot be analysed as adjectives and get licensed by case. As they use the case which normally would license the NP, *de* has to be inserted.

6.4   Partitives

The partitive construction is typically found in the nominal system, and is characterized by the sequence *Q of the NP*. In the verbal and adjectival domains nothing of the kind exists. The examples in (32a) to (32c) show partitives in the context of different DQs in French, Dutch and English, respectively:

(32)   a. Beaucoup   de ces   livres ont   paru   l'année dernière
              a-lot   of these   books have   appeared the-year   last
              'Many of these books appeared last year'
       b. Weinig van   de gezakte studenten   waren   goed voorbereid
              little   of   the failed students   were   well prepared
              'Few of the students who failed were well prepared'
       c. Most of the children wanted to eat an ice-cream

The partitive construction seems to be freely generated in the context of quantifiers, and is not restricted to the context of DQs. Some examples in which typically adnominal quantifiers feature in the partitive construction are given in (33):[30]

(33) a. Three of the linguists were dancing
      b. All of these articles are interesting
      c. Each of the children sang a different song

These data suggest that the possibility of creating a partitive construction is not a lexical specification of certain quantifiers, including DQs, but rather a general property of a specific type of quantified noun phrases.

In 6.4.1 I will comment on the syntactic structure of the partitive construction. I will argue that the DQ does not adjoin to the partitive PP itself (the *of the NP*) but to an empty NP. This NP contains the *q*-position which is bound by the DQ. In 6.4.2 I will discuss the interpretation of the partitive construction, and contexts in which a similar interpretation occurs. Section 6.4.3 will be concerned with the proportional interpretation of the partitive in the context of most DQs and quantifiers such as *many*. In all of these sections I aim to keep the lexical specification of DQs as simple as possible.

6.4.1 The syntactic structure of the partitive construction

From a linear point of view the partitive noun phrase occupies the same position with respect to the DQ as other NPs modified by a DQ, as is shown in (34):

(34) a. Beaucoup   de ces   enfants sont   dans le jardin
          a-lot   *of these children are   in   the garden*
      b. Beaucoup   d'enfants sont   dans le jardin
          a-lot   *of children are   in   the garden*

The partitive phrase *de ces enfants* in (34a) may occupy the same position as *d'enfants* in (34b) or a different one. If the former option is chosen (cf. for instance Abney 1987), there is no way in which the DQ can be analysed in the same way as in a non-partitive construction. The DQ clearly does not

---

[30]   In many languages (e.g. French and Dutch) the quantifier corresponding to *all* (the non-distributive universal quantifier) is exceptional in this respect, and cannot occur in the partitive construction: **tous de ces livres* 'all of these books'. Otherwise French and Dutch are similar to English.

identify the scalar position in the DP *ces enfants* 'the children', but determines that an important subset of *ces enfants* 'the children' is in the garden. This is particularly clear when we consider *peu* 'few; little'. In *peu de ces enfants sont dans le jardin* 'few of the children are in the garden' the DP *ces enfants* may refer to a group consisting of a lot of children, provided that few of them are in the garden. The second option, in which the partitive NP does not occupy the same position as other phrases modified by the DQ, makes it possible to maintain that the DQ is interpreted by saturating a scalar position in an XP in the partitive construction as well. Given the aim to keep the lexical specification of DQs as simple as possible, this second option is preferable. In order to apply the general analysis of DQs in the context of the partitive construction, we have to assume that the partitive construction contains an empty NP with an open *q*-position, and that this empty NP is the host of the DQ.

An analysis along these lines has been defended by Milner (1978a) on different grounds (cf. also Cardinaletti & Giusti 1991). A slightly modified version of the structure he proposes is given in (35), which is the structure I adopt here:[31]

(37)

```
                        NP
                   ┌────────┴────────┐
                  QP                NP
                   │           ┌─────┴─────┐
               beaucoup       NP          PP
                               │         ╱    ╲
                               e      de ces livres
```
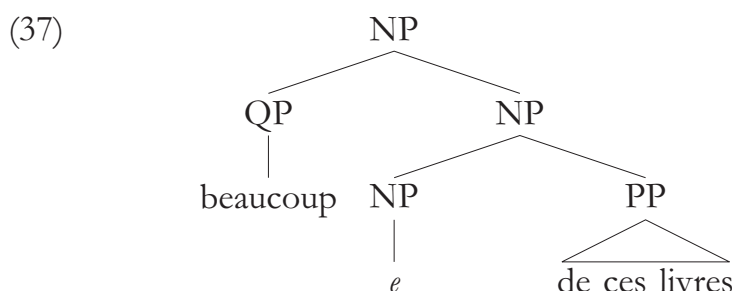
The position which is normally taken by the NP modified by *beaucoup* (*d'enfants* in (34b)) is now filled by a phonologically empty NP.

Evidence for the presence of a second NP in the partitive construction comes from the fact that in some cases a visible pronominal element shows up. In French *un* is present in the partitive constructions *quelques *(uns) de ces livres* 'some of these books' and *chac*un/ *chaque de ces livres* 'each of these books'. The analysis allows us to assume that also in partitive constructions, the DQ binds a *q*-position, which is contained in the empty NP. The function of the partitive PP is to specify the domain of which the set denoted by the NP is a part. In (35), the set corresponding to [*beaucoup e*] is a subset of the set consisting of *ces livres* these books.

Given the observation that partitive PPs are found in the context of most Qs, and independently of their DQ status, it is plausible that their presence

---

[31]   I will not discuss the exact syntactic position of the partitive PP, which might well turn out to be different from that in (35).

is a possibility in the context of quantified noun phrases in general. This allows us to keep the lexical specification of DQs simple, as we do not have to specify compatibility with a partitive PP as part of the lexical selection properties of DQs.

6.4.2 The partitive reading

The partitive construction always corresponds to a strong noun phrase. The interpretive distinction between strong and weak noun phrases has been introduced by Milsark (1977), who observes that noun phrases can be divided into two classes on the basis of their interpretation, which determines part of their distribution. The semantic difference between strong and weak noun phrases can be roughly described as follows. Strong noun phrases introduce individuals from a contextually given set and are hence specific in the sense of Enç (1991). Weak noun phrases introduce a new set of individuals. As Milsark (1977) shows, only strong noun phrases can be the subject of an individual-level predicate while weak noun phrases are the only ones to be found in English *there*-sentences.[32] The distributional difference between strong and weak noun phrases is illustrated in (36). The strong DP *everyone* cannot be used in the *there*-sentence (36a), and the weak DP *a man* cannot be the subject of an individual level predicate.

(36) a. There is a man/*everyone in the garden
      b. Everyone/*a man is intelligent

The indefinite noun phrase *a man* is necessarily weak, and cannot refer to a member of a previously given set. The strong noun phrase *everyone* is necessarily understood with respect to a given set. The partitive construction introduces a subset of a contextually given set, and, as expected, it patterns with the strong noun phrase *everyone*, as shown in (37):

(37) a. *There are a lot of the linguists in the garden
      b. A lot of the linguists are intelligent

The strong reading found in the partitive construction is also called the partitive reading. The partitive noun phrase introduces a subset of a contextually relevant set. In (37b) this is a set of linguists which is a subset of the set of individuals referred to by *the linguists*.

---

[32] Below it will be shown that in Dutch strong noun phrases can, under certain conditions, occur in *there*-sentences.

It is possible to have a partitive reading in the absence of a partitive construction as well (cf. Diesing 1992 and De Hoop 1992 for discussion of syntactic configurations that trigger this reading). The noun phrase *a lot of linguists* in (38) can have either a weak or a strong reading:

(38)   a.   There are a lot of linguists in the garden
       b.   A lot of linguists are intelligent

In (38a) *a lot of linguists* must be weak, due to its occurrence in a *there*-sentence. There is no previously given set of linguists of which the linguists referred to by *a lot of linguists* are members. In (38b), where the individual-level predicate triggers a strong reading, *a lot of linguists* must be understood with respect to some previously given set. A large subset of this set of linguists has the property of being intelligent. Hence, in (38b) the interpretation of *a lot of linguists* is similar to the one of *a lot of the linguists.*

Qs that occur in the partitive construction can always have a strong or partitive reading, whether the partitive construction is used or not. A number of real weak Qs (or determiners), such as *a* and unstressed *some* ('*sm*'), do not occur in the partitive construction and never give rise to strong noun phrases.[33] DQs all occur in the partitive construction and may have a partitive reading.

The partitive construction is typically found in the context of nouns and there is no corresponding structure possible when Qs combine with either VP or AP. As I will show below, the partitive reading is not readily available outside of the nominal system either. Quantified VPs may have a strong interpretation under influence of focus, while APs always have a weak interpretation.

Normally, a quantified VP does not have a strong reading. Compare for instance the sentence in (39) to (38b):

(39)   John reads the newspaper a lot

In (38b), where *a lot* is part of a strong noun phrase, a large subset of a presupposed set of linguists has the property of being intelligent. There is no similar reading for (39). The sentence does not convey information about an significant part of John's newspaper reading.

In the context of a focused constituent, however, a strong reading may be obtained, as is illustrated by (40):

(40)   John reads the newspaper a lot ON THE TRAIN

---

[33]   The notation *sm* for unstressed *some* has been introduced by Milsark (1977), and is based on the phonological difference between stressed and unstressed *some*.

This sentence states that a relatively large portion of John's newspaper reading activities takes place on the train, and can hence be seen as a verbal counterpart of the strong reading.

The difference between the sentences in (39) and (40) is that (39) lacks a phrase which can function as the scope of the quantifier. Let us turn back once more to weak and strong noun phrases. Strong noun phrases, contrary to the weak ones, depend in their interpretation on the presence of a contrastive predicate, which functions as their nuclear scope. This can be illustrated by the behaviour of strong and weak noun phrases in Dutch *there*-sentences, as illustrated in (41):[34]

(41)   a.   Er   zijn   twee katten
            there   are   two   cats
       b.   *Er   zijn   twee van   de katten
            there   are   two   of   the cats
       c.   Er   zijn   twee van   de katten   in de tuin
            there   are   two   of   the cats   in the garden

According to De Hoop (1992), the source of the ungrammaticality in (41b) is the absence of a contrastive predicate, which is necessary in the context of a strong noun phrase. Adding the predicate *in de tuin* 'in the garden' makes the sentence fine as this predicate is contrastive and offers a number of contextual alternatives (in the house, on the street etc.). This throws a light on the quantified verb phrases in (39) and (40). The sentence in (39), where the DQ *a lot* modifies a VP only has a weak reading, because there is no contrastive predicate present which may function as the scope of the quantifier, and can therefore be compared to the existential sentence in (41a). There is a lot of newspaper reading by John. In (40), the contrastive predicate *on the train* (as opposed to in the kitchen and in his bedroom) functions as the scope of the quantifier, and as a result a strong reading, similar to the one introduced by the partitive construction, can be obtained.

The examples show that DQs such as *a lot* normally do not introduce a strong reading in the context of verbs, but that the strong reading may be obtained in the context of a focused constituent. In the nominal system, the strong reading is more easily available. As said in chapter 1, I consider the syntactic scope of a quantified noun phrase to correspond to its c-command domain, while focus may change the scope relations at a semantic level. The difference between noun phrases and verb phrases follows from the fact that noun phrases function as subjects of a predicate, while verb phrases are

---

[34]   In Dutch the use of existential sentences is less restricted than in English, and may contain certain strong noun phrases in case they contain a contrastive predicate (cf. De Hoop 1992 for discussion).

predicates themselves. The predicate of a quantified noun phrase functions as the syntactic scope of the Q. Quantified VPs lack a syntactic scope, but may be interpreted as strong quantifiers in case focus is involved.

With adjectives strong readings are absent, even in the context of focus, which can be shown on the basis of superlative forms. Before going over to the examples containing adjectives, I will first discuss some cases where the superlative DQ *most* introduces a strong reading, which will allow us to see that this reading is absent in the adjectival cases.

In (42) *most* occurs in a partitive construction, which always has a strong reading:

(42)   a.   Most of the salt is in the dish on the red plate
       b.   Most of the intelligent remarks are made by Sue

Consider the following situation for (42a). There are three dishes on the table, each of which contains a certain amount of salt. In this context the sentence in (42a) says that more than half of the total amount of salt is in the dish on the red plate. The sentence in (42b) does not only mean that, in a given situation, Sue made more intelligent remarks than any other person, but also that she uttered most of the total number of intelligent remarks that were made.

If we compare these sentences to the ones in (43) we see that adjectives do not allow for the strong interpretation of *most*, not even in the context of focus:[35]

(43)   a.   The dish on the RED plate is the saltiest dish
       b.   The most intelligent student is SUE

The sentence in (43a) is true in a situation in which there are three dishes which together contain a certain amount of salt and that less than half of the total amount of this salt is contained in the dish on the red plate, provided that the dish on the red plate contains more salt than either of the two other dishes. We do not compare the amount of salt in the red dish to the total amount of salt in the three dishes, as we did in (42a), but to the amounts in each separate dish. Similarly the sentence in (43b) does not imply that Sue is more intelligent than all the other contextually relevant people together, only that she is more intelligent than each of them separately. Again we see that this is not the strong reading of *most* that we find in the context of a partitive noun phrase.

So far we have seen that the partitive construction is a typical nominal

---

[35]   As I argued in chapter 4 the superlative suffix *–st* and the DQ do not differ in interpretation. The choice between the two is based on the Elsewhere Condition.

phenomenon, though the strong reading it triggers may be found in the context of quantified VPs as well, provided that a focused contrastive predicate is present. In the context of APs neither the partitive construction nor the partitive reading are available.

6.4.3   Proportional interpretations

Partee (1988) claims that quantifiers such as *many* and *few* are ambiguous between a proportional and a cardinal reading. Her arguments could be extended to many DQs (*a lot*, *little*, *much*, *most*, French *beaucoup* 'a lot' *peu* 'few; little', *énormément* 'a whole lot' etc.). Hence the question arises whether these DQs are ambiguous after all or whether their different occurrences still can be accounted for in the same way, as I argued so far. In this section I will challenge Partee's ambiguity thesis. I will defend the view that the partitive reading is necessarily proportional in the context of certain quantifiers (cf. also De Hoop 1992). Proportionality is a property of partitives in the context of an expression of relative quantity. The proportional interpretation of certain strong noun phrases is not due to ambiguity of the Q, but to the interaction of the interpretation the quantifier always has and the partitive construction. This will allow us to keep the lexical specifications of DQs maximally simple.

The difference between a proportional and a cardinal interpretation can be illustrated on the basis of the following example:

(44)   Many students study linguistics

The proportional interpretation can be obtained by taking all students of the world as our reference set. According to the sentence, then, the set of linguistics students is relatively large as a proportion of all students in the world, which is obviously false. In the cardinal interpretation we do not compare the number of linguistics students to the total number of students, but look at the cardinality of the set of linguistics students. Adding up all linguistics students in the world will give a high figure, and hence the sentence is true on its cardinal interpretation.

According to Partee the two interpretations of the sentence correspond to two different readings of an ambiguous quantifier *many*. She argues that proportionality cannot be a side effect of the strong (partitive) reading of quantified noun phrases, as there exist non-proportional partitives as well. Numerals never yield a proportional interpretation, even when used in a partitive construction. Partee explains the difference by assuming that numerals are not ambiguous while *many*-type quantifiers are. The difference between the two types of quantifiers is illustrated by the following pair of

sentences:[36]

(45)   a.   Three linguists in this room are women iff there are three women
             linguists in this room
       b.   Many linguists in this room are women iff there are many women
             linguists in this room

The implication in (45a) is clearly true. The one in (45b), however, as Partee puts it, gives rise to conflicting feelings, which she attributes to the tendency to interpret the first *many* proportionally, and the second cardinally. Because of this, the first *many* can correspond to a smaller number than the second *many*, which makes the implication false. If there is a lecture by a famous linguist at which, disappointingly, only five linguists show up, four of which are women, we can say that many linguists in the room are women. However, in this same situation, it would not be appropriate to say that there are many women linguists in the room. The proportional interpretation is absent in the context of *three*, even if interpreted as a partitive *three of the linguists*, and therefore the implication holds without making anybody feel uncomfortable. Three is always three, whether we are talking about three members of a previously given set or not. For Partee this is a reason to assume that numerals only have one reading, which expresses cardinality and which can be either strong or weak. Strong, or partitive, when we are talking about *three* out of a previously given set, and weak otherwise. Quantifiers such as *many* are ambiguous between a proportional reading (strong) and a cardinal reading, similar to the one of *three*.

De Hoop (1992) argues that no distinction between the partitive reading of cardinal numerals and the proportional reading of quantifiers such as *many* should be made. Her main argument is that the partitive and

---

[36]   The property illustrated by the sentences in (45) is called the intersection property, and has been formalized in the Generalized Quantifier framework (cf. Barwise & Cooper 1981). Within this framework determiners are seen as elements that relate two sets, one of which is given by the NP and the other by the predicate. The formal definition of the intersection property used by Partee is as follows, where D stands for determiner, and A and B for the sets related to each other by D. The last clause in (i) is the formal counterpart of the examples in the (45):

(i)   **Definition**   D has the intersection property iff:
       a.   D(A)(B) iff D(AintB)(B)   or equivalently
       b.   D(A)(B) iff D(B)(A)   or equivalently
       c.   D(A)(B) iff D(AintB)('exist')

proportional readings are triggered in exactly the same contexts.[37] In the context of individual level predicates, for instance, quantifiers such as *many* have a proportional interpretation, while numerals have a partitive interpretation:

(46)   a.   Many students are intelligent
       b.   Three students are intelligent

In both of these sentences the strong reading is triggered by the individual-level predicate *intelligent*. The noun phrases must be interpreted with respect to a previously given set, which results in a proportional interpretation in (46a) and in a non-proportional partitive interpretation in (46b). According to De Hoop (1992) both are instances of the partitive reading.

The idea that proportionality is a side effect of partitivity and not an independent phenomenon can be further motivated by the observation that the proportional reading does not coexist with a non-proportional partitive reading. If quantifiers such as *many* were ambiguous between a cardinal reading similar to the one of cardinal numerals such as *three* and a proportional reading similar to the reading of quantifiers such as *all*, we would predict that they have two distinct strong readings. Next to the strong proportional reading, we would expect to find a strong cardinal reading, corresponding to the one found in (46b). It turns out, however, that the non-proportional partitive reading is found in the context of the cardinal numerals only. *Many* must be proportional when part of a strong noun phrase. The impossibility of a strong cardinal reading for quantifiers such as *many* similar to the one in (46b) can be illustrated on the basis of the examples in (47), which tell us about paintings of the famous painter Duchovnik. Duchovnik made only five paintings during his life time, and four of these, his studies in blue, are on display in the Stedelijk Museum in Amsterdam. The fifth painting, a study in green, is in a private collection.[38]

(47)   a.   We saw few Duchovniks in the Stedelijk Museum
       b.   Four Duchovniks are studies in blue
       c.   Few Duchovniks are studies in blue

Given what we know about Duchovniks, the first sentence may well be true, even if we have seen all four Duchovniks of the Stedelijk Museum, as four is a relatively small number. The sentence in (47b) is obviously true, as

---

[37]   I will not go over the data supporting this claim, which can be found De Hoop (1992), chapter 3.

[38]   These sentences are inspired by Huettner's test; see Partee (1988) for discussion.

four of the five paintings painted by Duchovnik are studies in blue. As the predicate *are studies in blue* is an individual-level predicate, the subject noun phrase has a partitive interpretation. The parallel sentence in (47c), also forces a strong interpretation of its subject. Given the ambiguity thesis, we expect that there are two possible readings: the proportional reading, and a strong cardinality reading which is similar to the one of (47b).[39] The proportional reading is available, and obviously makes the sentence false. Given that four out of five Duchovniks are studies in blue, the studies in blue do not form a relatively small subset of the Duchovniks in the world. However, if it were true that *few* has also a non-proportional reading similar to the reading we find for *four*, which we also have in (47a), the sentence should have a second reading under which it would be true, given that (47b) is true. A strong reading in which *few* is interpreted as 'a small number' (the cardinality reading) is absent; the sentence only has the (false) proportional interpretation. We can conclude from this that *many*-type quantifiers have only one strong reading, which is necessarily proportional. Proportionality can then be seen as a side effect of the partitive reading in the context of these quantifiers, and not as a result of ambiguity of the Qs.

Contrary to cardinal numerals such as *three*, Qs that trigger a proportional interpretation never indicate absolute quantities, and have to be interpreted with respect to a contextually given norm. What counts as *few* depends on the context. For example, in (47a), *few Duchovniks* can refer to the four Duchovniks in the Stedelijk Museum in a situation in which we have seen a large number of paintings, only four of which were Duchovniks. If except for the Duchovniks we have hardly seen any other paintings, the sentence is not so felicitous. Partitives are interpreted with respect to a reference set, which in the partitive construction is represented by the noun phrase in the partitive PP. The data discussed so far indicate that the partitive or strong reading of quantified noun phrases containing a Q expressing relative quantity is necessarily proportional. The norm with respect to which these Qs are interpreted depends on the size of the reference set. In *a lot of the students*, for instance, what counts as 'a lot' depends on the size of the set of the students. The fact that we evaluate *a lot* as a proportion of the reference set introduced by the partitive should be seen as the result of a general interpretive process triggered by expressions of relative quantity that have to be interpreted with respect to a norm, not to ambiguity of these expressions.

Having argued so far that *many*, *a lot* etc. should not be seen as ambiguous, it is interesting to look at *most*. *Most* in the sense of 'more than

---

[39]   I disregard the possible interpretations that may be obtained through focus. For discussion of the interaction between focus and quantifiers such as *few*, see for instance Westerståhl (1985), Partee (1991), Herburger (1992) and De Hoop & Solà (1995).

half' is classified among the strong quantifiers, but *most* or *the most* also functions as the superlative of *much/many*. Given that the cardinal and proportional readings of *a lot* are not a matter of ambiguity, we would like to say that *most* is not ambiguous between a superlative ('more than any other') and a proportional reading ('more than half') either, and that the proportional reading of *most NP* is the result of partitivity. A similar suggestion for Dutch *de meeste* 'most; the most' has been made by Hoeksema (1983). Hoeksema takes the superlative 'more than any other' as the basic interpretation of *de meeste* and argues that the 'more than half' interpretation is obtained in those cases where the cardinalities of exactly two groups are compared. In that case 'more than any other' boils down to 'more than the other' which corresponds to 'more than half'. This makes the 'more than half' interpretation a special case of the superlative.

Dutch *de meeste* 'the most; most' is simpler than its English counterpart, as there are not two different forms (*most/the most*), which, in the context of nouns distinguish between a strong (*most*) and a weak reading (*the most*).[40] I will leave the difference between *most* and *the most* aside, and use Dutch examples to illustrate the point.

(48) a. De meeste kinderen kregen een kadootje
          'Most children got a present'
      b. Jan, Peter en Fred vierden hun verjaardag. Jan kreeg de meeste kadootjes
          'Jan, Peter and Fred celebrated their birthdays. Jan got the most presents'

The noun phrase *de meeste kinderen* 'most of the children' in (48a) has a proportional reading ('more than half of the children got a present'). In (48b) *de meeste* 'the most' functions as a superlative. John got more presents than either Peter or Fred, but not necessarily more than half of the total number of presents.

Let us look at numerals once again, which have a non-proportional partitive reading:

(49)   Three of the women are linguists

This sentence states that if we take the set of women and the set of linguists, there will be overlap between the two, and the cardinality of the

---

[40]   The distinction between *most* and *the most* is illustrated by the translations of the examples in (48). *Most* in the translation of (48a) has a strong reading, while *the most* in the translation of (48b) has a weak reading. In the latter sentence *most* can also be used, but if the weak, superlative interpretation is intended, *the most* is strongly preferred. I will leave this issue aside.

intersection is three. The set corresponding to *the women* can be divided into two subsets on the basis of the criterion of whether they are linguists or not, and the set of women linguists contains three members. Consider now (50), where *three* is replaced by *most*:

(50)   De   meeste   vrouwen   zijn   taalkundige
          the   most   women   are   linguist
          'Most women are linguists'

In order to understand *de meeste* at least two sets must be compared. In (50) these are the subset of the women who are also linguists and the subset of the women who are not. The fact that the proportional reading corresponds to 'more than half' can be seen as the result of comparing exactly two sets. In non-partitive contexts, such as (48b), more than two sets can be compared, in which case the 'more than half' does not occur.

  We can conclude that the proportional interpretation we find in the context of *many*, *most* and *a lot* is not the result of ambiguity of these Qs but should be attributed to general interpretative mechanisms, triggered by Qs which do not indicate an absolute quantity, but a quantity which is understood with respect to a norm.

6.5   Conclusions

In the preceding four sections I discussed several aspects of the distribution of DQs in the context of NPs, taking as a starting point the desire to keep a maximally simple definition of DQs. The goal of this chapter was to show that peculiarities of DQs in the context of NPs were the result of general properties of (quantified) noun phrases. In the first subsection I discussed the nature of the scalar position bound by the DQ in the NP. In argumental noun phrases, whether the noun is abstract or concrete, this position has the properties of a *q*-position, not of a *g*-position. Looking at nouns and adjectives that from a conceptual point of view introduce the same scale, we see that the scale manifests itself as a *q*-position in the noun, and as a *g*-position in the adjective. This shows that the difference between the two types of scales is not a conceptual one, but depends on syntactic factors. In 6.2 I argued that adjectives are adjoined to the NP and that no NumP is present between the DQ and the NP. This makes it possible to derive the order of a DQs, the NP and adjectives on the assumption that DQs adjoin to NP and not to a higher functional projection in the superstructure of the NP. In 6.3 I argued that the element *de* in French *beaucoup de livres* 'a lot of books' is inserted to ensure that the argumental noun phrase gets case. *De* is inserted as a last resort when a DQ uses the

case assigned to the noun phrase. Finally I argued in 6.4 that the partitive construction and the partitive interpretations are general properties of quantified noun phrases. The meaning effects found in partitives are due to general interpretive mechanisms, not to ambiguity of the Q.

7   Adnominal quantifiers

The English word *many* cannot be used with mass nouns: *many sugar is ungrammatical. French *beaucoup* 'many; much' and English *a lot* can be combined with both mass nouns and plural count nouns. Another property of *many* which distinguishes it from *beaucoup* and *a lot* is that its use is restricted to the nominal system. *Many* cannot be adverbial. The difference between *many* and French *beaucoup* is illustrated in (1):

(1)   a.   John goes to the movies a lot/*many
         b.   Jean va   beaucoup au   cinéma
            Jean goes   a-lot   to-the cinema

This chapter focuses on the differences between quantifying expressions which are restricted to the nominal system and DQs, which are insensitive to the categorial properties of the phrase they combine with. I will argue, among other things, that the impossibility of combining *many* with a mass noun is related to the fact that it cannot be used as an adverb.

    The chapter will be organized around the descriptive generalization in (2). This generalization states that there is a correlation between the restriction of certain quantifiers to nominal contexts and their selectional properties within the nominal system:

(2)   Qs that are restricted to the nominal system cannot be combined with a mass noun unless they are also compatible with a count singular and a plural

The selectional properties of typically adnominal Qs differ from those of DQs within the nominal system. As we have seen in the preceding chapters, DQs combine with mass nouns and count plurals, and resist combination with count singulars. In the rest of this chapter I will call Qs that only function in the nominal system AdnQs (adnominal Qs).

The different selection properties of DQs and AdnQs within the nominal system can be understood under the assumption that DQs theta select their host, as discussed in the preceding chapters, while AdnQs categorially select NPs. It turns out that there are three types of AdnQs. The first type is found in the context of singular count NPs. An example is English *one*, which is incompatible with mass nouns, plurals and non-nominal phrases. The second type selects plural count NPs. *Many*, mentioned above, is an example of a Q belonging to this class. The last type of typically adnominal Q is found in the context of any NP, independently of mass and count properties or singular and plural. An example of this type of quantifier is French *quelque* 'some', which combines with mass nouns, count singulars and count plurals, but not with non-nominal projections.

I will take selection of plural or singular as an instance of categorial selection, as a consequence of which the three possibilities are expected given uniqueness of categorial selection. The three types then correspond to selection of singular, selection of plural and selection of NP, independently of the Number properties of this NP. Only the last class of AdnQs is found in the context of mass nouns, and I will argue below that this is an indication that mass nouns do not bear Number morphology at all.

AdnQs selecting either a singular or a plural count noun normally are incompatible with mass nouns. It is possible to circumvent this restriction, however, by the insertion of a classifier. Whereas **many sand* is out, *many bags of sand* is fine, for instance. As was shown in chapter 2, Chinese is a language in which the opposition between singular and plural does not exist and classifiers are obligatorily present in the context of AdnQs. The combination of AdnQs with VPs can also be achieved by the insertion of a classifier-like item. In (3), the combination of the AdnQ *many* with a VP is made possible by insertion of *times*:

(3)   We went to the movies many *times*

Quite generally, classifier insertion seems to be an alternative way to satisfy the selectional requirements of the AdnQ. It will turn out, though, that the relation between *many times* and a VP differs from the relation between *many* CL and a mass noun. Making an exception for those classifier constructions which have turned into DQs, which were discussed in 4.2.3, I will argue that classifiers uniformly select NPs.

The organization of this chapter is as follows. In 7.1 the empirical background for the generalization in (2) will be discussed. A theoretical account for the generalization will be given in 7.2. Section 7.3 focuses on the relation between classifiers and Number morphology on the one hand, and the role of 'verbal' classifiers such as English *times* on the other.

7.1   Empirical background

According to the generalization in (2) there exist no AdnQs which combine only with a mass noun, with a plural and a mass noun, or with a singular and a mass noun. The distribution of AdnQs in French, English and Dutch supports this generalization.

AdnQs which only select a singular count noun are *un* 'one, a', *chaque* 'each' in French, *one*, *a*, *each* and *another* in English and *een* 'one, a', *elk* 'each' and *ieder* 'each' in Dutch. The French examples in (4) illustrate the distribution of *un* 'one, a' and show that, in accordance with the generalization in (2), *un* cannot be used adverbially:[41]

(4)   a.   un cheval/ *chevaux/ #sucre
             a   horse/   horses/   sugar
        b.   *Jean a   un dansé   la salsa
             Jean   has one danced   the salsa

Other cardinal count numerals are only found in the context of plurals, and, again, resist adverbial use:

(5)   a.   deux chevaux/ *cheval/ #sucre
             two   horses/   horse/   sugar
        b.   *Jean a   deux dansé   la salsa
             Jean   has two   danced   the salsa
        c.   *Jean est deux allé   au   cinéma
             Jean   is   two   gone   to-the   movies

(5d) shows that adverbial use of *deux* is excluded even if the verbal predicate is count and can in principle have a plural interpretation (cf. (1b)). In order to make an adverbial quantifier out of a cardinal numeral the element *fois* 'time' has to be added:

(6)   Jean a   une/deux fois dansé   la salsa
             Jean   has one/two   times   danced   the salsa

The same pattern is found in Dutch and English.

Indefinite quantifiers that combine with a plural but not with a mass noun cannot be used adverbially either. In French this is the case for *plusieurs*

---

[41]   As noted in chapter 2, the morphological manifestation of plural in French is to a large extent a matter of orthographical convention. I will mostly use examples such as *cheval/chevaux* 'horse/horses', where singular and plural differ both in written and in spoken French.

'several', *différents* 'different' and *divers* 'different':

(7)   a.   plusieurs/différents/diverses chevaux/*cheval
           several/ different/ different   horse/ horses

    b.   #plusieur(s)/différent/divers   sucre
           several/ different/ different   sugar

    c.   *Jean est plusieur(s)/différent/divers allé   au   cinéma
           Jean   is   several/ different/ divers   gone   to-the movies

In Dutch *enkele* 'some', *sommige* 'some', *meerdere* 'several', *verscheidene* 'several' and *verschillende* 'different', and in English *several*, *different*, *many* and *few* behave in the same way as the French indefinite quantifiers in (7). *Many* and *few* are particulary interesting because they strongly resemble DQs but are restricted to plurals. *Many* and *few* do not combine with mass nouns and cannot be used adverbially either, while *much* and *little*, which are restricted to mass nouns, and *a lot*, which combines with both mass nouns and count plurals, can be:

(8)   a.   *John took many/few sugar in his coffee
    b.   John took much/little sugar in his coffee
    c.   *John sleeps many/few these days
    d.   John sleeps much/little these days
    e.   *John goes to London many/few
    f.   John goes to London a lot

Again we see that the incompatibility of *many* and *few* with verbs is not restricted to mass predicates. They are incompatible with count verbal predicates as well, as in (8e). The generalization that a Q which is incompatible with a mass noun cannot function as a DQ is exceptionless in the three languages considered.

    The third and last type of AdnQ is found in the context of mass nouns, count singulars and count plurals, which suggests that this type is insensitive to the Number properties of NPs. In general, Qs of this class are similar to an indefinite article when combined with a count singular, while they describe a small quantity in the context of a count plural or a mass term. An example is French *quelque* 'some':

(9)   a.   Jean a   lu   quelque   livre de linguistique
           Jean has   read   some   book of linguistics

    b.   Pierre   a   mangé quelques escargots
           Pierre   has eaten   some   snails

    c.   Marie   a   eu quelque   peine   à   choisir
           Marie   has had some   trouble   to   chose

In English, *some*, *no* and *any* belong to this class:

(10) a. John did not read any book about linguistics
      b. Peter did not eat any snails
      c. Mary did not have any trouble to choose

Dutch examples are the exclamative marker *een* (cf. Bennis 1995), *geen* 'no' and *enig* 'some':[42]

(11) a. Een   interessant BOEK dat hij gekocht   heeft!
          an   interesting book   that he bought   has
          'He bought such an interesting book!'
      b. Een   SLAKKEN   dat   hij gegeten heeft!
          a   snails   that   he   eaten   has
          'He ate so many snails!'
      c. Een   MOEITE   dat   het gekost heeft!
          a   trouble   that   it   cost   has
          'It has taken so much trouble!'

The examples in (12) show that this class of Qs cannot be used adverbially, and hence falls in the category of AdnQs:

(12) a. *Pierre a   quelque   dansé   *[French]*
          Pierre   has   some   danced
          'Pierre danced some'
      b. *Peter didn't dance any   *[English]*
      c. *Wat heeft Piet   een   gedanst!   *[Dutch]*
          what has   Piet   a   danced
          'Piet danced so much!'

---

[42] The Dutch equivalent of *quelque* and *some*, *enig* 'some/any' has unusual polarity properties depending on the mass/count properties of the noun it modifies. It is a negative polarity item when combined with a singular count noun, a positive polarity item if combined with a plural count and has no polarity restrictions if combined with a mass term:

(i)   a. Jan heeft *(nog nooit)   enig boek   over   taalkunde gelezen
          *Jan has   *(yet never)   any book   about   linguistics read*
      b. Peter heeft (*nog nooit)   enige   slakken   gegeten
          *Peter has   (*yet never)   some   snails   eaten*
      c. Marie heeft (nooit) enige   moeite gehad om te kiezen
          Marie has   (never) any/some difficulty had   to choose

The polarity properties of *enig* are beyond the scope of this thesis, but see Van der Wouden (1994) for an overview of phenomena relating to negative polarity.

English *some* is exceptional in this respect, as it can be used adverbially:

(13)   a.   We walked some
       b.   I like him some

On the basis of its adverbial use we would classify *some* as a DQ. Contrary to all other DQs, however, it can be found in the context of a count singular, as in *some person*.

According to (2) all other types of Qs are not uniquely found in the nominal system. As we have seen in the preceding chapters DQs typically combine with both plurals and mass nouns. A small number of DQs, to which I will come back below, are found in the context of mass nouns only. Examples are *much* in English and *un peu* in French. The last two types of Qs which are logically possible do not seem to exist. In the languages I considered there are no Qs which combine with count singulars and plurals without combining with mass nouns as well, nor Qs which combine with mass nouns and count singulars but which are incompatible with plurals. This is quite a remarkable fact, and I will show in the next section that it is a strong piece of evidence in favour of the idea that AdnQs select one unique category.

There are some quantifying expressions which are restricted to the nominal system that do not fall under the generalization in (2). A first example is French *plein* 'a lot'. *Plein* has all the properties of an adnominally used DQ. It roughly means the same as *énormément* 'a (whole) lot' and combines with a mass noun or a count plural. Yet *plein* cannot be used adverbially, and hence cannot be considered to be a DQ. The distribution of *plein* is illustrated in (14):

(14)   a.   Il y a   plein de sucre   dans cette tarte à la rhubarbe
            there is   a-lot of sugar   in   this   pie with the rhubarb
            'There is a lot of sugar in this rhubarb pie'
       b.   Plein d'étudiants   sont   venus   à la fête
            a-lot of-students   are   come   at the party
            'A lot of students came to the party'
       c.   *Pierre a   plein dormi   cette nuit
            Pierre   has a-lot slept   this night
            'Pierre slept a lot last night'
       d.   *Pierre est plein allé   au   cinéma cet été
            Pierre   is   a-lot gone   to-the movies   this summer
            'Pierre went to the movies a lot this summer'

The word *plein* originally means 'full', and the quantifier use, according to Togeby (1982-85), has recently been introduced into the language. The

expression *c'est plein de fautes* 'it is full of errors' has led to *il y a plein de fautes* 'there are a lot of errors'.[43]

It might be the case that words, in the process of becoming a DQ, impose stronger restrictions on their use at first. Two of my informants pointed out to me that it is possible to use *tout plein* as an adverb, one of whom indicates that it can be used in the context of eventive verbs as in (15a) and (15b) and the other mentions its compatibility with the verb *ressembler* 'to resemble' in (15c) (see also Grevisse 1986:1450):[44]

(15)   a.   ?Pierre a   dormi   tout   plein
            Pierre   has slept   all   full
            'Pierre slept a whole lot'
       b.   ?Pierre est allé   au   cinéma tout plein
            Pierre   is gone   to-the cinema all   full
            'Pierre went to the movies a whole lot'
       c.   ?Pierre ressemble   tout   plein à   Marie
            Pierre resembles   all   full   to   Marie
            'Pierre resembles Marie a whole lot'

Since diachronic processes seem to play a role in the restrictions on *plein*, it should be treated as a special case.

Whereas *plein* is an isolated case, there is also a group of elements which are involved in quantification that systematically violate the generalization in (2). These are classifier constructions. As discussed in 4.2.3 classifier constructions are typically found in the nominal system. Only under very specific conditions can classifiers lose their selectional properties and turn into DQs (e.g. *a lot*, Dutch *een hoop* 'a lot'). Classifiers usually combine with mass nouns and plurals, on a par with DQs. Some examples are given in

---

[43]   In Dutch the words for *a lot* and *full*, which are *veel* and *vol*, are etymologically related. English *full* can be used as a degree modifier in expressions such as *full well* (Marcel den Dikken, p.c.).

[44]   Johan Rooryck pointed out to me that focus has a similar effect as *tout*. Focused *plein* may be used as an adverb, as in (i):

(i)   Il   a   pourtant   dormi PLEIN
           he   has   nevertheless slept a-lot

Tout plein is less acceptable with nouns than *plein*. **tout plein de sucre* 'a whole lot of sugar' is out but if the noun phrase is extracted, as in (ii), *tout plein* can be used as an adnominal quantifier:

(ii)   Il y   en   a   tout plein
           it there of-them   has   all full
           'There are a whole lot of them'

(16):

(16) a. a kilo of sugar/beans/#bean
b. a bottle of wine/marbles/#ship
c. two boxes of sand/books/#computer

Yet, these classifier constructions cannot be used outside of the nominal system. I will argue below that classifier constructions categorially select NPs, and at the same time theta select a scalar argument position.

The data discussed in this section are recapitulated below.

Adnominal quantifiers (restricted to the nominal system)

  Qs combining with count singular:
  French: *un* 'one/a'; *chaque* 'each'
  English: *a*; *one*; *another*; *each*
  Dutch: *een* 'one; a', *elk* 'each'; *ieder* 'each'

  Qs combining with count plurals:
  French: *deux* 'two', *trois* 'three' etc.; *plusieurs* 'several'; *différents* 'different'; *divers* 'different'
  English: *two*, *three* etc.; *several*; *different*; *many*; *few*
  Dutch: *twee* 'two', *three* 'drie' etc.; *enkele* 'some'; *sommige* 'some'; *meerdere* 'several'; *verscheidene* 'several'; *verschillende* 'different'

  Qs combining with all types of NPs (mass/count/singular/plural):
  French: *quelque* 'some'
  English: *any*; *no*
  Dutch: *een* 'such/such a'; *geen* 'no'; *enig* 'some'

  Exceptional AdnQs:
  in general: classifier constructions, which combine with mass nouns and plurals (cf. 4.2.3 and 4.2.5 for classifier constructions that have turned into DQs)
  French: *plein* 'a whole lot' combines with mass nouns and plurals, yet functions as an AdnQ, not as a DQ

Degree quantifiers   (not restricted to the nominal system)

   Qs combining with mass nouns only:
       French: *un peu* 'a bit'
       English: *much*; *little*; *a bit*
       Dutch: *een beetje* 'a bit'; *een ietsiepietsie* 'a bit'

   Qs combining with mass nouns and plurals:
       the remainder of the DQs (cf. 4.2.5 for a list)

   Exceptional DQ:
       English: *some*; compatible with all types of NPs, yet also
                    functioning as a DQ

Nonexisting quantifiers

   Qs combining with only count singulars and mass nouns

   Qs combining with only count singulars and count plurals

7.2   Theoretical implications

7.2.1   Categorial selection versus theta selection

The data in the preceding section show that AdnQs and DQs have clearly
different selection properties, even if we restrict ourselves to the nominal
domain. The differences can be understood on the basis of the difference
between categorial selection and theta selection. In what follows I will be
mainly concerned with the syntactic selection properties of the Qs. For a
detailed account of the semantics of the different classes of Qs, cf.
Chierchia (1995).

   As argued in the preceding chapters, DQs theta select their host, needing
the presence of a scalar argument position in order to be interpreted. In the
nominal system, this scalar position is found in the theta grid of mass nouns
and plurals. In the standard case, DQs are in fact found with both plurals
and mass nouns. As the schema in 7.1 shows there exist only a few DQs
which can only be combined with mass nouns. For some of these DQs
which normally combine only with mass nouns, such as French *un peu* 'a
little', there is no absolute restriction on the use of a plural. The reluctance
of *un peu* 'a bit' to combine with count predicates, illustrated in (17a), is not
extended to the verbal domain, as shown in (17b). In (17c) and (17d) it is

shown that in some cases *un peu* is acceptable, at least for some speakers, with a plural count noun:

(17)   a.   *un   peu   de   chevaux
            a   little of   horses
       b.   Jean est   un peu allé   au   cinéma ces   derniers temps
            Jean is   a little gone   to-the cinema these last   times
            'Lately, Jean went to the movies a couple of times'
       c.   Jean a   mangé un peu   de   cacahuètes
            Jean has eaten   a   little of   peanuts
            'Jean ate some peanuts'
       d.   Pierre a   mis   un peu   de fleurs sur la   table
            Pierre has put   a   little of flowers on   the table
            'Pierre put some flowers on the table'

The sentences in (17) show that the restriction found on the use of these *un peu* is not an absolute incompatibility with plural Number features, nor incompatibility with plural interpretation. As we have seen in the preceding section, there are no DQs which only combine with plurals. Qs which, in the nominal system, only combine with plurals always function as AdnQs.

As AdnQs are only found in the context of nouns, the idea that they categorially select NPs is quite plausible and not very exciting as such. Interestingly, however, the existence of exactly three types of AdnQs follows from the assumption that Number features are categorially selected, if we adopt the idea that a Q categorially selects at most one category. This idea has already been exploited in the previous chapters, where I argued that DQs, which obviously combine with more than one category, are insensitive to the categorial properties of the phrase they modify. I will first discuss how the selection of AdnQs would work in case we assume that the AdnQ directly selects an NP, and then consider the potential role of a Num(ber)P as an intermediary between the AdnQ and the NP.

The first class of AdnQs only combines with plurals. If we assume that Qs which show up in the context of plural nouns and not with mass nouns, do so because they categorially select a plural NP, we expect them not to be used adverbially on the basis of the assumption that categorial selection is unique.

Similarly, AdnQ which uniquely combine with singular count nouns categorially select a singular NP. Note that these Qs are incompatible with mass nouns, and moreover, that there do not exist any Qs which combine with a count singular and a mass noun. These two facts suggest that mass nouns are not singular. This claim has been made on independent grounds by Delfitto & Schroten (1991) discussing existential bare noun phrases. According to Delfitto & Schroten the plural Number affix in an existential

bare plural functions as a quantifier in sentences. Bare singulars do not have
an existential reading, which is due, according to Delfitto & Schroten, to the
non-quantifier status of singular Number morphology. If mass nouns were
singulars, we would expect bare mass nouns to pattern with bare singular
count nouns, but as a matter of fact they have the same distribution as bare
plurals (cf. chapter 2). Delfitto & Schroten conclude that mass nouns are
not singulars and contain a different type of suffix, which can function as
a quantifier. The claim that mass nouns contain a different suffix than count
singulars is corroborated by the observation that in several Romance dialects
the word marker found on singular count nouns differs from the one found
on mass nouns; e.g. in Norcia (Umbria) we find the suffix –*u* on singulars,
and the suffix –*o* on mass nouns as in *lu piettu* 'the chest' and *lo fero* 'the
iron' (cf. Hall 1968).

Accordingly, the fact that mass nouns trigger singular agreement on the
verb and combine with singular adjectives and determiners, as shown in
(18), should be seen as a result of the default status of singular, and not of
the presence of a [+singular] feature on the mass noun:

(18)   Le   sable est   blanc
          the SG sand   is SG   white SG
          'The sand is white'

The last type of AdnQs is found in the context of singular, plural and
mass nouns. This corresponds to categorial selection of an NP, and
underspecification with respect to the Number features of this NP. It is
quite interesting that this type of Q exists, while there are no Qs combining
with both singulars and plurals which are incompatible with a mass noun.
This is a strong argument in favour of the idea that Qs can select at most
one category, as I postulated in chapter 1. The Q can select either a singular
NP or a plural NP but not both at the same time. Compatibility with both
types of NP is only possible in case the Q is not sensitive to the Number
features of the NP it selects, and in that case we predict that the Q is also
found in the context of mass nouns, which do not have Number features
at all. The three types of attested AdnQs correspond to three categories of
NPs the AdnQ can select: NP [+singular], NP [+plural] or NP.

Alternatively, one could assume that the Number features are checked in
a NumP, in accordance with Minimalist assumptions about the role of
features in syntactic structure and derivation (cf. Chomsky 1995), and that
AdnQs select NumPs. The presence of a NumP in the functional
superstructure of nouns has been defended by for instance Ritter (1991),
Bernstein (1993) and Valois (1991). In chapter 6 I argued that the possibility
of postnominal adjectives in French is not a reason to adopt overt N-to-
Num movement in this language. If N-to-Num movement applies, it applies

covertly, which means that if we adopt the presence of a NumP we do so on conceptual grounds.

As for the selection properties of AdnQs, the presence or absence of a NumP is not a crucial issue. In case we assume there is a NumP, to which the French, English or Dutch noun moves in covert syntax, the three different types of AdnQs select a NumP which is marked for singular, a NumP which is marked for plural, or an NumP, regardless of its number features. If AdnQs such as *any* and French *quelque* 'some' select NumP, we have to assume the presence of a NumP in the functional superstructure of a mass noun, even though the mass noun is neither a singular nor a plural. Otherwise we would predict that selection of a NumP without specification of singular or plural would lead to selection of singular and plural count NPs, without allowing for mass nouns. This is exactly what we need to prevent, as there exist no quantifiers which combine with plural and singular count nouns, and AdnQs such as *any* and *quelque* combine with any noun, independently of its Number properties. One can ensure that mass nouns also move to a Number projection by assuming that they contain a 0-feature which triggers the presence of a NumP, but which prevents them from having a value for either plural or singular (cf. Rooryck 1994 for discussion of different feature values, including the possibility of the 0-value).[45] I will not discuss this possibility further, and leave the choice between the two ways of implementing the selectional properties of AdnQs (making use of NumP or not) to the theoretical preferences of the reader.

As we have seen in the previous section, classifier constructions have different selection properties than AdnQs. Classifier constructions such as *a kilo* and *two bottles* select NPs, but are also sensitive to the presence of a scalar theta position in the NP. On a par with DQs they combine with plurals and mass nouns, while being incompatible with singular nouns (*a kilo of sugar/beans/#bean*; cf. (16)). The exceptional property of classifier constructions, can be seen as a reflection of their ability to both categorially and thematically select, contrary to the AdnQs, which only select on the basis of category and contrary to the DQs, which only theta select. This assumption is not implausible in the light of the observation that, quite generally, classifiers are more sensitive to lexical properties of the noun they combine with than AdnQs. This is particularly clear in numeral classifier languages, grammars of which offer long lists stating which classifier has to be used in the context of which noun. Similarly, we saw in 4.2.3 that the Dutch NP selecting classifier construction *een schep* 'a shovel(ful)' can be

---

[45]   One might say that AdnQs which combine with singular count nouns, plurals and mass nouns (e.g. *any* or French *quelque*) do not select NumP but NP. In this case one has to stipulate that it is not possible to select a NumP which is underspecified for singular and plural. Otherwise we fail to explain that there exist no quantifiers which combine with both singulars and plurals, and with nothing else.

used in the sense of 'a lot' but that this interpretation is not readily available in the context of all NPs. *Een schep geld* 'a lot of money' is fine, but *een schep koekjes* cannot mean 'a lot of cookies'. Classifiers are hence more selective than other Qs, and if we assume that contrary to AdnQs they may select both on the basis of category and on the basis of the presence of a scalar theta position, the different selectional properties of AdnQs and classifiers fall out.

Summarizing, DQs theta select a scalar position and for that reason they are found in the context of mass nouns and plurals or, in some exceptional cases, only in the context of mass nouns. They are not found in the context of a singular count noun as singular count nouns do not contain a scalar argument position. AdnQs categorially select NP [+singular], NP [+plural] or NP (or alternatively NumP [+singular], NumP [+plural] or NumP), which corresponds to the three types of AdnQs discussed in the previous section. Qs selecting a singular and a mass noun do not exist, because the combination of a singular and a mass noun cannot be the result of unique categorial selection, as I argued that mass nouns do not bear the feature [+singular]. The nonexistence of Qs that combine with a singular and a plural but not with a mass noun is the result of uniqueness of categorial selection. Classifiers normally categorially select NPs, but they can also theta select a scalar position, resulting in compatibility with mass and plural NPs only.

7.2.2 The syntactic position of AdnQs

Given that the selectional properties of AdnQs follow from categorial selection, we do not want to project these Qs as adjuncts. In chapter 4 Deg-heads, which categorially select APs and function as theta binders of the *g*-position in the grid of this AP, were analysed as heads of the functional projection DegP which dominates AP. Analogously, we could say that AdnQs are QP heads which select an NP, and act as binders of the *q*-position in this NP.[46]

The motivation for head status of Deg-heads was provided by the impossibility to extract them and the suffixal nature of the comparative and superlative Deg-heads *–er* and *–st*, following Corver (1990). On a par with Deg-heads, AdnQs cannot be extracted. Consider for instance exclamative *een* in Dutch. The examples in (19) show that French exclamative *combien*, which functions as a DQ, can be extracted, while *een* cannot, in which respect it resembles the Deg-head *too* (cf. 4.2.1):

---

[46]   In this section I will disregard the potential presence of a NumP intervening between the QP hosting the AdnQ and the NP.

(19)   a.   Combien$_i$ il   lit   [t_i de bouquins]!   *[French]*
            how-many   he   reads   of books
            'He read so many books!'
       b.   *Een$_i$ leest   hij [t_i BOEKEN]!   *[Dutch]*
            a   reads   he   books
            'He reads so many books!'
   c.   *Too$_i$ is Peter [t_i tall]   *[English]*

The contrast between French *combien* and Dutch *een* can be understood
under the assumption that *een* heads a QP selecting NP, while *combien* is
adjoined.

   None of the AdnQs discussed so far has affixal properties, but the article
in Swedish does, which can be seen as the counterpart of *un/a/een*. The
examples in (20) show the element *en* 'a' either precedes or follows the
noun. In case it precedes N, *en* functions as the indefinite article, and if it
follows, the noun phrase is definite:

(20)   a.   en   bil
            a   car
       b.   bilen
            car-a
            'the car'

According to Delsing (1988), the element *en* is generated in the head
position of an FP dominating the NP. The order in (20b) is obtained by
head movement of N to F, and subsequent movement of the N+*en* to D
which causes the definite reading. The possibility of head movement
suggests that *en* occupies a head position (cf. also Kester 1996).

   On the basis of the evidence presented so far, the following structure can
be adopted, where the AdnQ occupies the head position of QP:

(21)   QP
                           /   \
                        Spec   Q′
                                / \
                              Q   NP
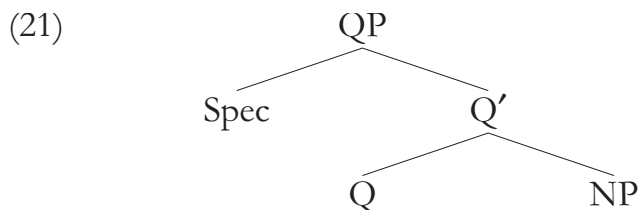
This structure roughly corresponds to the one proposed by Abney (1987),
Cardinaletti and Giusti (1991) and Giusti (1991). Note that these authors
propose this structure for all quantifiers that combine with nouns. I propose
this structure only for AdnQs and not for DQs, which are analysed as
adjuncts. The adjunct status of DQs was motivated in the previous chapters.
Note that the selectional properties of DQs in the context of nouns cannot

be obtained by categorial selection, which is why the categorially selecting AdnQs and DQs have distinct properties as far as their compatibility with mass nouns, count singulars and count plurals is concerned. The differences in selectional properties within the nominal system between AdnQs and DQs are further evidence for categorial insensitivity of DQs.[47]

It might be the case that some AdnQs are generated in the specifier of the QP dominating NP, and not in its head-position. As the example in (22) shows, English *many* can be modified by a Deg-head:

(22)   John ate so/too many cookies

DegPs dominate the phrase they modify, and do not function as specifiers or adjuncts (cf. 4.2.1). If we assume that *many* heads the QP in (21), the DegP headed by *so* or *too* would dominate a QP dominating NP. The top node of the extended projection of the noun phrase *too many cookies* would hence be a DegP. An alternative might be that *many*, instead of being the head of the QP selecting NP, occupies SpecQP. In this configuration DegP may select *many*, in which case SpecQP would contain a DegP which is not problematic. In this case we have to assume that under Spec-head agreement with *many*, the head of QP categorially selects a plural NP.

As we have seen in the preceding sections, classifiers select NPs, but they also function as nouns themselves since they are compatible with AdnQs. Accordingly, I adopt the structure in (23), in which the classifier heads a nominal projection and categorially selects an NP:

(23)   QP
                         /   \
                        Q $N_{Cl}P$
                              /   \
                          $N_{Cl}P$ NP
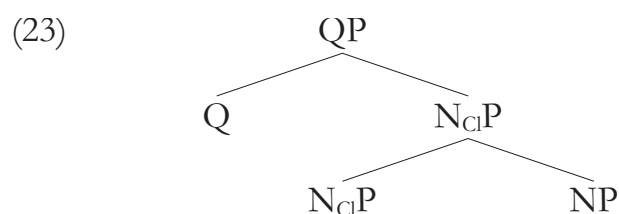
Q hosts an AdnQ, N_{CL} a classifier, which selects an NP containing a scalar *q*-position. In the configuration in (23) N_{CL} theta binds the scalar *q*-position in NP. The structure in (23) roughly corresponds, as far as the status of the classifier is concerned, to the ones proposed by J. Hoekstra (1988) and Löbner (1990). Both authors analyse classifiers as heads selecting an NP

---

[47]   The quantifier *tous* 'all' in *tous les enfants* 'all the children' does not behave like the other AdnQs and combines with the full DP *les enfants*, not with the NP *enfants*. This suggests that there are two different Q positions in the superstructure of NPs. One above and one under the DP level. A QP selecting DP has been proposed by Shlonsky (1991) for Hebrew, and Giusti (1991) uses a structure with two QPs to account for phrases of the type *all the three children*. The distribution of *tous* 'all' and its use as a floating quantifier will be discussed in the next chapter.

complement.[48]

In this section I argued that AdnQs occupy the head position of a QP dominating NP. The AdnQ *many* might occupy the specifier of QP instead as it can be modified by a Deg-head. As AdnQs usually cannot be modified, I assume that head status of the AdnQ is the standard case. Classifiers, which also select NPs, are analysed as heads selecting an NP complement as well. In the next section I will concentrate on those properties of classifiers due to which they may be selected by AdnQs.

7.3 AdnQs and classifiers

Most AdnQs cannot directly be combined with mass nouns, including collectives. Insertion of a classifier makes the combination possible. In Mandarin Chinese, which does not have singular and plural count nouns, classifiers are always inserted. The example in (24) shows that in order to combine *san* 'three' and *shu* 'book', either of the elements *ben* 'CL_{volume}' or *ge* 'CL_{unit}' has to be inserted:

(24)   san*(-ben/ge)   shu
          three(-CL_{volume}/ CL_{unit})   book
          'three books'

As I argued in 2.1.3.2, the denotation of the noun *shu* provides a criterion for counting from a semantic point of view. Insertion of the element *ge* 'CL_{unit}' cannot be seen as the source of the presence of atoms in the denotation of the noun *shu* as it does not contain any information about what these minimal parts are. Hence, this information must be present in the noun *shu*. The classifier and Number seem to have a similar function in the context of AdnQs, as classifiers make singular or plural selecting AdnQs compatible with NPs without Number morphology. Section 7.3.1 will study the relation between classifiers and Number morphology. I will argue that those AdnQs which need the presence of Number marking or a classifier are not sensitive to the semantic presence of minimal parts, but to the syntactic visualization of this presence, reflected by Number morphology or the classifier.

In section 7.3.2 I will comment on the use of classifiers in adverbial contexts. Insertion of the classifier-like element *times* makes AdnQs such as

---

[48]   J. Hoekstra (1988) also makes use of theta theory to express the quantificational relation between the classifier and the NP, though in a different way from the one proposed here. According to him, classifiers assign a quantificational theta role to the complement NP, whereas I assume that theta binding of the *q*-position in the NP is responsible for the quantificational relation between the classifier and the NP.

many compatible with verbs as well, as shown in (22):

(25)   We went to the movies many *(*times*)   (=(3))

There are many indications showing that *times* can be seen as a classifier, and at first sight it seems to be the VP selecting counterpart of the classifier *piece(s)*. However, the AdnQ-*times* combination turns out to function as a full noun phrase, and its relation with VP differs from the relation of an Adn-CL combination with an NP.

7.3.1   Classifiers and Number

Classifiers and nouns bearing Number morphology must have a property in common which makes them suitable complements for a QP headed by an AdnQ. A first hunch is that classifiers are marked for Number themselves. In case we want to modify a mass noun, which does not bear Number morphology, by a AdnQ selecting either a singular or a plural, we can insert a classifier which bears the required morphology, and which serves as a bridge between AdnQ and the mass NP. At first sight, this idea seems to be promising, given that the English classifier *piece* in (26) is marked for singular and plural in accordance with the selection requirements of AdnQ:

(26)   one piece of furniture; two pieces of furniture

However, further investigation of classifiers shows that they do not need to be marked for Number. In what follows I will first argue that classifiers can be unmarked for Number even if they combine with AdnQs. Both bare classifiers and Number marking will be considered to be syntactic markers of countability.

   In classifier languages, there is no formal difference corresponding to a singular/plural opposition expressed on the classifier: next to *san-ben shu* 'three-CL$_{volume}$ book' there is *yi-ben shu* 'one-CL$_{volume}$ book', which seems to be the general pattern in classifier languages. If we want to claim that classifiers are marked for singular and plural Number, we have to assume that this distinction is not visible. This is not impossible, given the existence of words that do not distinguish between singular and plural such as *fish* and *deer*. In spoken French, plural and singular forms coincide, given that the written plural *-s* hardly ever surfaces. The noun *enfant(s)* 'child(ren)', for instance, is pronounced as /ãfã/, regardless of whether the singular or plural is intended. This suggests that it could be the case that Chinese classifiers are marked for Number, but that the distinction between singular and plural is not visible.

This hypothesis turns out to be untenable when we look at classifiers in Dutch, some of which are similar to the Chinese ones in not bearing overt Number morphology. As shown in (27), certain classifiers do not need to be marked for the singular/plural opposition in the context of cardinal numerals, while others do:

(27) a. Jan heeft twee kilo(*'s) pruimen gekocht
          Jan has   two   kilo(PL) plums   bought
      b. Jan heeft twee zak*(ken) pruimen gekocht
          Jan has   two   bag(PL) plums   bought
          'Jan bought two kilos/bags of plums'

The Dutch classifier *kilo* resembles in this respect Chinese classifiers in that Number is not overtly expressed. Other classifiers that have the behaviour of *kilo* are *liter* 'litre', *gram* 'gram', *mud* 'four bushels'.[49]

    The compatibility of the non-overtly plural form *kilo* with cardinal numerals could be seen as an argument in favour of the presence of silent plural marking, as in the English and French cases discussed above. There are, however, some clear differences between the French and English nouns which function both as singulars and plurals on the one hand, and classifiers of the *kilo*-type in Dutch on the other, which make this explanation implausible.

    Comparing the alleged plural classifiers with French plural nouns we find several differences, suggesting that the French cases are in fact cases of formal identity between singular and plural, while the Dutch classifiers are not. The first difference is that French nouns trigger plural agreement on the verb, as in (28). Dutch classifiers of the *kilo* and type do not, as shown in (29a) for the classifier *liter* 'litre', while the ones that are marked for plural, for instance *glas* 'glass' in (29b), do.[50]

(28)   Trois enfants /ãfã/ sont/*est venus
          three child(ren)   are/is   come
          'Three children came'

(29) a. Er   zit/*zitten twee liter wijn in de kaasfondue
          there sits/sit   two litre wine   in the cheese-fondue
          'There are two litres of wine in the cheese fondue'

---

[49]   I will not address the question why certain classifiers are members of the *kilo*-class while others behave like 'normal' nouns.

[50]   In certain southern varieties of Dutch both the singular and the plural may be used in (29a) (Johan Rooryck, p.c.). In the standard Dutch the use of plural is not possible.

  b. Er *?zit/zitten twee glaz*en* wijn in de kaasfondue
    there sits/sit two glasses wine in the cheese-fondue
    'There are two glasses of wine in the cheese fondue'

Given that in both (29a) and (29b) the classifier is used as a pure measure, the difference in agreement cannot be the result of the interpretation of *liter* 'litre'. This is corroborated by the fact that in the English translation plural is marked on both the classifier *litre* and on the verb. The most plausible explanation for the lack of plural marking on the verb in (29a) is that *liter* 'litre' is not a plural.

 The second difference between the French plurals and Dutch classifiers of the *kilo*-type is illustrated in (30). In combination with a DQ, classifiers that are normally not marked for Number have to bear a Number specification. French plurals are fine in this context.

(30) a. vele kilo*('s) suiker   *[Dutch]*
    many kilo(s) sugar
  b. beaucoup d'enfants /ãfã/   *[French]*
    a-lot   of-child(ren)

The English exceptions *fish* and *deer* are similar in these respects to the French nouns and not to the Dutch classifiers. The example in (30a) shows a third peculiarity of the classifiers. It is possible to form a plural adding the regular plural morpheme. This is not possible for *deer* and *fish*.

 The data discussed in (28)–(30) show that the Dutch classifiers do not function as real plurals in the absence of plural morphology. As they can be combined with AdnQs, we must conclude that classifiers satisfy the selection criteria of the AdnQ in the absence of the relevant type of Number morphology.

 Further evidence for the idea that it is not a property of a lexical item to be compatible with AdnQs, but a property of classifiers, can be found in Chinese. In general, classifiers derive from nouns. In many cases these nouns can also function as common nouns. Chinese *wan*, for instance, means 'bowl' and can be either a classifier or a common noun. However, it is not possible to use the common noun *wan* without a classifier. Only when it functions as a classifier itself, is it directly compatible with a AdnQ. This is an important fact because it shows that it is not the lexical item *wan* that has the necessary properties to occur with AdnQs, but only the classifier *wan*.

 In chapter 2 I argued that there exists a class of count mass nouns, such as *furniture* in English and a large class of nouns including *ren* 'man' and *shu* 'book' in Chinese. These nouns contain lexically specified minimal parts in their domain of denotation, though they are not compatible with Number

morphology. In accordance with Chierchia (1995) I assume that singulars and count mass nouns have a different type of denotation. Singulars denote a set of atoms, while the count mass nouns denote a set of atoms and pluralities formed on the basis of these atoms. As plurals are formed on the basis of the denotation of a singular noun, the singular/plural distinction does not play a role for the count mass nouns, which nevertheless contain minimal parts in their domain of denotation, and as such provide a criterion for counting from a syntactic point of view.

Consequently, AdnQs which select a plural, such as cardinals other than *one*, are not sensitive to the mere presence of minimal parts in the structure. They are sensitive to the plural morpheme. As we have seen above, classifiers can be combined with cardinals in the absence of Number morphology. One could regard both the classifier and Number morphology as syntactic manifestations of the semantic presence of minimal parts. AdnQs which need the presence of Number or a classifier are sensitive to the presence of minimal parts, but their presence is not enough. The minimal parts must be syntactically visible, which is the case in the presence of a classifier or Number morphology.

Classifiers differ from Number morphology in that they have a much broader range. Number can only be used if the minimal parts are already present in the denotation of a noun. The Chinese classifier *ge* 'CL$_{unit}$' is similar in this respect, as it does not introduce information about what the atoms are. Other classifiers do introduce information about the objects that can be counted. Non-individual classifiers or measure phrases such as *kilo* introduce a criterion for counting. This latter type of classifier (which is called 'massifier' by Cheng & Sybesma 1997a) not only serves as a syntactic marker of the presence of a count structure, but creates this structure at the same time. The difference between plural and classifiers such as *ge* on the one hand, and classifiers such as *kilo* on the other, is that the former depend on the presence of a countable structure while the latter do not.

The selection criteria of singular/plural selecting AdnQs can be implemented in either of two ways. On the one hand, one can assume that the AdnQ selects an NP containing either the feature [+singular] or the feature [+plural] and that those classifiers which do not bear Number morphology contain a more abstract feature, which we could call [+countable], which can satisfy both requirements. On the other hand, these AdnQs might select a functional projection which contains a syntactic marker of countability (i.e. a classifier or Number). This Count Phrase (CountP) contains either a classifier or a noun marked for Number. An AdnQ selecting a plural can be satisfied by a CountP headed by either a plural or a classifier. I will not make a choice between the two options, but note that the latter is more in accordance with current assumptions in the literature: Chinese classifiers are usually generated in a ClassifierP (ClP) (cf.

for instance Huang 1982, Tang 1990, Cheng & Sybesma 1996, 1997). On the other hand, many linguists assume the presence of a NumP which hosts the Number features of nouns which are marked for morphological Number (cf. also the discussion in 7.2.1 above). The label CountP can be seen as a cover term meant to integrate ClP and NumP, which expresses the idea that Number marking and classifiers share the property of making nouns suitable for counting.

Chinese, Dutch and English differ with respect to Number marking on classifiers. In Chinese classifiers are never marked for Number, in Dutch there exist some classifiers, mostly measures such as Dutch *kilo* 'kilo' and *liter* 'litre', which do not show Number agreement, and in English classifiers indiscriminately bear Number morphology. The difference between the three languages suggests that classifiers are not necessarily in themselves proper candidates for satisfying the selectional requirements of AdnQs, and in some cases need Number marking as well. In what follows I will show that classifiers which are not marked for Number have a more restricted distribution than those that are. I will argue that this is due to the purely functional status of bare classifiers. Number marked classifiers can to a certain extent function as nouns due to the presence of an *r*-position.

The Chinese examples in (31) show that DQs cannot be found in the context of a classifier:

(31)   a.   hen   duo   (*ben)   shu
            very   *much*   *(CL$_{volume}$)*   *book*
            'a lot of books'
       b.   hen   duo   (*wan)   tang
            very   *much* *(CL$_{bowl}$)*   *soup*
            'a lot of soup'
       c.   hen   duo   (*jin)   nailao
            very   *much* *(CL$_{pound}$)*   *cheese*
            'a lot of cheese'

Given that the DQ is not sensitive to the presence or absence of an individualizer but is mainly interested in the presence of an open scalar position it can be identified with, we expect that insertion of a classifier is not necessary in the context of a DQ. Chinese nouns all contain a scalar argument position, as count singulars, the only category of nouns which accommodates a non scalar *q*-position, do not exist in this language. What is intriguing about the examples in (31) is, that the classifier must be absent. This is surprising, as there does not seem to be a semantic problem in the examples in (31). The English counterpart of (31b), *many cups of soup*, is fine.

The obligatory absence of the classifier in the context of DQs in Chinese might be better understood when we compare the Chinese facts to Dutch.

In Dutch we find a similar phenomenon, to which I already alluded in (30). Classifiers are excluded in the context of DQs unless they are marked for Number:

(32)   a. Jan heeft meer kilo*(s) pruimen gekocht dan   Marie
            Jan has   more kilo(s)   plums   bought   than   Marie
            'Jan bought more kilos of plums than Marie did'
      b. Jan heeft gisteren   vele liter*(s) wijn gedronken
            Jan has   yesterday   many litre(s) wine drunk
            'Jan drank many litres of wine yesterday'

The examples show that the presence of Plural marking on the classifier saves the sentence.

At this point it is important to realize that plural is, on the one hand, a syntactic marker for the presence of atoms, but on the other hand the source of a change in the denotation of the noun. The singular form of a singular/plural pair does not introduce a scale while the plural form does. Adding plural morphology to a singular NP makes the NP compatible with an AdnQ selecting a plural, but also induces a semantic operation which results in the presence of a scalar *q*-position. As such the presence of the plural morpheme is crucial in the context of DQs, which depend on the presence of the scalar *q*-position. Unlike plural morphology, the classifier does not introduce a scalar position. It combines with nouns which contain a scalar position, and hence the classifier can be left out in the context of a DQ, while plural morphology cannot.

I take the presence of plural marking on a classifier, as in (32), to be an indication that the classifier loses its purely functional status and is interpreted as a real count noun, which is either singular or plural. This offers an explanation for the incompatibility of AdnQs and classifiers in Chinese, as Chinese lacks real count nouns. The explanation hinges on the fact that there is no similar strategy in which the classifier is reanalysed as a collective noun. I do not fully understand why collectives would differ from plurals in this respect. However, the contrast between Dutch and Chinese is quite striking, as illustrated by the examples in (33a) and (33b), all the more so as the lexical item *wan* 'bowl' is ambiguous between a classifier and a normal collective noun, as shown in (33c):

(33)   a. veel/vele kommen soep
            much   bowls   soup
            'many bowls of soup'
      b. *hen duo   wan   tang
            very   much   bowl soup
            'many bowls of soup'

c. hen   duo   wan
    very   much   bowl
    'many bowls'

The question is why the classifier in (33b) cannot be reanalysed as the noun *wan* and still keep its container interpretation. Apparently there is a clash between the container interpretation and the collective nature of the noun, which is absent in the singular/plural system in Dutch.

In this section I argued that classifiers are similar to Number marking in the sense that they are syntactic markers of countability. A subclass of the classifiers, the 'massifiers' in Cheng & Sybesma's (1997) terms, do not only signal countability but also define the minimal parts. In languages such as English, classifiers always bear Number morphology, though in other languages Number morphology is absent in some cases (Dutch) or always (Chinese). Even those classifiers that are not marked for Number satisfy the selectional requirements of AdnQs which select either a singular or a plural. These classifiers might in fact contain a feature [+countable], which is compatible with both plural and singular selecting AdnQs.

7.3.2 Times and pieces

In this section I will further motivate the claim that *time* (French *fois*, Dutch *keer*/*maal*) is a classifier. At first sight, *time* seems to be a verbal classifier, which does not select an NP but a VP. The element *time* can in certain respects be seen as the verbally oriented counterpart of the classifier *piece*. However, the relation that holds between *Q times* and a VP differs from the relation between *Q pieces* and an NP. I will argue that *Q times* constitutes a full noun phrase, and that the VP in relation to which it is interpreted functions as the scope of the Q, not as its domain of quantification. In *Q pieces NP* the domain of quantification is defined by the classifier and the NP, which does not function as the scope of the Q. The discussion in this section is based on English and Dutch data, but the results also pertain to French.

The Dutch counterparts of *times*, *maal* and *keer*, share all relevant properties with classifiers of the *kilo* type, except selection of an (overt) NP. If combined with a cardinal numeral they are not marked for plural, but in combination with a DQ they are, which corresponds to the pattern found for *kilo*, discussed in the previous subsection:

(34)   a. Jan is   vorige week   drie maal/*malen naar de film gegaan
           Jan is   last week   three time/times   to the movie gone
           'Jan went to the cinema three times last week'

    b. Jan heeft ons   vele malen/*maal om   de tuin geleid
       Jan has   us   many times/time   around   the garden led
       'Jan has deceived us many times'

The fact that there is no NP complement visible next to this classifier could be interpreted in either of two ways. The first is that *maal* and *keer* do not select an NP but a VP. The other is that the phrases are really nominal, and contain a hidden noun. Even though there is some evidence for the former claim, there are strong reasons to opt for the latter.

    When *AdnQ times* modifies a verb phrase, the mass/count properties of this verb phrase determine the way *time* is interpreted. Consider the examples in (35):

(35)   a. John went to London three times
        b. John ran three times last week

In (35a) the verb phrase is count, and we count trips to London. The VP in (35b) introduces an activity, which is mass. In the context of *three times* we understand that there have been three stretches of time characterized by John's running. In other words, in the context of a count VP, the VP introduces the unit of counting, and in the context of a mass VP *time* forces an interpretation in which the mass is divided in separate 'portions'. This recalls the behaviour of the nominal classifier *piece* as discussed in chapter 2. If the denotation of the noun provides minimal parts, the *pieces* correspond to those minimal parts but if it does not, the presence of the classifier forces an interpretation in which a division in portions is made:

(36)   a. three pieces of furniture
        b. three pieces of cheese

Any solid object made of cheese qualifies as a piece of cheese, while pieces of furniture must be chairs and tables etc. So far the hypothesis that *time(s)* is a VP selecting classifier still seems plausible.

    A first problem for this hypothesis is the position that the *Q times*-phrase has in languages such as Dutch. If *keer/times* categorially selected the VP, we would expect it to be the head of a projection dominating VP, and as such *Q* and *keer* would be intervening heads preventing verb movement in (37), contrary to fact.[51]

---

[51]   The head movement analysis is standard for this type of sentences. Cf. Zwart (1997) for an overview of different proposals concerning the functional head position the verb moves to.

(37)   Jan at$_i$ vorige week drie keer   [$_{VP}$ kaasfondue t$_i$]
          Jan ate   last   week three times   cheese-fondue
          'Last week, Jan ate cheese-fondue three times'

If *keer* in this sentence were a head selecting VP, it would occupy a head position and block head movement of the verb *at* 'ate', and thus provoke a violation of Travis' (1984) Head Movement Constraint. The verb is not hindered on its way to a higher functional projection and hence it is not plausible that *keer* functions as a head selecting the VP.

A closer comparison of the elements *times* and *pieces* shows that the relation between *Q times* and a VP differs from the one that holds between *Q pieces* and an NP, and also offers evidence against the idea that *times* functions as a VP selecting classifier. In (36), *pieces* combines with the collective or count mass noun *furniture* and with the real mass noun *cheese*. These nouns both contain a scalar *q*-position. In case the classifier *piece* is combined with a singular count expression, which contains a non scalar *q*-position, count-to-mass shift applies:

(38)   a.   #three pieces of chair
       b.   #three pieces of cup

Comparing (38a) with (36a), we see that (36a) can be used to refer to two complete chairs, whereas (38a) cannot.

If *time(s)* were the VP selecting counterpart of *piece(s)*, we would expect that if *time(s)* is used in the context of an event which has a singular interpretation, we should find a similar effect as in (38). The predicate *to buy two kilos of olives* has singular reference. The sentence in (39) cannot be used to describe more than one event of John buying two kilos of olives:

(39)   John bought two kilos of olives

Adding the modifier *three times*, yields three events in which two kilos of olives are bought:

(40)   Last week, John bought two kilos of olives three times

We can conclude that *three times* triggers a 'three events' reading for a verbal predicate which in the absence of *three times* only has a singular interpretation. Going back to the examples in (38) the contrast between *three times VP* and *three pieces NP* is clear. *Three pieces* cannot introduce a plurality of objects on the basis of an NP denoting a singular object, but *three times* introduces a plurality of events on the basis of a singular predicate.

One might object that sentences such as (41), which contain a 'once-only'

predicate, are strange, which suggests that somehow *times* might be similar to *pieces* after all:

(41)   #John drew this circle three times

The sentence is odd because one and the same circle cannot be drawn more than once. There is, however, a difference between singular nouns such as *chair* and *cup* in (38) and 'once-only' predicates such as *to draw a circle* in (41). For nouns such as *chair* and *cup*, we know what the plural interpretation is like, while predicates such as *to draw a circle* do not have a plural interpretation for conceptual reasons. The incompatibility of the predicate *to draw this circle* and *three times* tells us more about the predicate (it defines a unique event) than about *three times*. The predicate *to buy two kilos of olives* has a singular interpretation, but does not define a unique event, and is therefore similar to *cup* or *chair*, which are singular but do not define unique objects.

   The reason behind the possibility of a plural interpretation of the predicate in (40) seems to be that the phrase *three times* has scope over the indefinite *two kilos of olives*. The same effect can be obtained by a quantified subject:

(42)   Three children bought two kilos of olives

This sentence can be used for a situation in which three children each bought two kilos of olives. The domain of quantification is the set of children, and the VP *bought two kilos of olives* defines the nuclear scope. The behaviour of quantified subjects in the context of 'once-only' predicates is, again, similar to that of phrases such as *three times*:

(43)   Three children drew this circle

The sentence in (43) cannot have a distributive interpretation. The sentence has only a collective interpretation, which is obviously not available for phrases such as *three times*.

   Interestingly, there is a contrast between phrases of the type *three times* and adverbially used DQs. In order to preserve word order in both sentences, the examples are in Dutch:

(44)   a. Jan heeft drie keer   twee kilo olijven gekocht
            Jan has   three times   two kilo   olives   bought
            'Jan three times bought two kilos of olives'

b. *?Jan heeft   veel   twee kilo olijven gekocht
    Jan *has*   *a-lot* *two kilo* *olives*   *bought*
    'Jan bought two kilos of olives a lot'

The unacceptability of (44b) is expected, as the predicate does not contain a scalar *q*-position. The relation between *three times/drie keer* and the verbal predicate is independent of the presence of a scalar *q*-position, suggesting that the VP is the nuclear scope of the quantifier, as in (42). In the examples containing the classifier *pieces* in (36) and (38), the NP defines the domain of quantification, not the scope of the quantifier.

We can conclude that the phrase *three times* functions in the same way as a full argument noun phrase, not as a classifier construction selecting a VP. Consequently, we would like to treat the phrase as a full noun phrase. There exist some other elements that behave like classifiers, but do select an overt NP. Some examples are *uur* 'hour', *jaar* 'year' and *gulden* 'guilder'. In the context of cardinals they do not take plural marking, but when combined with a DQ they do: *twee jaar* 'two year', *drie gulden* 'three guilder' versus *vele jaren* 'many years' and *vele guldens* 'many guilders'. The elements belonging to this class all express a unit of time or a unit of currency.[52]

Interestingly we find that both the word corresponding to *time* and units of time and currency can be combined with a cardinal numeral without the insertion of a classifier in classifier languages (cf. Greenberg 1972). In Kana, for instance, the words for *time*, *year* and *penny* do not take a classifier: *zìì sí* 'one time, once', *zìì zúá* 'one year' and *zìì pɛnì* 'one penny' (cf. Ikoro 1994, who does not conclude, however, that the reason why these elements do not trigger the insertion of a classifier is that they are classifiers themselves). I assume that in these cases there is an empty NP present.

In this section I argued that the element *times* which can be added to an AdnQ in order to make it compatible with verbal context behaves, at least in some languages, like a classifier, but does not select a VP. When *Q times* combines with a VP, the VP defines the nuclear scope of Q and *times* its domain of quantification.

---

[52]   Note that most units of currency and time do not function as bare classifiers. For example, *maand* 'month', *dag* 'day' and *stuiver* 'penny' must be marked for plural in the context of cardinals. The difference between the two types of time indications seems to be a lexical matter.

7.4   Conclusions

Qs which are typically found in the context of nouns, the so-called adnominal Qs or AdnQs, satisfy the generalization in (2), according to which they do not combine with a mass noun unless they also combine with a singular count noun and a plural. There are three types of AdnQs: AdnQs selecting a singular, AdnQs selecting a plural and AdnQs selecting an NP, without a specification of the number properties of this NP. Only this last type is compatible with mass nouns, as mass nouns do not bear Number features. The three types are expected on the basis of the assumption that categorial selection is unique. An AdnQ cannot select both a singular and a plural, for instance. DQs, on the other hand, theta select their host. They are found in the context of plurals and mass nouns, which provide a scalar q-position. Classifier constructions also select an NP, except for the ones that have lost this property and have become DQs (cf. 4.2.3 for a description of the conditions under which this may occur). Unlike AdnQs, classifiers may be sensitive to the presence of a scalar q-position, which makes their distribution within the nominal system similar to that of DQs and not to that of AdnQs. AdnQs never combine with both plurals and mass nouns, unless they also combine with count singulars, while DQs and classifiers are typically found in the context of plurals and mass nouns, being incompatible with count singulars. In accordance with the idea that categorial selection involves a head-complement structure, I proposed that AdnQs and classifiers are heads selecting NP.

In the last section of this chapter I discussed two issues concerning the function and status of classifiers. AdnQs selecting an NP marked for either singular or plural can also combine with a classifier, even if this classifier is not marked for Number. I argued that both classifiers and Number morphology should be seen as syntactic markers of a countable structure. A subclass of the classifiers contains information about the nature of the units that will be counted, and are compatible with real mass nouns. Others, such as Chinese *ge* 'CL$_{unit}$', do not, and their function is similar to the function of Number, which is to syntactically indicate the presence of a count structure. Count mass nouns (collectives) such as *furniture* cannot be combined with a cardinal numeral, not because they do not contain minimal parts from a semantic point of view, but because this semantic property is not made syntactically visible by means of a classifier or Number morphology.

In the verbal domain, AdnQs can be used in case a classifier is inserted as well. I compared the use of *Q times* in the verbal system with *Q pieces* in the nominal system and came to the conclusion that even though there are some similarities, the relation between *Q times* and a VP is different from the one that holds between *Q pieces* and an NP. *Q times* turns out to behave

like a full quantified noun phrase, and the VP functions as the scope of the Q. In *Q pieces NP*, the classifier and the NP define the domain of quantification of the Q.

Quantifiers such as *all* and *each* and French *tous* 'all' and *chacun* 'each' have the property that they can float. A French example of quantifier float (Q-float) is given in (1a), and the corresponding sentence without Q-float in (1b):

(1)   a.   Ces   enfants   ont   **chacun**   lu   un livre   différent
            these   children   have   each   read   a   book   different
            'These children each read a different book'
     b.   **Chacun** de ces   enfants   a   lu   un livre   différent
            each   of   these   children   has read   a   book   different
            'Each of these children has read a different book'

If we compare these sentences with the ones in (2), where a degree quantifier (DQ) is used, we see that even though the surface word order alternation in (1) and (2) is the same, the pairs in (1) and (2) differ from each other from a semantic point of view:

(2)   a.   Ces   enfants   ont   **beaucoup** travaillé
            these   children   have   a-lot   worked
            'These children worked a lot'
     b.   **Beaucoup** de ces   enfants   ont   travaillé
            a-lot   of these   children   have   worked
            'A lot of these children have been working'

In (1a) there is a clear relation between the FQ and the DP *ces enfants*. The sentences in (1) do not have different truth conditions. Whether the quantifier *chacun* 'each' floats or not, it ranges over a set of children and the VP functions as its scope. There is, to the contrary, a very clear meaning difference between (2a) and (2b). The DQ *beaucoup* evaluates the quantity represented by the VP: a lot of work has been done. In (2b) *beaucoup* is

associated to the NP and indicates that the number of children is important.

Contrary to DQs, FQs such as *tous* 'all' and *chacun* 'each' are always associated with a noun phrase in the sentence.[53] Their semantic restriction is given by this noun phrase and not by the VP. The sentence in (3) cannot mean that the children are responsible for all sleeping events, excluding the possibility that anybody else slept but the children:

(3)   Les enfants ont   **tous** dormi
           the children   have   all   slept
           'The children all slept'

From this point of view FQs behave like adnominal quantifiers.

FQs can be found both to the right and to the left of the noun phrase with which they are associated. In the examples in (1a) and (3) the FQ is to the right of the subject DP *ces/les enfants* 'the(se) children' with respect to which it is interpreted. In the example in (4), the FQ is to the left of the object clitic *les* 'them' with which it is associated:

(4)   J'ai   **tous** voulu **les**   voir
           I-have all   wanted them   see
           'I wanted to see them all'

Traditionally, sentences such as (4) were considered to be cases of L-TOUS or leftward quantifier float, while the ones in (1a) and (3), where the FQ 'floats to the right' of the DP, were called cases of R-TOUS (cf. Kayne 1975, 1981).

The analysis of FQs I will develop here is an extension of the proposal made in Doetjes (1991, 1992), which I will call the generalized L-*tous* analysis, as it generalizes an analysis for L-*tous* cases such as (4) to the R-*tous* cases in (1a) and (3). According to this analysis FQs are generated in an adverbial position, and bind an empty category in an argument position. In the cases discussed so far, this *ec* is the trace of the noun phrase the FQ is associated with from an interpretive point of view. The basic configuration that licenses FQs is given in (5):

(5) $[_{XP}$ FQ$_i$ $[_{XP}$ ... ec_i ...]]

I will argue below that FQs such as *tous* and *chacun*, which I will call 'standard FQs', are in fact quantified noun phrases, containing a silent pronominal element representing the domain of quantification. The FQ *tous*,

---

[53]   For a discussion of interpretive differences between *chacun* 'each' and *tous* 'all', which will not be considered here, cf. Junker (1995). Cf. also Déprez (1994), who discusses floating *chacun* 'each' and *tous* 'all' in relation to weak islands.

for instance, will be assigned the structure [$_{QP}$ *tous* [$_{DP}$ *pro*]]. The XP, which is a VP or some projection thereof, functions as the scope of quantifier.

The configuration in (5) is clearly present in L-*tous* sentences such as (4), the (simplified) structure of which is given in (6):

(6)   j'ai [$_{VP}$ **tous**$_i$ [$_{VP}$ voulu **les**$_i$ voir t_i]]
        I-have   all   wanted   them   see

Under the VP internal subject hypothesis, the analysis can be generalized to so-called R-*tous* cases such as (3). I assume that the subject *les enfants* 'the children' in (1a) originates in the VP internal subject position, where it leaves a trace. As a result, the configuration in (5) is obtained. The structure I will assign to (3) is given in (7):

(7)   **les enfants**$_i$ ont [$_{VP}$ **tous**$_i$ [$_{VP}$ t_i dormi]]
        the children   *have   all   slept*

A second class of FQs consists of so called bare FQs. These are not associated to a noun phrase, but are said to float as they are found in the same position as standard FQs. French *tout* 'all' and *rien* 'nothing', when replacing the direct internal argument of the verb, can occupy a position to the left of the past participle, on a par with the standard FQs in (1a) and (3). As the direct object in French is normally to the right of the past participle, the order in (8a) marks floating.

(8)   a. Il a   **tout**$_i$ lu t_i, mais il n'a **rien**$_i$ compris t_i
            he has   all   read   but   he NEG-has nothing   understood
            'He read everything, but did not understand anything'
        b. *Il a   le livre lu
            he   has the book read
        c. Il a   lu   le livre
            he has   read   the book
            'He read the book'

Standard FQs such as *tous* and *chacun* cannot float in the absence of an overt DP:

(9)   Marie *(**les**) a   **chacun** envoyé   dans un pays différent
        Marie (them) has   each   sent   in   a country different
        'Jean has sent each of them to a different country'

Traditionally the FQs *tout* 'all' and *rien* 'nothing' in (8a) are analysed as bare quantifiers (cf. Kayne 1975 and Jaeggli 1982). Cinque (1990) shows that in

case a bare quantifier is left dislocated, the left dislocated phrase does not need to be doubled by a clitic in the matrix sentence (cf. (34) below). This is so, Cinque argues, because bare quantifiers, which do not contain nominal material, function as operators, which can license an empty category as a variable. Following the traditional idea that *tout* and *rien* are bare quantifiers will make sure that the empty object position is licensed. The structure I will adopt for a sentence containing a bare FQ is illustrated in (10):

(10)   Il   a   [$_{QP}$ **tout**$_i$] lu   *ec$_i$*
           he   *has*   *all*   *read*

As the structures in (5) and (10) show, standard FQs and bare FQs are found in the same configuration. However, as I will claim that standard FQs contain pronominal material, they do not qualify as operators and cannot license the *ec* they bind as a variable. In order to make the use of a standard FQ possible, the configuration in (5) must be created by movement of an argumental noun phrase.

The organization of this chapter is as follows. Section 8.1 concentrates on FQs of the standard type (*tous*), the generalized L-*tous* analysis and the internal structure of the standard FQs. Section 8.2 focuses on bare FQs. This section will also contain a discussion of adverbial degree quantifiers such as *beaucoup* 'a lot', which turn out to function as bare FQs, which is in accordance with their bare Q status.

8.1   Standard FQs

In 8.1.1 I will discuss some major properties of standard Q-float which will motivate the generalized L-*tous* analysis. The approach will be briefly compared to some alternative theories of Q-float, such as the influential Q stranding analysis of Sportiche (1988). In 8.1.2 I will discuss the presence of an empty pronominal element in standard FQs (cf. (7)). The last subsection, 8.1.3, discusses some potential problems for the generalized L-*tous* analysis concerning the status of the VP internal subject hypothesis, which have been pointed out by Bobaljik (1995).

8.1.1   Generalized L-*tous*

FQs of the standard type depend on the presence of a DP and a DP trace in the sentence. As we will see below, if there is no appropriate DP in the sentence, or if this DP is 'too far away', the FQ cannot be interpreted and the sentence becomes ungrammatical. (11) shows that in the absence of a DP the standard FQ, contrary to the bare FQ, cannot be interpreted (cf.

(8a) and (9)):

(11)   *Il   faut   **tous**   voir e_i
           it   must   all   see
           'it is necessary to see (them) all'

I will attribute this property of FQs to the fact that they contain a
pronominal element, which prevents them from licensing an empty category
as a variable, in accordance with Cinque's (1990) observations on left
dislocation which will be discussed in 8.2.1 below.

   The FQ *tous* 'all' agrees with the DP. (12a) illustrates the fact that the DP
and the FQ agree in number, and in (12b) it is shown that the DQ and the
DP agree in gender:

(12)   a.   ***Le garçon**   est   **tous**   allé   à la plage
            the boy SG   is   all PL   gone   to the beach
            'The boy all went to the beach'
       b.   **Elles**   sont   **toutes/*tous**   allées à la plage
            they F   are   all F/ all M   gone   to the beach
            'They (the women) all went to the beach'

In languages where case is morphologically expressed we see that the DQ
and FQ agree in case as well. This is illustrated in the German examples in
(13):

(13)   a.   Peter   hat   seinen   Freunden   allen/*alle   ein   Buch
            Peter   has   his   friends DAT   all DAT/ all ACC   a   book
            gegeben
            given
            'Peter gave all of his friends a book'
       b.   Peter   hat   seine   Freunde   alle/*allen   gesehen
            Peter   has   his   friends ACC   all ACC/ all DAT   seen
            'Peter has seen all of his friends'

If the FQ is associated with a dative DP the dative form *allen* has to be
chosen, while an accusative is combined with the accusative form of the FQ
alle. The agreement facts seem to be a reflex of the binding relation between
the FQ and the DP trace.

   Some locality restrictions on the relation between the DP and the FQ are
illustrated in (14). The DP in (14a) is separated from the FQ by a clause
boundary, and in (14b,c) the DP does not c-command the FQ:

(14)   a.   ***Les garçons**   ont   dit   que   Pierre   est   **tous**   parti
              the boys   *have* *said* *that* *Pierre* *is*   *all*   *left*

        b.   *La mère de **mes amis** est **tous** allée   à la plage
              the mother of my friends   is   all   gone   to the beach

        c.   *J'ai   **tous** vus **mes amis**
              I-have   all   seen my friends

The locality restrictions found on DP-FQ pairs strongly resemble those imposed on anaphors by condition A of the Binding Theory (Chomsky 1981).

Many scholars have viewed the ungrammaticality of the examples in (14) as the result of some sort of anaphoric relation between the DP and the FQ. According to Kayne (1981) and Jaeggli (1982) the FQ itself is an anaphor. Belletti (1982) derives the anaphor status of the FQ from trace theory. She assumes that the FQ has to move at LF to the DP it is associated with and as the FQ leaves an anaphoric trace, it looks as if the FQ is an anaphor at S-structure. Sportiche (1988) also derives the data in (14) from trace theory. He makes use of the VP internal subject hypothesis, and assumes that the FQ is base generated next to the subject DP in the VP internal subject position. The DP moves to its surface position in SpecIP without the FQ, which is stranded in the VP internal subject position. As the FQ is adjacent to the anaphoric trace of the subject DP, the FQ can easily be 'misinterpreted' as an anaphor. The generalized L-*tous* analysis also derives the ungrammaticality of the data in (14) from the need of an anaphoric relation between the subject and its trace in the specifier of VP, but the FQ binds the trace and does not need to be adjacent to it.

As we have already seen in (4) above, FQs can, under certain conditions, occur in a position which is structurally higher than the DP. This is illustrated in (15), where the FQ is to the left of the DP:[54]

(15)   a.   J'ai   **tous** voulu   **les**   voir   (= (4))
              I-have all   wanted them   see
              'I wanted to see them all'

        b.   J'ai   promis   de **tous les**   lire
              I-have promised   to all   them   read
              'I promised to read them all'

---

[54]   In (15a,c), an FQ in a matrix clause is associated with an argument of an embedded clause ('long-distance L-*tous*'). This is possible only in the context of a limited set of matrix verbs (basically the ones that allow for clitic climbing in Italian, though (15c) is special in this respect); cf. Pollock (1978), Rochette (1988) and Doetjes (1991) for discussion of long-distance L-*tous*.

c. Je veux **tous** qu'**ils** viennent!
   I want all that-they come
   'I want them to come all'

The sentences in (13) cannot be captured under an analysis in which the FQ, its LF trace, or a DP trace adjacent to the FQ is an anaphor with respect to the DP. Hence, within the analyses of Kayne (1981), Jaeggli (1982), Belletti (1982) and Sportiche (1988) one has to assume two distinct mechanisms creating floating Qs.

As was pointed out above, the generalized L-*tous* analysis can account for both types of Q-float. The adoption of the VP-internal subject hypothesis makes it possible to consider all cases of Q-float as instances of L-*tous*, as this introduces the necessary DP trace in the c-command domain of a subject related FQ. (16) recapitulates the simplified structures corresponding to the sentences in (3) and (4), together with the basic configuration for L-*tous*:

(16) a. **les enfants**$_i$ ont [$_{VP}$ **tous**$_i$ [$_{VP}$ t_i dormi]] (= (7))
        the children have all slept

   b. j'ai [$_{VP}$ **tous** [$_{VP}$ voulu **les** voir t_i]] (= (6))
      I-have all wanted them see

   c. [$_{XP}$ FQ$_i$ [$_{XP}$ ... ec_i ...]] (= (5))

Even though the FQ can be either to the right (16a) or to the left (16b) of the DP with respect to which it is interpreted, it is always in a structurally higher position than the DP trace. The configuration in (16c), which I claim to be typical for Q-float, is present in both (16a) and (16b). The generalized L-*tous* analysis is preferable to the other analyses, which fail to unify the two types of Q-float, given that there seem to be no good arguments in favour of keeping the two types of Q-float apart (cf. Doetjes 1991, 1992 for discussion).

There are some restrictions on sequences in which the noun phrase associated to the FQ is in a structurally higher position than the FQ, as in the examples in (15). A noun phrase which follows a coindexed FQ must be a pronominal. The example in (17) forms a minimal pair with (15c):

(17)   *Je veux **tous** que **les enfants** viennent
        I want all that the children come

The contrast between pronouns and full noun phrases can be understood as an effect of binding theory. As the FQ is coindexed with the trace of the DP, we expect it to be a potential binder of the DP. As such the FQ gives rise to a principle C violation in case it c-commands the DP. In case the

DP is a pronominal, as in the cases in (15), no problem arises. Whereas R-expressions fall under principle C of the binding theory and must be free independently of their binding domain, pronominals can be bound as long as their binder is outside of their binding domain (cf. Chomsky 1981). I take the binding domain of the pronominals in (15a,b) to be the VP, which contains an accessible subject under the VP internal subject hypothesis. The binding domain of the pronominal in (15c) is the embedded clause.

I assume that the position the FQ occupies at S-structure is an adverbial position. French FQs, for instance, occur in the same positions as adverbs of quantification such as *souvent*. The assumption that FQs are adverbial is made in most analyses of FQs. The stranding analysis proposed by Sportiche, which postulates that the FQs are stranded in argument positions, is exceptional in this respect. However attractive his proposal may be from a conceptual point of view, the idea that FQs occupy the base position of a moved argument is untenable, even for the traditional R-*tous* cases he considers. Under the standard analysis of passive and unaccusative constructions, the stranding analysis predicts that in these constructions, the subject, as it is an underlying object, can strand a FQ in the direct object position. This turns out to be impossible (unless an adverbial follows; cf. section 8.1.3 below):[55]

(18)   a.   *The children were seen all
       b.   *The children arrived all

Sportiche's solution to this problem is to postulate that passive and unaccusative verbs project the internal argument directly in the VP internal subject position. This solution is quite a drastic departure from the standard theory, and does not seem to be independently motivated (cf. also Bobaljik 1995 for discussion).

There seem to be no restrictions on the type of movement that creates the appropriate configuration for standard FQs. FQs are found in the context of *Wh*-extraction and topicalization, as shown in (19):

(19)   a.   Ces   livres$_i$,   que   j'ai   tous$_i$ lus t_i, sont   *[French]*
            these books   which I-have   all   read   are
            très   intéressants
            very   interesting
            'These books, all of which I read, are very interesting'

---

b. Deze boeken_i heb   ik   allemaal_i t_i   gelezen   *[Dutch]*
   these books   have I   all   read
   'I read all of these books'

Q-float in a real *Wh*-question is not so easy to get, but this seems to be so for pragmatic reasons. Sportiche (1988) points out that examples such as (20) are felicitous in a situation in which we have divided the children into subgroups, one of which is such that all children in it have gone to the movies:

(20)   Quels   enfants sont tous allés au   cinéma?
          which   children are   all   gone   to-the cinema
          'Which children all went to the movies?'

In this section we have seen the most important properties of Q-float of the standard type. Most FQs occupy a position to the right of the DP they are associated with, but in cases such as (15), the FQ is to the left of the DP. This variation is predicted to be possible within the generalized L-*tous* analysis, as there is no direct relation between the DP and the FQ. The locality restrictions on FQs follow from the binding relation between the FQ and the DP trace.

8.1.2   The internal structure of standard FQs

FQs differ from adverbially used DQs in that the VP or XP to which it is adjoined does not define the domain of quantification of the FQ but its scope (cf. the contrast between (1) and (2) above). I will argue in this section that the FQ contains an empty noun phrase, which defines its domain of quantification. As a result the quantifier contained in the FQ is a real adnominal quantifier.

There are several reasons to believe that the FQ itself is a quantified noun phrase. A convincing argument for this is given by Sportiche (1988), who reports that in some varieties of French *chacun d'eux* 'each of them' can function as a FQ:[56]

---

[56]   According to Sportiche (1988:445) cases such as (21) can be accounted under a base-generated movement account and the assumption that *eux* is a lexicalized trace. Lexicalization of the trace is possible when a case assigner (*de* 'of') is present.

(21)   Les enfants ont   chacun d'eux   acheté   une   voiture
              the children have   each   of-them   bought   a   car
              'The children each bought a car'

A further argument is the form of the quantifier. Let us consider first some cases of FQs that cannot be combined with an overt noun phrase. An example is French *tous les deux/ tous les trois* 'both, all three' etc. The examples in (22) show that these FQs float, but cannot be part of a lexical noun phrase:

(22)   a.   Les enfants sont tous   les trois allés   à   la   plage
            the children   are   all   the three gone   to   the   beach
            'All three of the children went to the beach'
       b.   *Tous   les trois (les) enfants sont allés   à   la   plage
            all   the three (the)   children   are   gone   to   the   beach

Similarly, the FQ *tous* 'all' can be used in the context of an overt DP, but the two occurrences of *tous* differ in pronunciation. Non-floating *tous* followed by an overt DP is pronounced as /tu/ and floating *tous* 'all' is pronounced as /tus/. In Dutch we find similar facts. *Allemaal* 'all' cannot combine with an overt noun phrase, but it can float:[57]

(23)   a.   De kinderen   zijn   allemaal   gekomen   [Dutch]
            the children   are   all   come
            'The children all came'
       b.   *Allemaal   de   kinderen   zijn   gekomen
            all   the   children   are   come

Allemaal 'all' alternates with the more formal FQ *allen* 'all', which does not have the ending *-n* when followed by a overt noun phrase:

(24)   a.   De kinderen   zijn   alle*(n) gekomen   [Dutch]
            the children   are   all   come
            'The children all came'

---

[57]   *Allemaal* can be used as a weak adominal quantifier in sentences such as (i), where it means something like 'all sorts of' or 'a whole lot' (cf. In 't Veld 1990):

(i)   Er   zitten allemaal   beestjes   in de keuken
             there   sit   all-sorts-of   animals DIM *in the kitchen*
             'There are all sorts of little animals in the kitchen'

I only consider cases where *allemaal* is a strong universal Q, similar to *alle(n)* 'all'.

b. Alle(*n)   kinderen zijn   gekomen
   all   children   are   come
   'All of the children came'

All of the FQs in (22) to (24) do have a non-floating counterpart, however, which occupies a DP position, without being accompanied by an overt noun phrase:[58]

(25)   a.   [$_{XP}$ Tous les trois]   sont   venus   *[French]*
            all   the three   are   come
            'All three of them came'
       b.   [$_{XP}$ Tous] /tus/   sont   venus
            all   are   come
            'All came'
       c.   Ik   heb   met [$_{XP}$ allemaal] gepraat   *[Dutch]*
            I   have   with   all   talked
            'I talked with all of them'
       d.   [$_{XP}$ Allen]   zijn   gekomen
            all   are   come
            'All came'

We can conclude that the form of the FQ matches the form of the Q which can be viewed as its non-floating counterpart only in case this Q modifies a noun phrase which is left empty. This suggests that the FQ is not just a quantifier, but that it contains an empty noun phrase, which defines its domain of quantification.

In his discussion of the contrast in (22), Sportiche suggests that both the floating *[tous les trois e]* and the subject in SpecIP are base generated, and form a chain. The external theta role is assigned to the foot of the chain containing both the FQ and the subject of the sentence. As we have seen in the previous section, however, there is evidence against the idea that the FQ occupies the base position of the argument it is associated with at S-structure. If we adopt the base generation approach to express the relation

---

[58]   I will not comment on the conditions under which an empty NP is licensed. This is an extremely thorny question, as a slightly closer look at the data shows. In Dutch, non-floating *allemaal* 'all' can only function as a PP complement as in the example in (25c), but cannot be a subject or a direct object (*allemaal zijn gekomen* 'all came'; *allen*, on the other hand, is always possible. In French, *tous (les deux)* can be the subject or the complement of a preposition, but is not allowed in object position (*J'ai vu tous* 'I have seen all'). The essential observation for the present analysis is that all forms that function as FQs may be used in at least one context as a quantified noun phrase containing an empty NP. I leave the conditions on the licensing of the empty nouns for further research (but see Sleeman 1995 for extensive discussion of licensing of empty nouns in French).

between the surface position of the subject and the VP internal subject hypothesis, it seems fair to assume that the FQ does not get into its surface structure adverbial position by movement either.

Analysing the FQ as a full quantified noun phrase raises a number of questions. One question is how this nominal entity is syntactically licensed. This question is partly independent of this proposal, given that in sentences such as (21) the FQ is a noun phrase containing an overt pronominal element. We know also that noun phrases can function as adverbial phrases (*yesterday*, *last week*), and I assume that FQs are licensed in a way similar to these adverbial noun phrases. How this works is a question that I will leave aside, and obviously more research is necessary.[59]

In the preceding chapter I argued that *Q times* adverbials should be seen as quantified noun phrases adjoined to the VP as well. A comparison between this latter category and FQs is in fact interesting, as both are assigned a similar structure: an AdnQ in combination with an empty or partially empty noun phrase is adjoined to a VP which functions as its syntactic scope. Contrary to the FQ, the *Q times* adverbial is not associated with a DP in the sentence. This might be seen as the result of the fact that a *Q times* adverbial ranges over times, while the FQ ranges over individuals. One could assume, then, that the *Q times* adverbial may take the VP as its scope because it contains an event argument, while the FQ must be related to one of the DP arguments of the verb. Following Higginbotham (1985), I assume that the event argument of the verb is not projected, while the other arguments of the verb are. This seems to shed light on the difference between FQs on the one hand and *Q times* adverbials on the other. The FQ depends on the presence of a DP, as it depends on the presence of an argument of the verb, in relation to which it is interpreted. The *Q times* adverbial adjoins to the VP independently of its syntactically realized arguments, as its interpretation depends on the *e*-position, which not syntactically projected.

A further question the proposal raises is the binding theoretic status of the pronominal element in the DQ. I will leave this question for further research. It should be stressed that the question needs an answer independently of the assumption of FQs such as *tous* contain an empty pronominal element, given the existence of the FQ *chacun d'eux* in (21), which contains an overt pronoun.

The presence of a nominal element in the FQ provides an answer to a number of other questions. The first is why FQs behave like adnominal quantifiers even if they are found in an adverbial position. Under the analysis proposed here, the FQ contains in fact an adnominal quantifier.

---

[59]   It might be fruitful to look whether there is a relation between Q-float and clitic doubling (Marcel den Dikken, p.c.).

Another advantage is that the form of the FQ is predicted. As the FQ binds the trace of an argument DP in the sentence, the agreement properties could be seen to be a result of the binding relation. The necessity of a pronominal element can also explain the difference between English *each* and French *chaque* 'each', the latter of which being unable to float. Contrary to *each*, *chaque* cannot license an empty pronoun:

(26) a. Each went in a different direction
      b. *Chaque est allé   dans une   direction différente
          each   *is* *gone* *in*   *a*   *direction different*

Only the complex form *chacun* (derived from *chaque* 'each' and *un* 'one') can be used and this is also the only variant of the two which can float.

In section 8.2 it will turn out that the presence of a silent noun phrase in standard FQs will allow us to explain the difference between standard FQs and bare FQs such as *tout* 'all' and *rien* 'nothing'. I will argue that the presence of an empty pronominal element prevents standard FQs from licensing the empty category they bind. As a result they can only be used in combination with a coindexed moved noun phrase, which syntactically licenses the empty position (its trace) which is bound by the FQ.

In this section I argued that standard type FQs, which accompany an overt DP in the sentence, contain an empty noun phrase. The FQ is generated in an adverbial position, which determines its scope, and it is coindexed with the trace of the DP argument it is associated with.

8.1.3   An apparent problem for generalized L-*tous*

In his discussion of Q-float, Bobaljik (1995) argues against Sportiche's stranding analysis, as he wants to get rid of the VP internal subject position. Some of his arguments do not pertain to the generalized L-*tous* analysis, but others do. He discusses a number of cases where a FQ is found in a position which is left adjacent to a phrase which cannot possibly contain a trace of a moved DP. The L-*tous* analysis cannot account for these cases, but I will argue that they do not involve Q-float. As we have seen in (25), FQs are formally identical to quantified noun phrases. As a result, quantified noun phrase which are formally identical to an FQ might be incidentally misinterpreted as FQs. I will argue that in Bobaljik's problematic cases the quantified noun phrases do not function as FQs but as regular noun phrases, and that his data do not have any consequences for the generalized L-*tous* analysis.

The examples in (27), given by Bobaljik (1995), show that the presence of certain adverbial phrases makes the presence of floating *all* acceptable in

a position where it would otherwise be excluded:

(27) a. Larry, Darryl and Darryl came into the café *all
      b. Larry, Darryl and Darryl came into the café all [at the same time]
      c. Larry, Darryl and Darryl came into the café all [very tired]

If *all* in (27b) and (27c) is in fact analysed as an FQ, the contrast between them and the example in (27a) seems in fact to be problematic for the generalized L-*tous* analysis. The impossibility of (27a) follows from the assumption that the FQ cannot be right adjoined to the VP containing the trace of the subject which it should bind in order to obtain the configuration in (5) (or its mirror image). The impossibility of (27a) suggests that in (27b) and (27c) *all* is an adjunct to the modifiers *at the same time* and *very tired*. In this position they do not c-command and hence do not bind the trace of the subject inside the VP. As a consequence the configuration in (5) is not created, as illustrated by the simplified structure of (27b):[60]

(28)   [Larry, Darryl and Darryl]$_i$ came [[$_{VP}$ t_i into the café][all [very tired]]]

However, if we assume that *all* is not a FQ but a quantified noun phrase containing an empty pronominal element, the lack of a trace is not problematic at all.

   Let us first go over some arguments that show that *all* in sentences such as (27b,c) behaves as part of the following phrase. Bobaljik mentions that in this type of examples, comma intonation is preferred, separating *all at the same time*/ *all very tired* from the rest of the sentence. Moreover, as the example in (14) shows, *all* cannot be left behind when the modifier is topicalized:

(29) a. All at the same time, the magicians began to appear
      b. *At the same time, the magicians began to appear all

Bobaljik rightly concludes from this type of observations that *all* in the sentences in (27) and (29) cannot occupy the VP internal subject position. We might wonder, however, whether it is plausible that *all* has the status of a floating Q in these cases. It will turn out that the data are also in accordance with the idea that *all* in these sentences is not a floating

---

[60]   The bracketing relation between the VP and the phrase *all at the same time* might well turn out to be different, which does not affect the present problem. As *all* is part of the phrase [*all at the same time*] it will not be able to c-command the VP internal subject position.

quantifier but the subject of an absolute SC, the predicate of which is *at the same time* or *very tired*.

A strong argument in favour of this latter idea is that in sentences such as (27b,c) other noun phrases alternate with *all*:

(30) a. Mary, Sue and Peter came into the café, Mary and Sue at the same time and Peter a little bit later
      b. Hundreds of tourists entered the museum, several at the same time

The example in (30b) shows that non floating Qs which may function as a quantified noun phrase, may occupy this position as well (Marcel den Dikken, p.c.). Given that the position occupied by *all* in (27b,c) may be occupied by a full (quantified) noun phrase, and that we know that *all* can function as a noun phrase in sentences such as *All came*, *all* in (27b,c) can be analysed as a noun phrase instead of a FQ.

A further observation supporting the non-float analysis of the sentences in (27b,c) is that in this type of left edge positions, the Q can be associated with non-arguments. The example is again due to Bobaljik:

(31)   Danny has cleaned the bathroom eight times this semester, all on one day

In this sentence *all* means 'all eight times'. As normal cases of Q-float never involve non-arguments, it is quite implausible that *all* in (30) functions as an FQ. It is more likely to be analysed as the subject of an absolute SC, with *on one day* as its predicate, on a par with the noun phrases *Darryl and Darryl* and *Larry* in (30). This reinforces the idea that *all* in (27b,c) is not a floating quantifier either.

The left edge phenomena are problematic for the stranding analysis and the generalized L-*tous* analysis if we try to relate the Qs to the VP internal subject position in the matrix sentence. There are reasons to believe, however, that the Qs do not function as FQs in this context, given that they alternate with full noun phrases, and that the alleged FQs are homophonous to full quantified noun phrases. In the real Q-float contexts, full noun phrases do not alter with the FQs.

8.2   Bare FQs and floating DQs

8.2.1   *Tout* and *rien*

When functioning as direct internal arguments, *tout*, and also *rien*, can

occupy a position to the left of a participle or an infinitive which is excluded for an ordinary direct internal argument, as shown in (32):

(32)   a.   Jean   a   tout   lu
            Jean   has   all   read
       b.   Jean   a   lu   tout
            Jean   has   read   all
            'Jean read everything'
       c.   *Jean   a   le   livre   lu
            Jean   has   the   book   read
       d.   Jean a   lu   le   livre
            Jean has read   the   book
            'Jean read the book'

According to Kayne (1981), the quantifier *tout* has moved to the left to a position adjoined to the VP and functions as an operator binding its trace. The sentence in (32a) corresponds then to the structure in (33):

(33)   Jean a [$_{VP}$tout$_i$ [$_{VP}$ lu e_i]]

According to Chomsky (1981:102) an empty category can be licensed as a variable iff it is locally bound by an operator. The floating quantifier *tout* qualifies as an operator because of its quantificational nature. Cinque (1990) shows that, in this respect, there is a difference between *bare* quantifiers and non-bare quantifiers. A bare quantifier is a phrase which has as its unique daughter a quantifier Q [$_{XP}$ Q]. Cinque shows that bare quantifiers in Italian can license an empty object position when left dislocated without the presence of a clitic. This is shown by the contrast in (34):

(34)   a.   Gianni, *(lo)   ho   visto[61]
            Gianni   him   I-have   seen
       b.   Qualque   errore,   Carlo *(lo)   ha   fatto
            some   error   Carlo it   has   made
       c.   Qualcuno,   (lo)   troveremo
            someone   (him)   we-will-find
       d.   Qualcosa,   di securo, io   (la)   faro
            something   for sure   I   (it)   will-do

The empty category in the object position must be licensed by a clitic in (34a) and (34b), where the left dislocated element is either non quantified

---

[61]   The clitic must be absent when *Gianni* bears a focus accent. According to Cinque, this is so because the presence of focus gives *Gianni* the status of an operator.

or non-bare quantified noun phrase.[62] In case the dislocated element is a bare Q, the clitic is optional. This optional insertion of the clitic has implications, however, for the meaning of the sentence. When the speaker has something specific in mind, the clitic is required, but if he does not, and 'something or other' or 'someone unspecified' is meant, it should be absent. Interestingly, there is a parallel difference between floating *tout* and *tous*, the latter being unable to function as an operator, given the obligatory presence of the clitic in (35):

(35)   Pierre *(les)   a   tous   lus
          Pierre them   has   all   read

When *tout* is used, there cannot be a clitic while retaining the intended interpretation. The presence of a clitic is incompatible with the unspecified interpretation 'everything', and forces the interpretation 'completely':

(36)   a. Jean a   tout   mangé
           Jean has   all   eaten
           'Jean ate everything'
       b. Jean l'a   tout   mangé
           Jean it-has all   eaten
           'Jean has eaten it completely'
           NOT: 'Jean has eaten everything'

I will leave this second use of floating *tout* out of consideration.

The differences between *tout* and *tous* can be derived under the assumption that *tout* is a bare quantifier and has the structure [$_{XP}$ *tout*], while *tous* has the form [*tous* [$_{DP}$ *e*]] as motivated in the previous section. Because of its complex form it cannot license an empty object position, on a par with the left dislocated quantified noun phrases in Italian. As a result the standard DQ cannot function in the absence of an argumental DP which licenses the empty category. The element *tout*, on the other hand, is a bare quantifier, by virtue of which it is a licit binder for the variable in the object position. With the exception of this difference the two types of Q-float involve the same basic configuration.

---

[62]   Following Chomsky (1981), Cinque (1990:73) defines an operator as follows:

(i)   Operator =$_{def}$ bare quantifiers, *wh*-phrases, and null NPs in SpecCP.

8.2.2   Floating *beaucoup*

It turns out that DQs partially overlap in distribution with *tout* and *rien* and that they can function as bare FQs. I will argue below that French bare DQs cannot function as arguments. Their use as bare FQs is not due to movement but results from the fact that they are adverbs. The adverbial DQ qualifies as a bare Q, and as a result it can function as an operator binding a variable in the object position.

    An example of DQ-float is given in (37):

(37)   Jeanne a   beaucoup fait   pour eux
            Jeanne has   a-lot   done   for   them
            'Jeanne has a lot done for them'

The reason to consider the example in (37) as a case of bare Q-float and not as an adverb to an objectless VP is that normally the verb *faire* 'to do' needs a direct internal argument, as is shown by the ungrammaticality of (38):

(38)   *Jeanne   a   fait   pour eux
            Jeanne   has done   for   them

The DQ in (37) occupies a position to the left of the past participle, similarly to *tout* in (33), and hence it is quite plausible that the DQ functions as a bare FQ and binds a variable which functions as the direct internal argument of *faire*. The structure I adopt for (37) is parallel to (33) and is given in (39):

(39)   Jeanne a [$_{VP}$beaucoup$_i$ [$_{VP}$ fait e_i pour eux]]

Most of the French DQs listed in 4.1 can float.[63]

    Leftward float of *tout* and *rien* has usually been viewed as a movement operation. The Qs *tout* and *rien* can also occupy an argument position as shown in (40):

---

[63] Some of my informants did not (readily) accept float with *à peine* 'hardly', *pas mal* 'not badly; a lot', *un peu* 'a bit', *rudement* 'rudely; a lot' and *le plus* 'most'. The exceptionality of *rudement* is expected, as it does not function as a DQ for all speakers. In the other cases the DQ is complex. One might speculate that because of their branching structure, they are not bare quantifiers in the strict sense, so that operator status might be less easily available. Note, however, that all of these DQs are accepted as an FQ in sentences parallel to (37) by at least some speakers.

(40) a. Rien   ne   presse
     nothing NEG *presses*
     'There is no hurry'
  b. Marie   s'interesse   à   tout
     Marie *self-interests* *in* *everything*
     'Marie is interested in everything'

As a result, the empty category in object position in (33) might be seen as the trace of the moved quantifier. A floating DQ can be situated to the right of the past participle, which linearly corresponds to the object position. This even seems to be the preferred option in certain cases:

(41)   Jeanne a   fait   énormément/davantage pour eux
       Jeanne has *done* *a whole lot/more*   *for them*
       'Jeanne did a whole lot/more for them'

There are two possible derivations for (41). In (42a) the DQ floats and occupies an adverbial position obtained by verb movement of the past participle out of the VP (cf. Pollock 1989 and section 5.1.2 above). In (42b) the DQ occupies the base position of the direct internal argument. I will demonstrate that the derivation in (42a) has to be preferred, and that DQ-float is not derived by movement:

(42) a. Jeanne a [$_{FP}$ fait$_i$ [$_{VP}$ énormément$_j$ [$_{VP}$ e_i e_j pour eux]]]
  b. Jeanne a [$_{VP}$ fait énormément pour eux]

In (42a) the DQ occupies an adverbial position, similar to the adverbial DQs in (43):

(43) a. Jean a   dormi beaucoup/à peine
     Jean has *slept* *a-lot/hardly*
  b. ?Jean a   vu   beaucoup sa petite soeur
     Jean *has* *seen* *a-lot*   *his* *little sister*

In (42b) the DQ is used pronominally. There are reasons to believe that the DQ in (41) is not pronominal, and that the derivation in (42a) is the only possible one. The non-pronominal nature of the DQ in (41) is not only a reason to reject the structure in (42b). It also suggests that the floating DQ is base generated in an adverbial position, and does not originate in the object position. Before commenting on these consequences, let us first go over to the evidence against (42b), showing that *énormément* 'a whole lot' does not function as a pronominal DQ in (41).

    The first reason is that there are some DQs which seem to resist being

used pronominally, but do occur in a sentence such as (41) and (37).[64] The DQs *guère* 'hardly', *énormément* 'a whole lot' and *vachement* 'a whole lot' are accepted by all speakers in sentences parallel to (37) and (41). If we adopted the structure in (42b), we would have to assume that the only position in which these DQs can be used pronominally is the direct object position. This is possible, but not plausible.

The second argument is similar, but applies quite systematically to the whole set of DQs. DQs are not found in the complement position of a preposition.[65]

(44)   *Marie s'intéresse   à   beaucoup/trop/vachement etc.
         Marie self-interests   in   a-lot/too much/a whole lot
         'Marie is interested in a lot of/too many things'

If (44) were analysed as in (42b) there would be an asymmetry between the direct and the indirect internal arguments that should be accounted for. The difference between indirect and direct objects is expected under the floating quantifier analysis, given that floating of *tout* and *rien* are not possible for indirect objects either:

(45)   *Marie s'est   à   tout   intéressée
         Marie self-is   in   all   interested
         'Marie took interest in everything'

The third reason to reject the structure in (42b) is the interpretation of the floating DQ. The floating DQ in (37) and (41) is not specific in the sense of Enç (1991). DQs of which we can be sure that they are pronominal must be specific. My informants accepted sentences with a DQ in the subject position more easily if a context was furnished providing a restrictive set for the DQ. The contrast is illustrated in (46):

---

[64] The data concerning pronominal use of DQs are quite messy. Different DQs do not behave alike, and I will leave the irregularities aside. There are some clear generalizations to be made, however, and these play a role in the arguments given in the text.

[65] The only exception seems to be *peu*, which can be used in sentences such as (i):

(i)   Elle se   contente   de   peu
         she self makes-satisfied of   little
         'She is easily satisfied'

The example corresponding to the one in (44) with *peu* instead of *beaucoup* is accepted by some but not all speakers.

(46) a. ??Beaucoup sont arrivés cet après-midi
     many   are   arrived this afternoon
     'Many people arrived this afternoon'

   b. J'ai demandé aux enfants de se mettre dans le salon. Beaucoup sont encore dans la salle à manger.
      'I asked the children to go to the living room. Many are still in the dining room.'

The sentence in (46a) was rejected by three of five speakers, wile the sentence in (46b), where a context is provided, was fully accepted by four of the speakers and marginally by the fifth. The specific interpretation is an indication that the quantifiers are not bare, and are accompanied by an empty pronominal element. The difference in interpretation is similar to the one Cinque comments on in relation to clitic left dislocation. The examples in (34c) and (34d) discussed above require a clitic when a specific person or object is intended. The non-specific meaning corresponds to absence of the clitic, which is possible only when the quantifier is bare.[66]

   Concluding so far, it is plausible to analyse both (37) and (41) as cases of quantifier float, on a par with *tout* and *rien*. There is, however, an important difference between *tout* and *rien* on the one hand, and the DQs on the other. Contrary to the DQs, *tout* and *rien* do not need to float, as shown in (40). This can be explained if we assume that the source of quantifier float with DQs is the adverbial DQ. The bare adverbial quantifier can be interpreted as an operator licensing a variable in the object position. The empty position is base generated and operator bound by the bare DQ adverb.[67] As a result the empty category is syntactically licensed as a variable. In the absence of a proper binder, the *ec* is not a legitimate syntactic object, and causes ungrammaticality.

---

[66] In this respect there is an interesting difference between French and Dutch. Imagine a situation in which a very good dessert is served. The Dutch sentence in (i) is fully appropriate in such a context, while the French counterpart is out, unless the clitic *en* is used:

(i) a. Ik wil   lekker veel
       I   want   nicely a-lot
       'I want a lot of it'
   b. J'*(en) veux   beaucoup
      I-(of-it) want   a-lot

The data suggest that in Dutch an empty noun is licensed which makes the specific interpretation possible, while this noun must be overtly realized as a clitic in French.

[67] Cf. Huang (1982), who argues in favour of the existence of topic bound variables that are base generated and not created by movement of the topic.

An interesting piece of data supporting this hypothesis is the behaviour of *plein* 'a lot, full'. The Q *plein* 'full; a lot' is uniquely found in the nominal system. Yet, *plein* resembles DQs more than other AdnQs, as it combines with mass nouns and plurals only, which is the typical selection requirement of DQs in the nominal system. Besides, the interpretation of *plein* is similar to that of DQs. As shown in (47), *plein* cannot float:

(47)   *Jeanne   a   plein fait   pour eux
            Jeanne   has a-lot done   for   them

The impossibility of (47) is predicted if floating of DQs depends on their possibility to be used as adverbs. *Plein* cannot be used adverbially, and hence we do not expect it to float.

We can conclude that the use of *beaucoup* and the other DQs derives from the fact that adverbial DQs qualify as syntactic operators, being able to license an *ec* in the object position as a variable. Floating DQs differ from floating *tout* 'everything' and *rien* 'nothing', as they cannot be used pronominally.

8.3   Conclusions

In this chapter I argued for the generalized L-*tous* analysis. FQs are adjoined to VP or a projection dominating VP and bind an *ec* in an argument position. The generalized L-*tous* analysis makes use of the VP internal subject hypothesis, which creates an *ec* corresponding to the subject in the VP. Subject related FQs bind the trace of the subject in the VP internal subject position. The analysis makes it possible to generalize over those cases where the FQ is to the right of the DP it is associated with, as in (1a) and (3), and those cases in which the FQ is positioned to the left of the DP, as in (15). This is possible because the generalized L-*tous* analysis does not postulate a direct relation between the DP and the FQ, but between the FQ and the DP trace. Those theories that postulate a direct relation between the DP and the FQ fail to make this generalization, and have to resort to two different Q-float creating mechanisms.

Next to the standard FQs, which are associated to an argument DP, there exist bare FQs such as *tout* 'all' and *rien* 'nothing' which license an empty argument position, and do not double an overt argument. I argued that in both cases of Q-float the same configuration is involved. In the case of the standard FQs, the *ec* which is bound by the FQ must be created by movement. This is so because the standard FQ consists of an AdnQ and a — usually empty — pronominal element, which corresponds to the domain of quantification of the AdnQ. As a result, the standard FQ is not

a bare quantifier. Following Cinque (1990), only bare Qs can function as syntactic operators and license an empty category as a variable. Contrary to the standard FQs the bare FQs do not contain any nominal material, and syntactically license the *ec* they bind as a variable. Because of their complex structure, standard FQs must be parasitic on movement of a full DP, a *wh*-phrase or a clitic, as they cannot license the empty category themselves.

Next to *tout* 'all' and *rien* 'nothing', DQs can function as bare FQs. I argued that floating DQs are base generated as adverbs and because of their bare quantifier status can function as binders of an *ec* in object position.

9   Adverbs of quantification

Souvent versus *beaucoup*

Adverbs of quantification (Q-adverbs) such as *souvent* 'often', *quelquefois* 'sometimes' always function as adverbial quantifiers and cannot occur with nouns. In this respect they differ from degree quantifiers (DQs) such as *beaucoup*, which, as we have seen in the preceding chapters, can be either adverbial or adnominal:

(1)   a. Jean est beaucoup/souvent allé au   cinéma
              Jean is a-lot/often   *gone to-the movies*
        b. Jean a   lu   beaucoup/*souvent de livres
              Jean has read a-lot/often   *of books*

In this chapter I will focus on differences between Q-adverbs and DQs. I will argue that Q-adverbs are in fact quantified noun phrases of a special type, and are this respect similar to adverbials of the form *Q times*, which were discussed in 7.3.2 above.

The idea that Q adverbs contain a nominal element can account for several differences between Q-adverbs and DQs. In the first place, the Q-adverb, consisting of a Q and an NP, is incompatible with yet another NP. A second difference is that the VP, which functions as the domain of quantification for the DQ, functions as the scope of a Q-adverb. I will show below that as a result of this, the Q-adverb can take indefinites in the VP in its scope and functions as an inherent iterator, both of which properties are not shared by the DQs (cf. 7.3.2 and 5.2.2 above).

A further characteristic of Q-adverbs which is not shared by DQs is the availability of a relational reading. The relational reading of the Q-adverb *souvent* 'often' is illustrated in (2) (cf. De Swart 1991):

(2)   Quand il se lève tard, Paul a souvent mal à la tête
             'When he gets up late, Paul often has a headache'

(2) is true if in many of the situations in which Paul gets up late, he has a headache. The relative number of situations in which he has a headache can still be small, in case Paul hardly ever gets up late. In the relational reading the main clause functions as the scope of the quantifier, and the *when*-clause defines the domain of quantification. According to Von Fintel (1994) Q-adverbs contain an anaphoric domain element, which I will identify from a syntactic point of view as the nominal element in the Q-adverb. Von Fintel argues that *if/when*-clauses constrain the value of this variable. This type of analysis is not available for the DQ, the domain of quantification of which is introduced by the VP.

In chapter 7 I argued that typically adnominal quantifiers occupy a Q position which is part of the functional superstructure of the NP. In the verbal domain there do not seem to be any QPs dominating the VP, hosting an adverbial quantifier which would be the adverbial counterpart of Qs such as *several* and the cardinal numerals. Q-adverbs are quantified noun phrases, on a par with *Q times*-adverbials, and they are not generated in a Q projection dominating the VP. The only way to set the value of the *q*-position within the VP is by bringing in a DQ. Q-adverbs do not saturate the *q*-position.

The structure of this chapter is as follows. In 9.1 I will argue that Q-adverbs resemble quantified noun phrases. I will give morphological evidence for the presence of nominal material, and relate this to a recent proposal by Von Fintel (1994), who argues that Q-adverbs contain a 'hidden' domain anaphor. In 9.2 a number of contexts in which Q-adverbs differ from DQs will be discussed, and it will be shown that this different behaviour can be seen to be the result of the noun phrase status of the Q-adverb. In these contexts Q-adverbs are similar to *Q times*-adverbials. Section 9.3 will discuss habituality and differences between Q-adverbs and cardinal count adverbials of the form *Q times*. In 9.4 I will concentrate on relational readings of Q-adverbs and the absence thereof in the context of DQs. Section 9.5 will recapitulate the main points.

9.1   Q-adverbs as 'quantified noun phrases'

In this section I will present arguments in favour of the idea that Q-adverbs resemble quantified noun phrases. In 9.1.1 I will discuss morphological evidence for the presence of nominal material in a large subset of the Q-adverbs. Many Q-adverbs include an element such as *times*, which makes them formally similar to *Q times*-adverbials. I argued in 7.3.2 that *Q times*-adverbials such as *three times* constitute full noun phrases, and that the VP they combine with functions as the scope of the Q element they contain. In 9.1.2 I will discuss the presence of a nominal material in relation to Von

Fintel's (1994) analysis of Q-adverbs, according to which Q-adverbs contain a hidden anaphoric domain variable. Given the morphological evidence in 9.1.1, it seems plausible to assume that the nominal material in the Q-adverb is the syntactic realization of Von Fintel's domain anaphor. The presence of nominal material representing the domain of quantification of the Q contained in the Q-adverb is the main difference between Q-adverbs and DQs, which are pure quantifiers. It will turn out that this distinction can account for a number of differences between Q-adverbs and DQs, that will be presented in later sections of this chapter

9.1.1 Morphological evidence

If we look at adverbs of quantification in different languages, we observe that they often contain the element *time* or its equivalent. This element, which I will call the *TIME* classifier, surfaces as *fois* in French, *time*, *way* and *while* in English and *tijd*, *maal* and *wijl* in Dutch, and is the same element we find in adverbial expressions of the form *Q times*. In the examples in (3) the *TIME* classifiers are put in italics. The Q-adverbs that are not used anymore are marked by @.

(3) a. tou*jours*;   quelque*fois*;   par*fois*   *[French]*
         all-days   *some*-times   *by*-time (*'sometimes'*)
         @mainte*fois*
         many-times
     b. al*tijd*;   dik*wijl*s;   menig*maal*   *[Dutch]*
         all-time *manyfold*-while+GEN   *many*-time
         @dik*maal*(s)
         many-time(GEN)
     c. al*ways*;   some*times*; @oft(en)*times*; @often*while*   *[English]*

A different class of Q-adverbs is derived from frequency adjectives. Some French examples are given in (4):

(4) a. Jean visite   fréquemment/rarement   sa tante
         Jean visits   frequently/rarely   his aunt
     b. les rares/fréquentes   visites   de Jean
         the rare/frequent   visits   of Jean

In both the French examples and their English translations the adverbs are formed by the suffix which is normally used to form an adverb on the basis of an adjective: *-ly* in English and *-ment* in French. These suffixes derive

from nouns, meaning 'body' and 'soul', respectively.[68] A comparison between these suffixes and the *TIME* classifier goes beyond the scope of this dissertation, as this would involve a study of frequency adjectives and deadjectival adverb formation. We can conclude, however, that there is morphological evidence that these Q-adverbs contain nominal material.

There is a third group of adverbs of quantification that do not contain a *TIME* classifier at first sight. There are reasons to believe that these are in fact similar to the adverbs of quantification in (3), and do contain a *TIME* classifier. A list of examples from French, Dutch and English is given in (5):

(5)   a.   souvent; jamais   *[French]*
           often   *never*

       b.   veelal; meestal; vaak; nooit   *[Dutch]*
           usually *usually*   *often* *never*

       c.   often, never   *[English]*

The classifier analysis is quite plausible for Dutch *vaak* 'often'. Etymologically *vaak* is related to the Dutch word *vak* 'partition' and Old English *fæc* 'space of time' (cf. *Woordenboek der Nederlandsche Taal*). Originally *vaak* was a temporal classifier similar to *time* or *fois*. Given its etymology, it seems plausible that *vaak* contains a classifier analogous to *fois*. According to Van Wijk (1971) the frequency interpretation is derived from the plural dative. The Q-adverbs in (3) contain both a Q and a *TIME* classifier, and it might be the case that plurality has functioned as a quantifying element. I will consider *vaak* to be an amalgam of a *Q* and a *TIME* classifier.

The frequency adverbs *jamais*, *nooit* and *never* have similar etymologies and are formed out of a negation and a word with the meaning of either 'always' or 'once'. In the Dutch and the English word the negation is present in the form of the *n*-prefix. The French form *jamais* was originally positive, and only got a negative interpretation in the presence of the negative particle *ne*. In Modern French the word *jamais* can be negative in itself (cf. Déprez 1997 for discussion). Being paraphrasable as *not once* they can be seen as consisting of a Q and a *TIME* classifier.[69]

---

[68]   The French suffix *–ment* is derived from latin *mens-mentis* 'soul, spirit' (cf. *Grand Robert*, for instance) and English *–ly* is, according to the Oxford English Dictionary related to Dutch *–lijk* '–ly'/*lijk* 'dead body', which go back to the old Germanic word for '(dead) body' (cf. *Woordenboek der Nederlansche Taal*).

[69]   Negative polarity plays a role in the way positive *jamais*, *ever*, and *ooit* can be used. The examples in (i) illustrate the use of *jamais* as a negative polarity item and its negative use, respectively; (ib) is taken from the *Trésor de la langue Française*, which attributes it to the author Guèvremont:

The Dutch Q-adverbs *veelal* 'usually' and *meestal* 'usually' in (5b) contain the DQs *veel* 'a lot' and *meest* 'most' and the morpheme *–al*. Suffixation of this morpheme turns the DQs into adverbs of quantification. The forms *veelal* 'usually' and *meestal* 'usually' cannot be used with nouns, and share all other relevant properties with Q-adverbs.[70] It might go too far to say that *–al* in these cases is a manifestation of the *TIME* classifier, but its function seems quite similar, and I will assume that these Q-adverbs contain nominal material as well.

Finally, *often* and *souvent* 'often' could be seen as amalgams of a Q and a classifier which have no transparent morphology. Both *souvent* and *often* synchronically cannot combine with nouns, and they are not derived from an adjective. In archaic speech and in older stages of English and French *souvent* and *often* are found in combination with a *TIME* classifier: @*souventes fois* 'often times' or @*souventefois* 'oftentimes' relate to *souvent* (cf. Von Wartburg 1928-66 for some variants in Old and Middle French). The *Oxford English Dictionary* gives i.a. @*oftentime*, @*ofttimes*, @*oftenwhile* in connection with *often*. The fact that middle French also featured the adverbial form *souventement* suggests that *souvent* at some point was similar to *fréquent* 'frequent' and lexically expressed frequency. Similarly, *often* is given in contexts such as *thine often diseases* 'your frequent diseases', which also suggests the presence of lexical frequency. Given that the two expressions are now used as adverbs only, I assume they developed into amalgams of a Q and a classifier. This issue needs further research, but I will treat *souvent* and *often* on a par with *quelquefois* 'sometimes' and *sometimes* in the rest of this chapter.

Even though there are reasons to believe that Q-adverbs consist of a Q element and a nominal element, Q-adverbs behave like adverbs, and not like noun phrases, from the point of view of the fact that they may be modified by Deg-heads. Some examples are English *as often*, French *aussi souvent* 'so often' and Dutch *even vaak* 'as often', which illustrate the use of a Q-adverb in the context of the Deg-heads *as*, *aussi* 'as' and *even* 'as', respectively. As shown in 4.2.1, Deg-heads categorially select APs, and the fact that these elements may be combined with Q-adverbs suggests that the Q-adverbs

---

(i)   a.   Personne n'a   jamais dit   cela
                nobody   NEG-has   ever   said   that
          b.   C'est   jamais la   même   eau   qui   repasse
                it-is   never   the   same   water   that   again-passes-by
                'It is never the same water that passes by again'

For details on the negative polarity properties of Dutch *ooit*, cf. Van der Wouden (1994).

[70]   Suffixation of *–al* has an interesting effect on the interpretation of *veel*: *veelal* does not mean 'often', but 'usually' (as does *meestal*). I have no explanation for this.

bear the category label A. It does not seem to be the case that the Deg-head directly modifies the Q element in the Q-adverb. Take, for instance, Dutch *vaak*. If this is an amalgam of a Q and a nominal element, we do not expect the Q within this amalgam to be modified by a DegP, as in general morphological composition blocks modification of the constituent parts. The adjective *black* in the noun *blackberry* cannot be modified by the Deg-head *very*, even if one could imagine that **a very blackberry* would refer to a particularly black blackberry. An alternative solution, pointed out to me by Johan Rooryck, is to assume that Q-adverbs are exocentric compounds, similar to the French noun *lave-vaisselle* 'dish-washer'. In most cases compounds are endocentric, which means that the head of the compound determines the category of the compound as a whole. In A-N combinations, such as *blackberry*, the noun *berry* is the head of the compound and passes on its category label to the compound as a whole. The noun *lave-vaisselle* 'dish-washer' is different in this respect. The verbal stem *lave* 'wash' and the noun *vaisselle* 'dishes' combine into a noun, the first part of which is the semantic head, while its categorial status corresponds to that of the second part. In Q-adverbs we might have something similar. They form a compound out of an adjectival Q and a nominal expression, which itself has adjectival status:

[$_A$ [$_A$ Q] [$_N$ N]], even though the adjective is not the head of the compound. This seems a promising way to look at the adjectival nature of Q-adverbs which makes it possible to assume that they contain nominal material, in accordance with their morphological form.

In this subsection I discussed morphological evidence for the nominal origin of Q-adverbs. It was argued that Q-adverbs contain nominal material and do not just consist of a Q. In most cases this nominal material has the form of a *TIME* classifier or the Q-adverb alternates diachronically with forms containing a *TIME* classifier. From a formal point of view, these Q-adverbs strongly resemble adverbials of the form *Q times* (but see 9.3 below for some differences). I argued in chapter 7 that *Q times*-adverbials constitute full noun phrases, and contain a noun phrase which corresponds to their domain of quantification. The main argument was that the way in which *Q times*-adverbials are interpreted with respect to the VP is parallel to the way we interpret quantified noun phrases that function as arguments of the verb under a distributive interpretation. In section 9.2 it will be shown that the arguments also pertain to Q-adverbs, and I will claim that the nominal element in the Q-adverb is a syntactic realization of the domain of quantification of the Q-adverb.

9.1.2   A 'hidden' domain anaphor

In the recent semantic literature on Q-adverbs, it has been proposed by Von Fintel (1994) that the domain of quantification of a Q-adverb is set by a hidden anaphor which is interpreted on the basis of pragmatic processes. The idea expressed in the previous section, according to which the Q-adverb contains an adnominal quantifier and nominal material, is very well compatible with Von Fintel's approach: Q-adverbs consist of a Q and a nominal element which sets their domain of quantification.

For Von Fintel adverbs of quantification involve quantification over situations, a view which has also been defended by Berman (1987), Heim (1990) and De Swart (1991). In the literature, the quantification over situations approach competes with the influential idea that Q-adverbs are unselective binders. As the goal of this chapter is not to give a full fledged analysis of Q-adverbs, but to see in which respects they differ from DQs such as *beaucoup* 'a lot', the discussion of the two approaches will remain rather sketchy.

According to the unselective binding approach the adverb of quantification does not quantify over times or situations but over tuples of variables (Lewis 1975, Kamp 1981 and Heim 1982). Unselective binding can be illustrated on the basis of the so-called donkey-sentence (6a) which is analysed as in (6b):

(6)   a. If a farmer owns a donkey, he always beats it
       b. always$_{x,y}$ (farmer(x) & donkey(y) & x owns y)
                         (x beats y)

The indefinites *a farmer* and *a donkey* function as variables that are bound by the unselective binder *always*, which binds all free variables in its restriction. As a result, we quantify over farmer/donkey pairs, which nicely accounts for the interpretation of the sentence. For every pair of a farmer and a donkey for which it is true that the farmer owns the donkey, the farmer beats the donkey.

A second type of data which is used as evidence of the unselective binding approach involves individual-level predicates, such as *intelligent*. If the subject of this predicate is a definite NP, it is not possible to use an adverb of quantification:

(7)   *Mary is always intelligent

This is so, according to Kratzer (1989) because individual-level predicates lack a Davidsonian event variable, and hence the impossibility of (7) follows from the ban on vacuous quantification. There is no variable in the sentence

that can be bound by the adverb of quantification. When the definite subject *Mary* is replaced by the indefinite NP *pigs*, the result is fine, because indefinites are taken to be variables. The NP *pigs* introduces the variable the adverb of quantification can bind:

(8)   Pigs are always intelligent

The unselective binding approach correctly predicts that the sentence in (8) means approximately the same as the one in (9), where the adnominal universal quantifier *all* is used:

(9)   All pigs are intelligent

All and *always* in (8) and (9) both range over *pigs*:

(10)   all$_x$/always$_x$ (pig(x)) (x is intelligent)

In the alternative approach, according to which Q-adverbs quantify over times or situations, the possibility of (8) shows that there must be an event variable in the grid of the individual-level predicate *intelligent*. As a result, the ungrammaticality of (7) needs to be explained in a different way. De Swart (1991) argues that individual-level predicates are 'once-only' predicates, in the sense that their application to a given individual is felicitous only once. The contrast between (7) and (8) can hence be compared to the one in (11):

(11)   a.   *John always fells the tree in the backyard
       b.   John always fells trees

In both cases there is a uniqueness presupposition on the Davidsonian event variable.[71] Individual-level predicates and 'once-only' predicates cannot be quantified over, unless there is an indefinite in the sentence which can be indirectly bound by the adverb of quantification, by means of quantification over assignments (De Swart 1991:118). To every different assignment of the indefinite corresponds a different event. It is possible to fell trees several times, on the condition that in each event a different set of trees is involved.

The assumption that there is an event variable present even in individual-level predicates is a necessary one if we adopt the idea that the adverb of quantification ranges over times. This does not exclude the idea that the quantifier acts as an unselective binder as well. One could propose an

---

[71]   Cf. 5.2.1.2 above, where I argue that this presupposition can account for the incompatibility of DQs and individual-level predicates.

alternative to (10) in which the universal Q in *always* ranges over pairs of situations/times s and pigs, such that for every pair of a situation and a pig the pig is intelligent in that situation, as in (12):

(12)   a.   Pigs are always intelligent
        b.   all$_{s,x}$ (*TIME*(s) & pig(x)) (x is intelligent in s)

Given that indirect quantification over assignments is possible as well it seems more natural to quantify over events or situations, and not to assume that Q-adverbs are unselective binders.

According to Von Fintel adverbial quantification differs from nominal quantification because NPs can provide a syntactic restriction for the quantifier, while VPs cannot. This claim should be slightly modified in the light of DQs. Whereas the VP functions as the scope of Q-adverbs, it functions as the domain of quantification for an adverbial DQ. It is true, however, that there are some remarkable differences between NPs and VPs with respect to their relation with quantifiers. In the verbal system there are no real counterparts of AdnQs. There are no Qs which are exclusively adverbial and which take the VP as the domain of quantification. Only DQs, which also function in the nominal system, are used in this way.

9.2   Scope and iteration

In this section some differences between DQs and Q-adverbs will be discussed which will be argued to support the idea that the Q-adverb contains nominal material corresponding to its domain of quantification. The VP functions as the scope of the Q contained in the Q-adverb. DQs are pure quantifiers, and if they are used adverbially the VP defines their domain of quantification. The different status of the VP will be shown to account for the fact that Q-adverbs can take indefinites in their scope, function as inherent iterators, and are found in the context of a number of VPs which fail to have a plural interpretation by themselves. After discussing the predictions with respect to the distribution of DQs and Q-adverbs in 9.2.1, section 9.2.2 will concentrate on data showing that DQs and Q-adverbs differ from each other in a quite systematic way.

9.2.1   Predictions

The assumption that DQs must saturate an open scalar *q*-position, which was extensively motivated in chapters 4–6, makes quite specific predictions about which verbal predicates may be combined with a DQ. I argued in

chapter 3 that a 'direct internal argument' which measures out the event is actually the subject of a SC with a silent inchoative auxiliary and an overt or covert predicate which indicates the state attained by the SC subject by the end of the event. The q-position of the SC-subject and the q-position of the inchoative event are identified, and the resulting position is identified with the q-position in the matrix verb. The different identification relations are illustrated by the structure in (13):

(13)

$$VP<q_i>$$
$$V<q_i> \qquad SC<q_i>$$
$$DP<q_i> \qquad Aux_{inch}P<q_i>$$
$$Aux_{inch}P<q> \qquad PRED$$
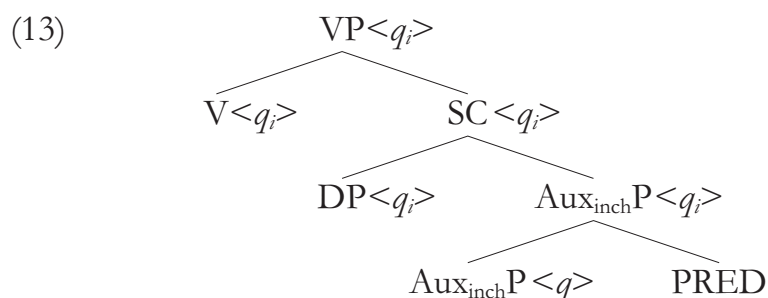
The q-position associated to the inchoative auxiliary percolates up to the AuxP heading this auxiliary. This position is theta-identified with the q-position in the SC subject, and percolates up to the level of the SC. The q-position in the SC is identified with the one in the matrix V. If the q-position in the DP (the subject of the SC) is saturated, all q_i-positions will be saturated, including the one in the VP. This is so, because identification of a saturated and an open position always yields a saturated position (cf. 1.2). In case the q-position in VP is saturated, modification by a DQ is excluded as it is not possible to identify two saturated positions.

The effect of saturation of the q-position in the VP may be cancelled out in case there is an iterated interpretation available. Under the iterated interpretation, the VP is interpreted as a plural form and as such corresponds to a join semi-lattice (cf. section 2.1.3). I assumed in chapter 3 that the operation corresponding to iteration introduces a new, scalar q-position, in accordance with its new interpretation. It seems natural to assume that this new position is not saturated and that iteration makes the verbal q-position available again for saturation by a DQ.

We predict that in measuring out contexts DQs are possible under either of two conditions. The first is that the SC-subject contain a non-saturated scalar q-position so that the q-position in the VP will be an open scalar position as well. This possibility will be further discussed in the next chapter in connection with the quantification at a distance construction. The second is the availability of an iterative interpretation, which cancels out the effect of measuring out, and introduces an open scalar q-position. In this section a number of contexts will be discussed in which, for some reason, the

iterative interpretation is not available, and, accordingly, a DQ cannot be accommodated.

The use of Q-adverbs does not depend on the presence of a non-saturated scalar *q*-position, as the interpretation of the Q-adverb does not involve theta identification. The contexts which do not allow for a DQ because they lack an open scalar *q*-position will turn out to be compatible in many cases with Q-adverbs. It will be shown that Q-adverbs can be used under the same conditions as argumental, distributive quantified noun phrases. Such noun phrases have the same type of relation with the VP as the Q-adverb, as far as quantification is concerned. The nominal material in the quantified noun phrase or in the Q-adverb defines the domain of quantification and the VP determines the scope.

On the basis of the differences between *beaucoup* and *souvent*, we expect, furthermore, that if both *beaucoup* and *souvent* are used in one sentence, *souvent* must have scope over *beaucoup*. If *beaucoup* were outside of the scope of *souvent*, it could not saturate the *q*-position in the VP. As a result, the DQ is uninterpretable. This prediction turns out to be correct (cf. also Obenauer 1994):

(14) a. Il   éternue souvent   beaucoup
          he   sneezes   often   a-lot
      b. *Il   éternue beaucoup souvent
          he   sneezes   a-lot   often

In the following subsection the predictions with respect to the types of predicates that allow for *beaucoup* and/or *souvent* will be examined on the basis of the distribution of DQs and Q-adverbs, respectively. We will see that there is evidence in favour of the idea that DQs are only possible in case a scalar *q*-position is available. Q-adverbs turn out to be possible in the context of predicates that allow for quantified argumental noun phrases to have a distributive interpretation.

9.2.2   The data

In the following subsections three types of contexts will be discussed in which DQs and Q-adverbs clearly have different properties. First, in 9.2.2.1, we will consider the scope properties of DQs and Q-adverbs in the context of indefinites. Then, in 9.2.2.2, we will look at a number of mysterious cases where the iterative interpretation a count predicate seems to be unavailable. Finally, in 9.2.2.3, we will discuss DQs and Q-adverbs in the context of mass and count predicates (cf. section 5.2.2 above).

9.2.2.1 Indefinites and scope

A first type of VP which can be combined with a Q-adverb and not with a DQ is one containing an indefinite that fails to have a referential interpretation. The examples in (15) show that DQs, contrary to Q-adverbs, do not take scope over an indefinite:

(15)   a. Jean   achète   souvent   deux   kilos   d'olives
           Jean   buys   often   two   kilos   of-olives
           'Jean often buys two kilos of olives'
       b. *Jean   achète   beaucoup   deux   kilos   d'olives
           Jean   buys   a-lot   two   kilos   of-olives
           'Jean buys two kilos of olives a lot'

In (15a) *souvent* 'often' quantifies over different events in which (different) two kilos of olives are bought. The ungrammaticality of (15b) shows that a similar interpretation is not available in the context of the DQ. The sentence pair in (15) has an exact parallel in Dutch:

(16)   a. Jan   koopt   vaak   twee   kilo   olijven   *[Dutch]*
           Jan   buys   often   two   kilo   olives
           'Jan often buys two kilos of olives'
       b. *?Jan   koopt   veel   twee   kilo   olijven
           Jan   buys   a-lot   two   kilo   olives
           'Jan buys two kilos of olives a lot'

In English, the situation is slightly more complicated, as both *a lot* and *often* can be used in this context. This must be a special property of the DQ *a lot*, as a similar contrast as the one in (15) and (16) can be made between the sentences in (17), where *more often* is opposed to the DQ *more*:

(17)   a. John buys two kilos of olives more often than Peter does
       b. John buys two kilos of olives more than Peter does

The sentence in (17b) ungrammatical under the intended reading, which is similar to the one in (17a). It only has a reading — irrelevant for the present discussion — according to which the total amount of olives bought by John weighs two kilos more that the amount of olives bought by Peter. I will not investigate the special properties of English *a lot*, and concentrate on what seems to be the general pattern.

The impossibility of the examples such as (15b) is not due to the presence of an indefinite *per se*, but to the presence of an indefinite that has to be interpreted within the scope of the DQ. Indefinites can cooccur with a DQ

in case they are referential and have wide scope with respect to the DQ. This is nicely illustrated by the contrast in (18), which is due to Milner (1978b):

(18) a. Trois Allemands   sont   beaucoup venus   chez toi
          three Germans   are   a-lot   come   at your-place
          l'an   dernier
          the-year   last
          'Three Germans visited you a lot last year'
      b. *Il est beaucoup venu trois Allemands chez toi
          it is a-lot   come   three Germans   at   your-place
          l'an   dernier
          the-year   last
          'Last year, there came three Germans to your place a lot'

The referential reading (three specific Germans) can only be obtained in (18a). In (18b) the noun phrase *trois Allemands* has to be interpreted inside the scope of the DQ, which leads to ungrammaticality.

The impossibility to take scope over an indefinite is expected given that only the referential reading of the indefinite allows for an iterated reading. Take, for instance, the example in (15b). The intended reading is that there are occasions at which Jean buys two kilos of olives. The indefinite within the scope of *beaucoup* does not have a referential interpretation, as Jean does not buy the same two kilos of olives several times. If we try to form a plural on the basis of singular events that can be characterized by *to buy two kilos of olives* we do not succeed. If Jean buys two kilos of olives on Friday and two more on Saturday, the two events together (their join) cannot be described by the predicate *to buy two kilos of olives* but would correspond to the predicate *to buy four kilos of olives* instead. The predicate refers to a singular event, and does not allow for an iterated interpretation. As *two kilos of olives* contains a saturated q-position, the q-position within the VP will be saturated as well, and iteration does not offer a way out. We thus expect sentences such as (15b) to be ungrammatical, in accordance with the facts.

The contrast in (18) confirms the idea that it is the lack of a referential interpretation which causes the ungrammaticality of sentences such as (15b). In (18a) the noun *trois Allemands* refers to a specific set of Germans. Iteration is available for the referential indefinite, which in this respect does not behave differently from any other referential expression. The sentence is compatible with a DQ on the condition that the verbal predicate has an iterated interpretation, as this introduces an open scalar q-position which can be saturated by the DQ. (18b) is similar to sentences such as (15b). The iterated interpretation is not available, due to the lack of a referential reading for the indefinite, and the use of a DQ is excluded.

The fact that Q-Adverbs do take scope over indefinites in the examples in (15a) and (16a,b) suggests that they do not depend on the presence of a scalar *q*-position. Given that Q-adverbs are analysed on a par with *Q times* adverbials, we expect that *Q time* adverbials may take scope over an individual as well. This is indeed the case, as shown in (19):

(19)   Jean y   a   plusieurs fois   acheté   deux   kilos   d'olives
        Jean there has   several   times   bought   two   kilos   of-olives

On the basis of similar data I argued in 7.3.2 that *Q times*-adverbials such as *plusieurs fois*, contrary to DQs, do not combine with the VP through saturation of the *q*-position.

As far as their quantificational properties are concerned, *plusieurs fois* and *souvent* resemble distributive quantified noun phrases that function as arguments of the verb. In (20) is shown that the subject *beaucoup de gens* 'a lot of people' may take scope over the indefinite *deux kilos d'olives* 'two kilos of olives':

(20)   Beaucoup   de gens   ont   acheté   deux   kilos   d'olives
        a-lot   of people   have   bought   two   kilos   of-olives
        'Many people bought two kilos of olives'

The proposed analysis relates *souvent* and *plusieurs fois* to quantified noun phrases. The nominal material they contain functions as their domain of quantification and the VP as the scope. This claim receives support from the observation that the three types of expressions show the same behaviour with respect to indefinites.

9.2.2.2 Iterative and non-iterative predicates

Predicates containing an indefinite are not the only ones which are hard to combine with a DQ. As it was shown in 2.2.5, count predicates often cannot be combined with a DQ, which suggests that they have a singular interpretation, and do not contain a scalar *q*-position which the DQ could saturate. In these cases the Q-adverb can be used, which shows that the impossibility of the iterated reading is not due to the 'once-only' character of the predicate.

Some examples of sentences in which a Q-adverb is strongly preferred over a DQ are given in (21):[72]

(21) a. Jean l'a   souvent/?*beaucoup rendu   heureuse   *[French]*
          Jean her-has often/a-lot   made   happy
          'Jean often made her happy'
      b. Jean a   souvent/?*beaucoup jeté   sa bicyclette
          Jean has   often/a-lot   thrown   his bike
          par terre
          on ground
          'Jean often threw his bike to the ground'
      c. Jan heeft haar vaak/?*veel gelukkig gemaakt   *[Dutch]*
          Jan has   her   often/a-lot happy   made
      d. Jan heeft zijn fiets vaak/?*veel op de grond   gegooid
          Jan has   his bike often/a lot   on the ground   thrown

Other count predicates can be combined with DQs quite easily. This always results in a plural interpretation, as expected under the hypothesis that iteration provides the open scalar *q*-position that is needed in order to interpret the DQ:

(22) a. Jean est beaucoup/trop allé   au   cinéma   *[French]*
          Jean is   a-lot/too-much   gone   to-the cinema
      b. Jean a peu   rencontré Marie
          Jean has little   met   Marie

The most plausible explanation for the impossibility of the DQ in the examples in (21) seems to be the unavailability of iteration, and hence the absence of an open scalar *q*-position. If we make this assumption, the difference between Q-adverbs and DQs falls out.

Contrary to the DQ, the adverb of quantification distributes over events, and is independent of the presence of a scalar *q*-position. In case the *q*-position is singular, the event is quantified over in the same way as the indefinite NP in (15a). As expected, expressions of the form *Q times* and quantified noun phrases pattern with the Q-adverbs in this context as well:

(23) a. Jean l'a   rendu   heureuse plusieurs fois
          Jean   her-has made   happy   several   times

---

[72]   The observation that certain predicates are incompatible with quantifiers of the type *beaucoup* has also been made by Milner (1978a:106), who gives for instance the following example: **Nous sommes beaucoup arrivés à Paris* 'We arrived in Paris a lot'.

b. Beaucoup   de gens   l'ont   rendu   heureuse
   a-lot   of people her-have   made   happy

In case the direct object has a type reading, DQs can always be used. The type reading of the object seems to make the iterated reading easily available, resulting in the presence of a scalar *q*-position:

(24)   On a   beaucoup vendu   ce modèle
            we have   a-lot   sold   this model

The observation that the type reading can save a structure containing a DQ is the source of some subtle contrasts between Q-adverbs and DQs. In Dutch there is an interpretive difference depending on the use of *vaak* 'often' or *veel* 'a lot' in the following sentences:

(25)   a. We hebben deze auto veel   verkocht
           we have   this car   a-lot   sold
           'We sold this car a lot'
       b. We hebben deze auto vaak   verkocht
           we have   this car   often   sold
           'We often sold this car'

In the (25a) the type reading is strongly preferred, or even required. In (25b), to the contrary, both the type and the token reading are fully acceptable, even though latter is pragmatically strange. The absence of the token reading in (25) can now be related to the absence of an iterated reading of the VP under the token reading of *deze auto* 'this car'. This makes the use of the DQ impossible, whereas the Q-adverb is fine. The type reading of the noun phrase turns the VP into a mass predicate, containing a scalar *q*-position which can be saturated by the DQ, and hence can save the sentence in (25a) from ungrammaticality.[73]

   In this context as well, the Q-adverb behaves like a quantified noun phrase. (26) has a reading in which there is only one single car involved (and Jan is a crook):

(26)   Jan heeft deze auto aan verschillende mensen   verkocht
            Jan has   this car   to several persons   sold
            'Jan sold this car to several persons'

---

[73]   The contrast in (25) is much weaker in English, and does not seem to exist in French. This suggests that the availability of the iterated reading is subject to cross-linguistic differences.

The assumption that an iterated reading is not readily available for all count verbal predicates, even if we exclude the 'once-only' predicates, can account for the observed differences between DQs and Q-adverbs. The source of the difference between the predicates in (21) and (22) is quite hard to apprehend. Judgements are subtle in some cases, and there are unexpected cross-linguistic differences. However, the data clearly indicate that something must be going on.

   There is some evidence that the type of change the direct internal argument undergoes plays a role. Consider the sentences below:

(27)   a.   John went to the movies
       b.   John threw his bike on the floor

(27a) can be used to express that John went to the movies and, after the movie, came back. On the other hand, the sentence in (27b) does not suggest in any sense that the bike is taken up again by John, after he threw it on the floor. This might actually play a role in determining whether the predicate may have an iterated, cumulative reading, or only a unique event reading. The bike has to be taken up before the event can take place a second time, while the end point of John going to the movies might be seen as the moment at which he is back. Further investigation of the phenomenon has to make clear whether these speculative remarks are on the right track, and also where the cross-linguistic differences come from.

9.2.2.3 Mass and count predicates

In 5.2.2 I argued that DQs never create iteration. An iterated reading, as in the French examples in (22), repeated here in (28), is introduced by the predicate, not by the DQ:

(28)   a.   Jean   est beaucoup/trop   allé   au   cinéma   (= (22a))
            Jean   is   a-lot/too-much   gone   to-the   cinema
       b.   Jean a peu   rencontré Marie   (= (22b))
            Jean has little   met   Marie

In the context of a mass predicate the iterated reading is absent. The examples in (29), which contain the mass predicate *dormir* 'to sleep', illustrate that *souvent*, contrary to *beaucoup*, is an inherent iterator, as it provokes an iterated reading even in the context of mass predicates:

(29)   a. Jean   a   souvent   dormi   ce   weekend
            Jean   has   often   slept   this   weekend
            'Jean often slept this weekend'
        b. Jean   a   beaucoup dormi   ce weekend
            Jean   has   a-lot   slept   this   weekend
            'Jean slept a lot this weekend'

For (29a) to be true, the number of separate sleeping events must be higher than a given norm, whereas (29b) implies that the total amount of sleeping by Jean during the weekend was relatively big. The sentence in (29a) can be true regardless of whether Jean has slept a lot or little. Similarly, the truth of (29b) is independent of the truth of (29a). Take, for instance, a situation in which Jean slept twice in the weekend, but each time for fourteen hours. This situation can be truthfully rendered with the aid of (29b) but not with the aid of (29a). Again, *souvent* is comparable with *Q times*-adverbials.

   Souvent and *beaucoup* only have a similar interpretation in the context of a count predicate which may have an iterated interpretation:

(30)   Jean est   souvent/beaucoup   allé   au   cinéma
            Jean is   often/a-lot   gone   to-the cinema

Regardless of whether we use *souvent* 'often' or *beaucoup* 'a lot', the sentence corresponds to a situation in which there are a lot of cinema visits by Jean. In case *beaucoup* is used, the source of iteration is the verbal predicate, not the quantifier. *Souvent* is an inherent iterator, as a result of which the iterated reading does not depend on the iterative reading of the predicate.

9.2.3   Concluding remarks

In the preceding subsections I discussed a number of contexts which illustrate the difference between Q-adverbs and adverbially used DQs. The theoretical differences between DQs and Q-adverbs and the predictions one can make on the basis of these differences were discussed in 9.2.1. DQs saturate the *q*-position in the VP. As a result they can only combine with VPs containing an open scalar *q*-position. Q-adverbs behave like distributive quantified noun phrases and adverbials of the form *Q times*, for which I argued in 7.3.2 that they are quantified noun phrases. The VP is not the domain of quantification of the Q element in the Q-adverb, but its scope. As a result the Q-adverb is not dependent on properties of the *q*-position in the VP. As a result it can be combined with VPs which resist modification by a DQ. In 9.2.2 the different properties of DQs and Q-adverbs have been illustrated with data. We have seen that DQs cannot take

scope over an indefinite, as the presence of the indefinite saturates the verbal *q*-position, and iteration is not possible, so that the VP does not contain an open scalar position in the context of which a DQ could be interpreted (9.2.2.1). Count predicates which do not include an indefinite but which still fail to be iterated cannot combine with a DQ either (9.2.2.2). All of these predicates are compatible with Q-adverbs. I argued that this is so because they are similar to quantified noun phrases. In 9.2.2.3 we have discussed DQs and Q-adverbs in the context of mass and count predicated. Contrary to DQs, Q-adverbs are inherent iterators, which can be shown on the basis of their interpretation in the context of mass predicates.

9.3   *Souvent* and *beaucoup* in habitual sentences

In the preceding sections the similarity between Q-adverbs and *Q times*-adverbials has been stressed. An important and well-known difference between the two types of expressions, however, is that only Q-adverbs can be used in habitual contexts (cf. Hoepelman & Rohrer 1981, De Swart 1988a, 1991). The contrast is illustrated in (31), where the habitual interpretation is forced by the use of present tense:

(31)   a.   Marie   joue   souvent   du   piano
            Marie   plays   often   of-the   piano
            'Marie often plays the piano'
       b.   ??Marie joue   du   piano   trois fois
            Marie   plays   of-the   piano   three times
            'Marie plays the piano three times'

The sentence in (31b) is strange, unless we interpret *trois fois* as 'three times per time unit', say per week. Habitual sentences do not render specific situations, but generalize over situations and have a homogeneous interpretation. A habitual sentence which describes a certain time interval will be a characterization of subintervals of this time interval as well. Hoepelman & Rohrer and De Swart explain the difference between the Q-adverb *souvent* in (31a) and the *Q times*-adverbial *trois fois* in (31b) as the result of a semantic difference between *souvent* and *trois fois*.

   The Q-adverb *souvent* must be interpreted with respect to a time unit. The number of times one has to play the piano in a week in order to play often differs from the number of times one has to play in a year in order to qualify as a frequent player. As a result, expressions such as *souvent* are compatible with the homogeneous interpretation of the habitual. In (31a) for instance, we expect an important number of times during which Marie played the piano for every time interval considered. The absolute number

of times depends on the time unit we choose, so that a homogeneous interpretation is possible.

Contrary to *souvent*, *trois fois* 'three times' indicates an absolute quantity. As a result it cannot be used in habitual sentences. Subintervals of a period in which Marie plays the piano three times in most cases will not qualify as intervals in which she played three times. By adding a phrase such as *par semaine* 'per week', the sentence becomes interpretable as this makes the quantity dependent on the time interval, thus solving the conflict between the homogeneous interpretation of the habitual and the absolute quantity expressed by the *Q times*-adverbial.

The contrast between French *quelquefois* 'sometimes' and *quelques fois* 'some times', discussed in De Swart (1988a), is to be understood along these same lines. The Q-adverb *quelquefois* 'sometimes' defines a relative quantity and can be used in habitual contexts, while *quelques fois* indicates an absolute quantity and cannot be used in habitual sentences.

DQs are similar to Q-adverbs as far as their compatibility with habitual contexts is concerned:

(32)   Marie   joue   beaucoup
         Marie   plays   a-lot

The data in (32) are expected given that *beaucoup* does not indicate an absolute quantity. As with *souvent* 'often', for which the number of times which counts as 'often' depends on the length of the chosen time period, what counts as 'a lot' in a week does not count as 'a lot' in a year. As a result we do not expect there to be a conflict between *beaucoup* and the homogeneous interpretation of habitual sentences.[74]

We can conclude that in habitual sentences Q-adverbs and DQs behave alike as a result of the fact that neither indicates an absolute quantity. *Q times*-adverbials such as *trois fois* cannot be used in habitual contexts as they indicate an absolute quantity and this is incompatible with the homogeneous interpretation of the habitual.

---

[74] De Swart (1991) uses the terms *frequency* and *iteration* to distinguish between the reading of Q-adverbs on the one hand, and *Q times*-adverbials such as *trois fois* on the other. I will not use the term *frequency* here, and will continue to use *iteration* for all interpretations that imply repetition of an event. De Swart uses the term *relative quantity* uniquely for frequency expressions, and not for expressions such as *beaucoup*.

9.4   Relational readings

9.4.1   The problem

An intriguing property which distinguishes Q-adverbs from DQs is the availability of a relational reading. The relational and the non-relational readings are illustrated in (33) (cf. De Swart 1991):

(33)   a.   Quand il se lève tard, Paul a souvent mal à la tête
              'When he gets up late, Paul often has a headache'
        b.   Paul a souvent mal à la tête
              'Paul has often a headache'

The first example illustrates the relational reading. The sentence expresses that in many of the situations in which Paul gets up late, he has a headache. This does not imply that the relative number of situations in which he gets a headache is particularly important, as it can be the case that Paul hardly ever gets up late. The second example is ambiguous between a relational reading and a non-relational reading. In the former, quantification is still restricted to a certain contextually given situation. In the latter, quantification is not restricted to a certain type of situation. In that case the average number of situations Paul has a headache is relatively high.

   The example in (34) is ambiguous between a relational and a non-relational reading as well, but contrary to (33b), it contains an overt *when*-phrase (and in that respect more closely resembles unambiguous (33a)):[75]

(34)   Quand il est à Paris, Pierre va souvent au Louvre
              'When he is in Paris, Pierre goes often to the Louvre'

In the relational reading the phrase introduced by *quand* 'when' is interpreted as the restriction of the quantifier. This reading of the sentence can be paraphrased as: 'many of the situations in which Pierre is in Paris are situations in which he goes to the Louvre.' In the non-relational reading, the phrase introduced by *quand* defines the periods of time in which Jean often goes to the Louvre. A paraphrase of this reading is: 'every time Pierre is in Paris, he often goes to the Louvre'. It is clear that in a situation in which most of the times he is in Paris, Pierre goes to the Louvre once is in accordance with the first, but not with the second reading of (34).

---

[75]   The *when*-clause in (34), which has both a relational and a non-relational reading, differs from the one in (33a) because it contains a stative VP. The stative VP introduces a time interval, which can serve a background for a sentence containing a non-relational Q-adverb or a DQ. Cf. Ter Meulen (1995) on the relation between aspectual properties of predicates and the way they are temporally interpreted in discourse.

When a DQ is used instead of the adverb of quantification, only the second, non-relational reading of (34) obtains:

(35)   Quand il est à Paris, Pierre va beaucoup au Louvre
            'When he is in Paris, Pierre goes to the Louvre a lot'

(35) can only be paraphrased as: 'every time Pierre is in Paris, he goes to the Louvre a lot'. The availability of the relational reading is hence a further characteristic of Q-adverbs which is not shared by DQs. The same contrast is found in Dutch and English. (36a,c), which contain a Q-adverb, are ambiguous, while (36b,d), in which a DQ is used, are not:

(36)   a.   Als hij in Amsterdam is, gaat Piet vaak naar het Rijksmuseum
            'When he is in Amsterdam, Piet often visits the Rijksmuseum'
       b.   Als hij in Amsterdam is, gaat Piet veel naar het Rijksmuseum
            'When he is in Amsterdam, Piet visits the Rijksmuseum a lot'
       c.   When he is in London, Peter often visits the National Gallery
       d.   When he is in London, Peter visits the National Gallery a lot

In this respect it is *beaucoup*, and not *souvent*, which resembles *Q times* adverbials, which do not allow for a relational reading either:

(37)   When he is in London, Peter visits the National Gallery (at least)
            three times

(37) does not have a relational reading as it cannot mean that during (at least) three of the times that Peter was in London he visited the National Gallery an undetermined number of times. Whereas the incompatibility of *Q times* adverbials and the relational reading seems to be related the fact that the *Q times* adverbial indicates an absolute quantity (cf. De Swart 1991), a similar explanation does not seem to be available for the fact that *beaucoup* cannot have a relational interpretation. *Beaucoup* is compatible with the imperfect and the present tense, in which respect it is similar to *souvent*, which is an indication that it is not an expression of absolute quantity.

9.4.2   Further cases of relational readings

The (un)availability of the relational reading for *beaucoup* can be viewed as the source of some contrasts between *souvent* 'often' and *beaucoup* 'a lot' discussed by Obenauer (1994:74-5). Obenauer observes that there is a contrast in the following sentences:

(38) a. Mon jeu   égale souvent/*beaucoup celui de Lendl
          my   playing equals often/ a-lot   that of Lendl
      b. Cette élève   sait souvent/*beaucoup la réponse
          this   student knows often/ a lot   the answer
      c. Quand il vient   à Paris, il réside   souvent/*beaucoup
          when   he comes to Paris he resides   often/ a-lot
          au   Ritz
          in-the Ritz

In all of these sentences, *souvent* 'often' only has a relational reading. In (38a) the noun phrase *mon jeu* indicates that we are only talking about those situations in which I play, in (38b) the presence of the noun phrase *la réponse* 'the answer' indicates that we only consider those situations in which a question has been asked. (38c) contains a *when*-clause and is similar to (33a) in that it only has a relational reading (cf. footnote 7).

Obenauer shows that the position of *souvent* is not readily accepted in sentence final position in these sentences:

(39) a. ??Mon jeu   égale   celui de Lendl souvent
          my   playing equals that of Lendl often
      b. ??Cette élève   sait la réponse   souvent
          this   student knows the answer   often
      c. ??Quand il vient   à Paris, il réside   au Ritz   souvent
          when   he comes to Paris he resides   in-the Ritz often

Placing *souvent* in the sentence final position is not very felicitous anyway, but there is a clear contrast between the sentences in (39) and the ones in (40):[76]

(40) a. ?Un policier   a   assisté à   ces   réunions souvent
          a policeman   has assisted to   these meetings   often
          'A (specific) policeman has often been present at these meetings'
      b. (?)Un étranger   louche a   été   vu ici souvent
          a stranger   suspect has been   seen here often
          'A (specific) stranger has often been seen here'

The narrow scope reading of *souvent* with respect to the subject suggests that the sentence final position is structurally lower than that of the subject.

Obenauer explains the difference between *beaucoup* and *souvent* as follows. *Souvent* can be either internal or external to the VP, whereas *beaucoup* must

---

[76] Cf. Obenauer (1994:74, note 34) for discussion of why the sentences in (39) are not fully excluded, on a par with the corresponding sentences containing *beaucoup*.

be internal to the VP. This idea is supported by the fact that only *souvent* can be sentence initial:

(41)   Souvent/*beaucoup,   un policier   a   assisté   à
         often/ a-lot   *a policeman   has   assisted   to*
         ces   réunions
         these   meetings
         'Often, a policeman has been present at these meetings'

In this position *souvent* has sentential scope, as it does in the position it occupies in (38). Obenauer states that in the sentences in (38) the Q must be in a VP external position, which is corroborated by the fact that the sentences in (39), where the Q-adverb does not have sentential scope, are quite bad. This predicts that *beaucoup*, which is necessarily VP internal, cannot be used in these sentences.
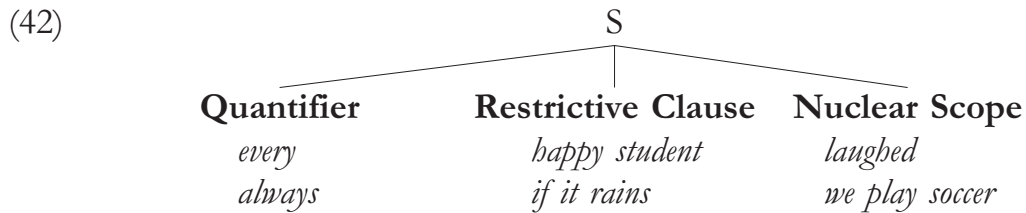
Even though there is clearly a correlation between the availability of the relational reading and the position of the Q (Q-adverb or DQ) in the tree, it is not so evident that the source of the unavailability of the relational reading is the more restricted distribution of the DQ. It could in principle be the other way around as well. One could argue that the DQ cannot occur in a higher position because it cannot sustain a relational reading. As we have seen in the preceding sections that there is strong evidence in favour of the idea that *souvent* but not *beaucoup* contains a nominal element corresponding to its domain of quantification, we would like to attribute the difference with respect to the (un)availability of relational readings to this same difference. I will attempt to do so in the next subsection, making use of Von Fintel's analysis of *if/when* clauses.

9.4.3   *If/when*-clauses

The problem presented in the preceding subsection can be restated in terms of the properties of *if/when*-clauses (*if-* and *when*-clauses can be treated on a par for our purposes). An implicit or explicit *if/when*-clause can determine the restriction of a Q-adverb but not of a DQ. In the preceding sections, I argued that the essential difference between Q-adverbs and DQs is that Q-adverbs are quantified noun phrases containing a nominal element which indicates the domain of quantification, while DQs only consist of a quantifying element and combine with a phrase that can serve as their domain of quantification. In order to prevent DQs from introducing a relational reading, we have to exclude the possibility that the *if/when*-clause contains a *q*-position which could be saturated by an adverbial DQ in some way, as a result of which the *if/when*-clause would function as the domain

of quantification of the DQ. Instead, *if/when*-clauses should be seen as expressions which narrow down the domain of quantification of a Q-adverb. A concrete proposal along these lines has been developed on independent grounds by Von Fintel (1994).

Partee's (1991) well-known tripartite quantificational structure gives the *if*-clause the same status with respect to the Q-adverb as an NP with respect to the quantifier:

(42)   S

    Quantifier   **Restrictive Clause**   **Nuclear Scope**

    every   *happy student*   *laughed*

    always   *if it rains*   *we play soccer*

On the view that the tripartite structure represents parallel syntactic relations, we might expect that DQs would combine in the same way with NPs and with *if*-clauses, which would predict that relational readings are possible in the context of DQs.

According to Von Fintel, however, the tripartite structure should be seen as a convenient meta-level notation and does not imply that the syntactic status of the noun phrase *happy student* with respect to the Q *every* is the same as the one of *if it rains* with respect to *always*. He gives two arguments against a syntacticization of (42) for *if*-clause constructions. First, *if*-clauses have a much greater positional freedom with respect to the Quantifier, which would be strange if it were true that the *if*-clause had the same status as the noun phrase. Second, *if*-clauses are always optional while there has to be an overt noun phrase present in the context of certain determiners, such as *every*.

Von Fintel argues that the *if*-phrase should be seen as a correlative clause. An example of the correlative construction, taken from Marathi, is given in (43):

(43)   Ram tithe bəsla, jithe sawəli hoti
          Ram there sat   where shade   was
          'Ram sat where there was shade'

The *if*-clause can be compared with the phrase *jithe sawəli hoti* in (43), which is related to the anaphoric element *tithe* 'there' in the main clause. The anaphoric element corresponding to the *if*-clause is either the anaphor in the adverb of quantification, or the element *then* which is in turn associated to

the anaphor in the adverb of quantification.[77] As a result the *if*-clause constrains the value of the variable in the adverb of quantification. For the semantic implementation and a thorough discussion of remaining problems I refer the reader to Von Fintel (1994:87). The relation between the *if*-clause and the adverb of quantification is established through the anaphoric domain element in the adverb of quantification.

At this point we can return to the difference between *beaucoup* and *souvent*, which was illustrated by the contrast between (34) and (35), repeated here in (44):

(44)   a.   Quand il est à Paris, Pierre va souvent au Louvre
            'When he is in Paris, Pierre goes often to the Louvre'
      b.   Quand il est à Paris, Pierre va beaucoup au Louvre
            'When he is in Paris, Pierre goes to the Louvre a lot'

For (44a) there are two readings. The relational reading is obtained when the clause *quand il est à Paris* constrains the noun phrase in the adverb of quantification *souvent* 'often'. In the non-relational reading the phrase introduced by *quand* 'when' constrains an anaphor in an invisible generic operator, and *souvent* is not constrained by the *when*-clause.

The absence of the relational reading in (44b) now directly follows from the fact that the DQ does not contain a noun phrase, as a result of which it cannot be associated with the *when*-clause. As it would in the absence of the *when*-clause, the adverbial DQ saturates the *q*-position in the VP, and hence ranges over visits of the Louvre by Pierre. The *when*-phrase *quand il est à Paris* must be interpreted with respect to a silent generic operator.

The positional differences between *souvent* and *beaucoup* discussed in the previous subsection could be related to the different ways in which they are interpreted. The relative unacceptability of the examples in (39) suggests that relational *souvent* should have sentential scope, and cannot be too low in the

---

[77]   The element *then* is not always present in the context of an *if*-clause, and in some cases, such as (i), it must be omitted:

(i)   What does John think that if Mary comes (*then) the guests will eat?

In other cases, insertion of *then* implies a specific interpretation:

(ii)   a.   If you open the refrigerator, it won't explode
         b.   If you open the refrigerator, then it won't explode

Adding *then* implies that if you do not open it the refrigerator will explode. For Von Fintel this is a reason to assume that the relation between the *if*-clause and the anaphoric element in the adverb of quantification can either be direct or mediated by *then*. I will abstract away from the differences between these two cases.

tree. The position of *beaucoup*, which must be adjacent to VP, is due to the existence of a saturation relation between the DQ and the *q*-position in the VP.

9.5   Conclusions

In this chapter properties of adverbial quantification have been discussed. I argued that Q-adverbs should be analysed as quantified noun phrases, consisting of a Q and a noun phrase, which in many cases surfaces as the classifier *times*. The noun phrase in the Q-adverb can be seen as the syntactic realization of the 'hidden domain anaphor' introduced by Von Fintel (1994). DQs differ from Q-adverbs because they are pure quantifiers, and do not contain their domain of quantification. For an adverbial DQ, the VP defines the domain of quantification, whereas the VP functions as the nuclear scope of the Q element included in the Q-adverb.

This distinction nicely accounts for a number of differences between Q-adverbs and DQs. First, Q-adverbs are expected not to combine with NPs as they already contain an NP. Phrases of the type *souvent (de) livres* 'often (of) books' are out, because *souvent* already contains nominal material. Second, as the VP functions as the scope of the adverb of quantification and as the domain of quantification of the DQ, the latter depends on the presence of a scalar *q*-position in the VP. The adverb of quantification takes the VP as its scope and can distribute over singular events. Third, the domain of quantification of Q-adverbs can be constrained by an *if*-clause, whereas the VP defines the domain of quantification of DQs. As a result, relational readings are only possible for Q-adverbs.

In many respects Q-adverbs are similar to *Q times* expressions. However, Q-adverbs are expressions of relative quantity, as a result of which they can function in habitual contexts. In this respect they resemble DQs, which can be seen as expressions of relative quantity on a par with the Q-adverbs. *Q times*-expressions of the type *three times* indicate an absolute quantity as a result of which they are not acceptable in habitual sentences.

Comparing Q-adverbs to AdnQs, we find that Q-adverbs are not the adverbial counterpart of AdnQs, but involve adnominal quantification themselves. The VP does not determine the domain of quantification, as does the NP in case of the AdnQs, but the scope of the Q included in the Q-adverb. DQs, which function in both systems, differ from AdnQs only because of the way they select. AdnQs categorially select NPs, while DQs thematically select a scalar argument position. There do not seem to be Qs that categorially select VPs, however.

The lack of clear adverbial counterparts of AdnQs is contingent on the lack of QPs in the functional superstructure of the VP. In chapter 7 I

argued in favour of the existence of a QP dominating NP and one dominating DP, both of which host typically adnominal quantifiers. No such projections seem to play a role in the verbal system.

10   Quantification at a distance

In most cases it is immediately clear whether a quantifier is adverbial or adnominal. This is not so in the quantification at a distance construction, which is exemplified in (1):

(1)   Jean a   beaucoup lu   de livres
              Jean has a-lot   read   of books
              'Jean read a lot of books'

The position of *beaucoup* 'a lot' is adverbial, but, at first sight, *beaucoup* ranges over books. To this one can add that the form of the direct internal argument, *de livres* 'of books', is identical to the form of an NP modified by a DQ (cf. 6.3), as in *beaucoup de livres*. In the absence of *beaucoup* the plural indefinite in the direct object position must have the form *des livres*, literally 'of-the books', where *des* functions as the plural indefinite article.

(2)   a.   *Jean a   lu   de livres
              Jean   has read   of books
      b.   Jean   a   lu   des livres
              Jean   has read   of-the books
              'Jean read books'

These facts have led to analyses of QAD where *beaucoup* is base generated as an adnominal quantifier and moved to its adverbial surface position (cf. for instance Milner (1978a, 1978b):

(3)   Jean a [$_{VP}$ beaucoup$_i$ [$_{VP}$ lu [e_i [$_{NP}$ de livres]]]]

There are also reasons to believe, however, that the quantifier in the QAD construction is base generated as an adverb. One reason is that only those

adnominal quantifiers which can also be used adverbially can figure in the QAD construction (cf. Kayne 1975):

(4)   Jean a   beaucoup lu
           Jean has a-lot   read
           'Jean read a lot'

In our terminology, we only find degree quantifiers or DQs in this construction, and no other Qs. AdnQs such as for instance *quelque(s)* 'some(+PL)' or *trois* 'three' do not occur in the QAD construction, and cannot be used as adverbs:

(5)   a. *Jean a   quelques/trois   lu   (de) livres
            Jean   has some/three   read   (of) books
    b. *Jean a   quelque(s)/trois lu
            Jean   has some(+PL)/three   read

The generalization holds completely. DQs can be found in the QAD construction, and AdnQs cannot (see chapters 4 and 7 for an inventory of DQs and AdnQs, respectively).

A further argument in favour of the adverbial status of the Q in QAD, which is also due to Kayne (1975), is that phrases of the type *de livres* exist independently. The *de NP* is found in negative contexts, and in certain cases it cannot be created by extraction of a Q:

(6)   Il n'aurait   osé   offrir d'alcool   très fort
           he   NEG-would-have dared offer   of-alcohol   very strong
            qu'à   un ami
            only-to   a friend
            'He would have dared to offer strong alcoholic drinks to a friend only'

In (6) the *de* NP is allowed because of the element *ne... que* 'only'. There is no overt Q present which could possibly originate in an empty position preceding the *de NP*.

Obenauer (1983, 1984) gives further motivation for the adverbial status of the Q in QAD based of the observation that in certain contexts QAD is not allowed, whereas the corresponding sentence in which the Q directly combines with the *de NP* is. He formulates the V-quantification hypothesis, according to which QAD involves adverbial quantification. The adverbial Q acts as a binder of a Q position in the *de NP*.

In this chapter I will follow the idea that the DQ in the QAD is in fact generated as an adverb. I will show, however, that the type of quantification

in the QAD construction is not unambiguously adverbial. In certain cases the quantity of objects or the amount of stuff corresponding to the *de NP* is determined by the DQ. I will argue that the hybrid type of quantification found in the QAD construction is due to the measuring out effect. The account of measuring out given in chapter 3 will be the basis of the analysis of QAD that I will develop in this chapter. It will be argued that, because of the measuring out effect, the *q*-position in the *de NP* and the *q*-position in V undergo theta identification. The resulting position is saturated by the DQ, as a result of which the DQ is interpreted with respect to the *de NP*, while functioning as an adverbial quantifier.

In the light of the proposed analysis I will discuss the status of the *de NP*. According to most linguists discussing the QAD construction the *de NP* contains an empty category which is bound by the quantifier. I will show that, within the proposed analysis, we might want to do away with this binding relation.

The organization of this chapter is as follows. In 10.1 I will first discuss Obenauer's V-quantification hypothesis and some more evidence in favour of an adverbial base generation analysis of QAD. Then I will establish the relation between QAD and measuring out and present the *q*-identification analysis sketched above. Section 10.2 will be devoted to the status of the *de NP*, and I will give an alternative to the analysis in which the *de NP* contains an *ec* which must be bound by a quantifier. In 10.3 two phenomena related to QAD will be discussed. The similarities between QAD and event related readings of quantified NPs (cf. Doetjes 1994), will be the topic of 10.3.1. In 10.3.2 QAD will be considered in the light of *combien*-extraction. These two sections will confirm the idea that it is not necessary to assume the presence of an *ec* bound by Q in the QAD construction. The chapter will be concluded in 10.4.

10.1   The analysis

10.1.1   The V-quantification hypothesis

The semantics of the QAD construction had not received much attention until the early eighties, when Haïk (1982) and Obenauer (1983, 1984) observed that there are some subtle interpretive differences between QAD sentences, as in (7a), and their non-QAD counterparts, as in (7b).

(7)   a.   Jean   a   beaucoup   lu   de livres
              Jean   has   a-lot   read   of books
       b.   Jean   a   lu   beaucoup   de livres
              Jean   has   read   a-lot   of books

'Jean read a lot of books'

On the basis of these differences, which will be examined in detail below, Obenauer formulates the V-quantification Hypothesis (VQH), according to which the Q in the QAD construction is an adverbial quantifier. According to Obenauer, quantification over the verbal predicate necessarily results in a so-called '*x*-times' interpretation, where *x* stands for the quantifier under consideration (cf. section 5.2.2 above). The adverbial DQ, he assumes, is an inherent iterator. Thus, (7a) has a 'many-times' reading given that the DQ *beaucoup* 'a lot' is used. The necessity of the '*x*-times' interpretation of the quantifier in QAD is also called the 'multiplicity of events requirement'. After discussing Obenauer's data and conclusions, I will argue that, even though the arguments for the VQH are very convincing, the multiplicity of events requirement on QAD has to be rejected.

Obenauer's (1983, 1984) main observation is that contexts triggering a unique event interpretation do not allow for quantification at a distance, whereas the non QAD counterpart is allowed. This is illustrated by the minimal pair in (8):

(8)　　a.　*En soulevant　le　couvercle il　a　beaucoup trouvé
　　　　　　lifting　　　　　the　lid　　he　has a-lot　　found
　　　　　　de　pièces　d'or
　　　　　　of　coins　of-gold
　　　　b.　En soulevant　le　couvercle il　a　trouvé beaucoup
　　　　　　lifting　　　　　the　lid　　he　has found　a-lot
　　　　　　de　pièces　d'or
　　　　　　of　coins　of-gold
　　　　　　'Lifting the lid he found a lot of gold coins'

The context *en soulevant le couvercle* forces a reading in which all gold coins are found at the same time, and this results in ungrammaticality of the QAD construction as we see in (8a). If *en soulevant le couvercle* is replaced by an adjunct that allows an '*x*-times' interpretation, QAD is possible:

(9)　　　　En cherchant partout　il　a　beaucoup　trouvé
　　　　　　Seeking　　　　everywhere he　has a-lot　　found
　　　　　　of coins　of-gold
　　　　　　de pièces　d'or
　　　　　　'Seeking everywhere he has found a lot of gold coins'

The sentence in (9) implies that there were many finding events and it cannot be the case that the result of seeking everywhere was that one huge pot full of gold coins was found.

More evidence for the VQH comes from the impossibility of QAD in the complement of *venir de* 'to have just':

(10)   a.   *Il   vient   de   beaucoup   boire   de   lait
            He   comes   of   a-lot   drink   of milk
       b.   Il   vient   de   boire   beaucoup   de   lait
            he   comes   of drink   a-lot   of milk
            'He just drank a lot of milk'

According to Obenauer, the impossibility of (9) is due to the multiplicity of events requirement introduced by the adverbial *beaucoup*. He assumes that the complement of *venir de* denotes a unique event and that therefore QAD is excluded.

A final argument in favour of the VQH is the impossibility of QAD in the context of a large class of psych verbs, such as *apprécier* 'to appreciate', *inquiéter* 'to worry' (Cf. Obenauer 1983 for more examples, which mostly contain psych verbs; for an extensive overview of psych verbs in French, cf. Ruwet 1972):

(11)   a.   *Le   critique   a   peu   apprécié   de   films
            the   critic   has   little   appreciated   of   movies
            'The critic has appreciated few movies'
       b.   *La   nouvelle   a   beaucoup   inquiété   d'experts
            the   news   has   a-lot   worried   of experts
            'The news has worried a lot of experts'

Again the sentences are fine when the DQ occupies a prenominal position:

(12)   a.   Le   critique   a   apprécié   peu   de films
            the   critic   has   appreciated   little   of movies
            'The critic appreciated few movies'
       b.   La   nouvelle   a   inquiété   beaucoup   d'experts
            the   news   has   worried   a-lot   of experts
            'The news has worried a lot of experts'

At first sight, this is not expected, as adverbial DQs are fine in this context:

(13)   a.   Le   critique   a   beaucoup   apprécié   ce film
            the   critic   has   a-lot   appreciated   this movie
            'The critic has appreciated this movie a lot'
       b.   La   nouvelle   a   beaucoup   inquiété   les experts
            the   news   has   a-lot   worried   the experts
            'The news has worried the experts a lot'

Obenauer observes, however, that in the context of this class of verbs the DQ indicates a degree of appreciation and concern, and cannot specify the number of times the event took place. He relates this to the fact that in German *viel*, which, in his view, is always an iterator, does not combine with these predicates. The difference between *viel* and *sehr* is illustrated in (14) (cf. 5.2.1 above for discussion of the similar difference between *veel* 'a lot' and *erg* 'badly' in Dutch):

(14) a. Diese Tatsache hat die Fachleute sehr/*viel beunruhigt
          this fact   has the experts   badly/a-lot worried
          'This fact has worried the experts a lot'
      b. Er ist viel/*sehr ins   Kino   gegangen
          he is a-lot/badly into-the cinema gone
          'He went to the movies a lot'

Again, Obenauer takes this as evidence for the VQH and the multiple event requirement.

Even though the data presented so far do in fact indicate that the Q in the QAD construction has adverbial properties, and as such support the VQH, there is clear evidence against the multiplicity of events requirement. As we have seen in 5.2.2, adverbial DQs do not function as inherent iterators. I argued there that the multiple event interpretation of sentences with an adverbial DQ is not triggered by the DQ itself but by the context. The '*x*-times' interpretation is forced by the count predicate in (15a) but not by the mass predicate in (15b):

(15) a. Jean est beaucoup allé   au   cinéma
          Jean is   a-lot   gone   to-the cinema
      b. Jean a   beaucoup travaillé
          Jean has a-lot   worked

On the basis of the behaviour of adverbial DQs, there is no reason to assume that QAD necessarily triggers a multiple event reading. We expect that a multiple event interpretation may be absent in the context of a mass predicate. This turns out to be correct. The example in (16), which contains a mass predicate, corresponds to a unique event:

(16)   Pendant ces   dix minutes la fontaine a   beaucoup
          during   these ten minutes   the fountain has a-lot
          craché   d'eau
          spouted   of-water
          'During these ten minutes the fountain spouted a lot of water in the air'

Even though the multiplicity of events requirement has to be rejected, Obenauer's data do show that the DQ in QAD behaves like an adverb.[78]

The pattern in (8) and (9), which illustrate QAD in the context of the verb *trouver* 'to find', falls out if we assume that the Q functions as an adverb. As we are dealing with a count predicate in this sentence, we expect the multiple event interpretation on the basis of the VQH, and the way DQs are interpreted in the context of count predicates (cf. 5.2.2). Similarly, the contrast between (11) and (12), which illustrates the impossibility of QAD in the context of individual-level psych verbs, is evidence for the VQH independently of the multiple event requirement. The difference is due to the absence of a quantificational interpretation of adverbial *beaucoup* in the context of psych verbs. I will come back to this in the next subsection, after presenting my analysis of QAD.

The examples in (10), which show that QAD is impossible in the complement of *venir de* 'to have just' need some more discussion. Obenauer claims that QAD is excluded in the complement of *venir de* 'to have just' because of the multiplicity of events requirement in combination with the assumption that the complement of *venir de* must denote a unique event. This explanation is not plausible, given that the verb phrase *boire de lait* 'to drink milk' is clearly mass. The verb *boire* 'to drink' is an activity verb, similar to *to run* (cf. 2.2.2). The direct object *de lait* 'of milk' is mass as well, so there is no reason to assume that the predicate introduces minimal parts of any sort. In the context of a mass predicate we do not necessarily expect a multiple event interpretation. Hence the claim that the complement of *venir de* must denote a unique event does not account for the ungrammaticality of (10a). Still the difference between (10a) and (10b)

---

[78]   The DQ *un peu* cannot be used in the QAD construction, as shown in (i):

(i)   *Pierre a   un peu   pris   de crème
               Pierre   has   a little   taken   of cream

Obenauer uses this example as evidence for the multiplicity of events requirement. It was already mentioned in chapter 7 that *un peu* only combines with mass nouns. Obenauer argues that this requirement prevents *un peu* from introducing a multiple event interpretation. As a result, the multiplicity of events requirement would nicely account for the ungrammaticality of (i). However, as we have seen in 7.2.1, adverbial *un peu* is compatible with a multiple event interpretation:

(ii)   Jean est   un peu   allé   au   cinéma ces   derniers   temps
               Jean is   a little   gone   to-the   cinema these last   times
               'Lately, Jean went to the movies a couple of times'

This shows that the multiplicity of events requirement cannot account for (i), which I will leave as a question for further research.

constitutes strong support of the VQH, given that adverbial *beaucoup* is excluded in the complement of *venir de*:

(17)   *Jean vient de   beaucoup travailler
         Jean   comes of   a-lot   work INF
         'Jean just worked a lot'

The *venir de* data indicate that the DQ in QAD is restricted in the same way as a regular adverbial DQ, and does not have the freedom of the prenominal DQ.

   We can conclude that even though the multiplicity of events requirement has to be rejected, Obenauer's observations offer strong evidence that the DQ in the QAD construction has adverbial properties. Obenauer discusses contexts in which QAD is excluded while the corresponding non-QAD sentence is fine, which he attributes to the adverbial status of the Q in QAD sentences. There are also cases in which the DQ must be adverbial, as a result of which QAD is fine, but the non-QAD counterpart is excluded. This type of examples exist in Dutch nominalized infinitives. Consider the examples in (18):

(18)   a.   Het   is   het gevolg   van   het vele   kranten   lezen
            it   is   the result   of   the much   newspapers read INF
            'It is the result of reading many newspapers'
       b.   Hij krijgt een   buikje   van   het vele   bier   drinken
            he gets   a   belly   of   the much   beer   drink INF
            'He gets fat from drinking beer a lot'

Even though the DQ sits next to the direct internal argument of the verb, it can be shown that it is a modifier of the VP, and not of the NP, because of its agreement properties. The form *vele* consists of the DQ *veel* and an adjectival agreement morpheme *-e*. Modifiers of VP bear adjectival morphology when used in the nominalized infinitive construction. This is shown in (19):

(19)   a.   Jan werkt   hard/veel
            Jan works hard/much
       b.   Jans   hard+e/vele   werken
            *Jan's   hard+*AGR*/much+*AGR* work* INF
            'Jan's working hard/a lot'

The DQ in the nominalized infinitive construction must bear agreement morphology. When the agreement marker is left out, as in (20a), the sentence is ungrammatical. The obligatory presence of the agreement marker

shows that *vele* in (18) is a modifier of the VP and not of the NP, because the agreement marker can or must be absent in the context of an NP. The example in (20b) shows that the form *vele* is incompatible with the NP *bier*:

(20)   a.   *Jan   krijgt een   buikje   van   het [veel bier]   drinken
            Ja   n gets   a   belly   of   the   a-lot beer   drink INF
       b.   Jan   drinkt veel/*vele   bier
            *Jan   drinks   a-lot/ a-lot+*AGR   beer
            'Jan drinks a lot of beer'

(20a) is impossible because the direct internal argument of the nominalized infinitive cannot (readily) be quantified. The Dutch examples of QAD are complementary to the cases discussed by Obenauer. In nominalized infinitives we cannot have a DQ which directly modifies the NP, but the QAD construction is allowed. Obenauer shows on the basis of the French examples that in contexts which do allow for an adnominal Q but not for an adverbial one QAD is excluded. The Dutch examples show that in addition to that contexts in which the QAD construction is possible do not necessarily allow for an adnominal DQ.

   Haïk (1982) discusses some interesting interpretive differences between QAD and non-QAD sentences on the basis of the following sentences:

(21)   a.   Jean a   beaucoup lu   de   livres en   un   jour
            Jean has a-lot   read   of   books in   one   day
       b.   Jean a   beaucoup raconté d'histoires   à   un   enfant
            Jean has a-lot   told   of-stories   to   a   child
       c.   Jean a   lu   beaucoup de   livres   en   un   jour
            Jean has read   a-lot   of   books   in   one   day
       d.   Jean a   raconté beaucoup d'histoires   à   un   enfant
            Jean has told   a-lot   of-stories   to   a   child

Only the non-QAD sentences in (21c,d) can have a distributive reading, in which *beaucoup de livres* 'a lot of books' and *beaucoup d'histoires* 'a lot of stories' have scope over *un jour* 'one day' and *un enfant* 'a child', respectively. In the corresponding QAD sentences (21a,b) all books are read during the same day, and all stories are told to the same child. The differences between QAD and the non-QAD sentences in (21) follow in fact from the assumption that the DQ in QAD is an adverb and support the analysis of adverbial DQs presented above. The DQ saturates the *q*-position in the VP, as a result of which the phrases *en un jour* 'in one day' and *à un enfant* 'to a child' are part of the VP which defines the domain of quantification of the DQ. In (21c,d), the NP is the domain of quantification of the DQ and the

phrases *en un jour* 'in one day' and *à un enfant* 'to a child' are part of the scope of the quantifier, making the distributive reading available.

In this section the Verb-quantification Hypothesis has been discussed. Obenauer's examples clearly show that the DQ in the QAD construction has the properties of an adverbial DQ, and not of an adnominal one. This view is corroborated by the Dutch QAD examples in (18), which offer a context in which only an adverbial DQ is allowed, and by the examples of Haïk (1982). Obenauer's multiplicity of events requirement, however, is not a necessary consequence of the VQH, given that adverbial DQs do not force a multiple event interpretation. In the next section some more examples will be discussed which show that a unique event interpretation is possible in the QAD construction.

10.1.2 Theta-identification and Measuring Out

In the context of mass predicates, such as *spouting water* and *drinking beer*, there can be a unique event interpretation. In the examples with a unique event interpretation, the size of the event seems to depend on the amount of stuff which is implied in the event, not, for instance, on the time the event takes. In this section I will show that this property of QAD sentences can be accounted for by making use of the analysis of the measuring-out phenomenon presented in chapter 3 of this thesis.
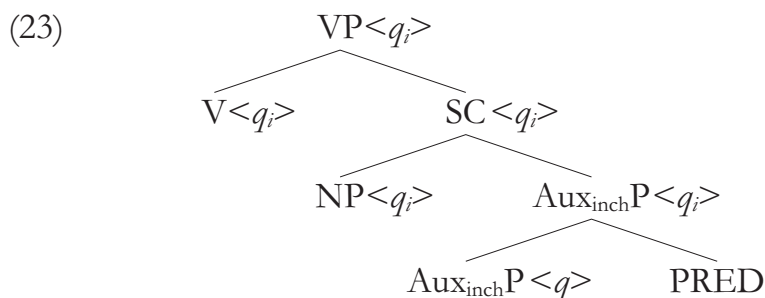
Consider the following sentences:

(22) a. Pendant ces dix minutes la fontaine a beaucoup
        during these ten minutes the fountain has a-lot
        craché d'eau   (= (16))
        spouted of-water
        'During these ten minutes the fountain spouted a lot of water into the air'
   b. L'oléoduc a beaucoup transporté de pétrole
        the pipeline has a-lot transported of oil
        'The pipeline transported a lot of oil'
   c. Pendant les dix minutes du concours Jean a assez
        during the ten minutes of-the contest Jean has enough
        bu de bière pour désaltérer un peloton de
        drunk of beer to quench-thirst-of a troop of
        soldats suisses
        soldiers Swiss
        'During the ten minutes of the contest, Jean drank enough beer to quench the thirst of a troop of Swiss soldiers'

The sentence in (22a) describes a burst of water which continues for ten minutes. The implication is not that there have been many spouting intervals. In (22b) there has been a lot of oil-streaming through the pipeline over some period of time; there is no implication that there have been many different oil-streaming events. In (22c) Jean has been drinking as much beer as he could for ten minutes and again it does not seem to be appropriate to talk about many drinking events.

What is most intriguing is that the quantity of water, oil or beer involved in the events described by these sentences is considerable. We have an event of much spouting of water because a lot of water is involved. This is quite a remarkable observation, given that, at first sight, this is not in accordance with the VQH. Yet, it was shown in the previous subsection, that there is quite some evidence in favour of the adverbial properties of the DQ. If we take the VQH seriously we have to conclude that an event in which, say, fifty litres of water are spouted into the air in ten minutes is 'smaller' than an event of equal duration in which five hundred litres of water are involved. The quantity associated to the event depends on the quantity of stuff/individuals involved in the event. Even though this seems a strange state of affairs at first, it is less so if we take into consideration the notion of measuring out.
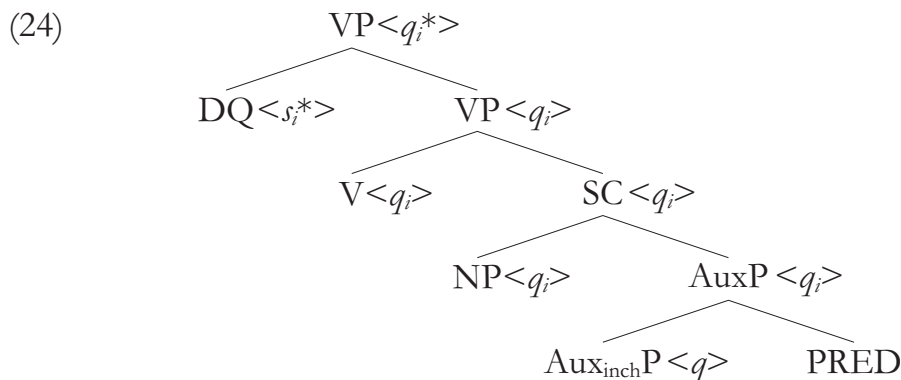
In the preceding chapter I discussed the interaction of DQs and measuring out. According to the analysis of measuring out given in chapter 3, the argument which measures out the event (the 'direct internal argument') is taken to be the subject of a resultative SC. The resultative SC contains a silent inchoative auxiliary and a predicate which can be either overt or covert. The reference properties of the SC subject determine the reference properties of the event as a whole because the q-position in the SC subject is theta identified with the q-position associated to the event argument of the inchoative auxiliary. This q-position undergoes theta identification with the q-position in the matrix V. The q-identification processes are represented in the tree in (23):

(23)

$$\text{VP}\langle q_i\rangle$$

$$\text{V}\langle q_i\rangle \qquad \text{SC}\langle q_i\rangle$$

$$\text{NP}\langle q_i\rangle \qquad \text{Aux}_{\text{inch}}\text{P}\langle q_i\rangle$$

$$\text{Aux}_{\text{inch}}\text{P}\langle q\rangle \qquad \text{PRED}$$

Saturation of q_i can take place at different levels in the tree. If the q-position in the NP (the subject of the SC) is saturated, all other q_i-positions will be

saturated as well given that identification of a saturated and an open position yields a saturated position (cf. 1.2). In that case the q-position in V is saturated as well. Unless an iterated interpretation is available, such a VP is incompatible with a DQ, as was shown in chapter 9. The interpretation of the DQ involves identification of a saturated scalar position in the DQ and an open scalar position the phrase it modifies. If the q-position in the VP is saturated, modification by the DQ is excluded, as two saturated positions cannot be identified.

Let us assume that the *de NP* in the QAD construction contains an open q-position. This position is identified, via the SC, with the open position in V. Adding the DQ results in saturation of the q-position in the VP, which itself is the result of identification of a verbal and a nominal q-position:

(24)

$$VP\!<\!q_i^*\!>$$

$$DQ\!<\!s_i^*\!> \qquad VP\!<\!q_i\!>$$

$$V\!<\!q_i\!> \qquad SC\!<\!q_i\!>$$

$$NP\!<\!q_i\!> \qquad AuxP\!<\!q_i\!>$$

$$Aux_{inch}P\!<\!q\!> \qquad PRED$$

Taking into account the identification relations between the different q-positions as in (24) makes it possible to account for the facts in (22) without losing the generalizations captured by the VQH. The DQ is purely adverbial and saturates the q-position in the VP, but as this position is the result of an (indirect) identification relation between the q-position in V and the q-position in the *de NP*, the quantity of water, oil and beer in the examples in (22) has direct implications for the quantity corresponding to the event.

The predicates in the examples in (22) clearly have a mass interpretation, and contain a mass noun in the *de NP*. In the example in (25) we see a similar effect, even though the verb phrase would not *a priori* exclude a count interpretation:

(25)　　Jean　a　beaucoup　transporté　de livres
　　　　Jean　has　a-lot　transported　of books
　　　　'Jean has transported a lot of books'

This sentence is true in a situation where there have been a lot of transports which each involved a few books, but this is not the only acceptable

context. In case Jean has transported a significant number of books in one or a few transports, the sentence is fine as well. Even though the sentence involves adverbial quantification, it is not necessarily the case that there are many separate transportations of books. The data can be understood if we assume that the size of the transportation event depends on the number of books, as a result of *q*-identification.[79]

A further argument in favour of the relation between measuring out and QAD is the following. The *de NP* cannot be an adjunct, as shown by Obenauer (1994:130):

(26) a. ?*Ils sont beaucoup venus   de fois
          they   are   a-lot   come   of times
          'They came many times'
      b. *Ils ont   trop   attendu de jours   avant d'attaquer
          they have too-much waited of days   before to-attack
          'They waited too many days before they attacked

The reason for the ungrammaticality of the examples in (26) cannot be that there is an *ec* in the *de NP* which is not properly governed, as *combien*-extraction is possible in these contexts:

(27) a. Combien$_i$ sont-ils venus [e$_i$ de fois]?
          how-many   are-they   come   of times
      b. Combien$_i$ ont-ils   attendu [e$_i$ de jours] avant d'attaquer?
          how-many   have-they waited   of days   before to-attack

I will come back to the difference between QAD and *combien*-extraction in 10.3.2, where it will become clear that *combien*-extraction as in (27) is extraction out of an adnominal Q position. The restriction on QAD

---

[79] Kanazawa (1993) discusses some examples of QAD in the context of the verb *photographier* 'to photograph'. His conclusion is that QAD involves pure quantification over events. One has to take many pictures in order for (i) to be true:

(i)   Pierre a   beaucoup photographié   d'éléphants
            Pierre has a-lot   photographed   of-elephants
            Pierre took a lot of pictures of elephants

This sentence is false in case Pierre has taken only one picture of a group of elephants. This observation is similar to the one Obenauer made in the context of the predicate *trouver de pièces d'or* 'to find golden coins (cf. (8a) and (9)). Kanazawa's conclusion is not in accordance with the interpretation of (25), where one transportation of a lot of books is enough. I suspect that the momentary nature of taking pictures plays a role here, and makes an interpretation where many pictures are taken necessary. I will leave this issue for further study.

illustrated in (26) is expected as QAD depends on the *q* identification processes that are typical of the measuring out effect. The *q*-position of a *de NP* which does not measure out the event is not identified with the *q*-position in V. Consequently, saturation of the *q*-position in the VP by an adverbial DQ does not result in saturation of the independent *q*-position in the *de NP* in the adjunct, and the *q*-position in the *de NP* remains open, in violation of the theta criterion.

A further nice consequence of the idea that QAD depends on the measuring out effect as illustrated in the structure in (24) is that this predicts the incompatibility of QAD and individual-level verbs. In (28) the ungrammatical results of this combination, which were given in (11) above, are repeated:

(28) a. *Le critique a peu apprécié de films (= (11a))
      the critic has little appreciated of films
      'The critic has appreciated few films'

    b. *La nouvelle a beaucoup inquiété d'experts (= (11b))
      the news has a-lot worried of experts
      'The news has worried a lot of experts'

Individual-level verbs do not contain a scalar *q*-position, and do not take resultative small clauses as their complement. It was shown in 5.2.1 that in the context of individual-level verbs with a scalar interpretation, the DQ can saturate a *g(rade)*-position (cf. 5.2.1.2). As the *g*-position in the individual-level verb cannot be identified with the open *q*-position in the *de NP*, this position remains open, in violation with the theta criterion.

We can conclude that the analysis of QAD based on measuring out predicts that the status of the sentences in (26) and (28) is the same as that of (2a), repeated here as (29), and due to a violation of the theta criterion:

(29) *Jean a lu de livres (= (2a))
     Jean has read of books

I will come back to this type of sentences in 10.2 below.

In this subsection it was shown that the quantity of substance or objects involved in the event plays a role in the interpretation of QAD sentences. This can be accounted for, while maintaining an adverbial analysis of DQs, by looking at the interaction between QAD and measuring out. I argued that the *q*-position which is saturated by the DQ is the result of theta-identification of the *q*-position in V and the *q*-position in the *de NP*, which is possible in measuring out contexts, as I argued in chapter 3. As a result of this analysis the *q*-position in the *de NP* is indirectly saturated by the DQ. The analysis can account for the unacceptability of QAD in case the *de NP*

is an adjunct and or the object of an individual-level verb, as in these contexts there is no identification of the *q*-position in the *de NP* and that in VP, and as a result the *q*-position in the *de NP* fails to be saturated.

10.2   The status of the *de NP*

On the basis of the analysis presented in the previous section, we want to assume that the *de NP* contains an open *q*-position, and that this position is indirectly saturated by the adverbial DQ.

According to most linguists working on QAD the *de NP* includes an empty category which is coindexed with the DQ, either through movement (Milner 1978a/b, Haïk 1982) or a by means of a functional coindexing mechanism (Obenauer 1983, 1984). The structure corresponding to these analyses is given in (3) and repeated in (30):

(30)   Jean a [$_{VP}$ beaucoup$_i$ [$_{VP}$ lu [e_i [$_{NP}$ de livres]]]]   (= (3))

As was already mentioned, *de NP*s are also found in negative contexts. Whereas Obenauer's functional approach makes it possible in principle to generalize over *de NP*s in negative contexts, the transformational account cannot unify the two types of *de NP*s, given examples such as (6), repeated here in (31):

(31)   Il   n'aurait   osé   offrir d'alcool   très fort
            he NEG-would-have dared offer   of-alcohol   very strong
            qu'à   un ami   (=(6))
            only-to   a friend
            'He would have dared to offer strong alcoholic drinks to a friend only'

According to Milner (1978b), this is desirable, because the *de NP* in QAD sentences and the one that is found in the presence of negation should not be confused. His argument is that the relation between negation and a *de NP* is less restricted than the one found in QAD.

(32)   a. Je   ne   crois pas qu'il   ait acheté   de livres
                I   NEG   think not that-he has bought of   books
        b. *J'ai beaucoup cru   qu'il   a   acheté de livres
                I-have a-lot   thought that-he has bought of books

The difference between these two sentences can, however, also be interpreted differently. It might be the case that the negation in the matrix

clause of (32a) can have access to the open *q*-position in the embedded VP, while the DQ in (32b) cannot. The sentence in (32a) is a case of Neg-raising: *I don't think he bought books* means about the same as *I think he didn't buy books* (cf. Lakoff 1977 and Horn 1978, 1989 for discussion). Without getting into the details of negative contexts, which are beyond the scope of this dissertation, I expect that the differences found between *de NP*s in the context of negation and QAD can be accounted for independently and that the two types of *de NP*s can be treated on a par.

The syntactic structure in (30), where a binding relation exists between the DQ and an *ec* in the *de NP*, is not in contradiction with the theta-identification analysis. However, the relation between the adverbial DQ and the *ec* in the *de NP* crucially does not play a role in the interpretation of the sentence. As the *q*-position in the *de NP* must be open at S-structure, the presence of e_i should not have any consequences for the status of the *q*-position in the *de NP*. This means that the relation between the *ec* and the DQ is vacuous, and that we could do without it as well. In this section I will investigate whether this is a plausible option, and I will conclude that it might in fact be possible to do without the *ec* in the *de NP*.

10.2.1 Some reasons to assume *ec de NP*

The arguments in favour of the presence of an empty category in the *de NP* are based on its distribution. We find *de NP*s in the context of overt quantifiers, as in *beaucoup de livres* 'many books' and *plein de monde* 'many people'. Normally, a *de NP* which is not preceded by a quantifier cannot occupy an argument position, as is shown in (33a). *De NP*s can function as arguments only in the presence of an adverbial DQ (QAD) or in negative contexts, as in (33b):

(33) a. *Martine a mangé de soupe
          Martine   has eaten   of soup
     b. Martine n'a pas/a beaucoup mangé de soupe
          Martine   NEG-has not/ has a-lot   eaten   of   soup
          'Martine ate no/a lot of soup'

The presence of an *ec* in the *de NP*s in (33b) can be seen as a way to account for the form and the distribution of the *de NP*. Outside of the QAD construction, the *de NP* is usually found in the context of a Q, as in *beaucoup de livres* 'a lot of books'. The form of the *de NP* can be related to the *de NP* in *beaucoup de livres*, if we assume that in examples such as (33) the *de NP* has the form *ec de NP*. If one assumes that this empty Q must be

coindexed with an overt quantifier elsewhere in the sentence, the contrast between (33a) and (33b) falls out.

The second distributional observation one can make with respect to *de NP*, is that it is typically found in the direct internal argument position. The examples in (34) show that the *de NP* cannot be the object of a preposition, nor occupy specIP:

(34) a. *Jean a beaucoup parlé à de collègues
      Jean has a-lot spoken to of colleagues
  b. *D'enfants n'ont pas dormi[80]
      of-children NEG-have not slept

The impossibility of the examples in (34) as opposed to the acceptability of (33b) follows from the Empty Category Principle (ECP) if we assume that the *de NP* contains a non-pronominal *ec*, which coindexed with a Q.[81] The direct object position is the only position in which the *ec* would be properly governed, and hence the *de NP* is restricted to this position (but see the examples in (26) and (27) above).

Summarizing, we have seen that the distribution of *de NP* in argument positions can be accounted for if we assume that it contains an empty category that has to be bound by a quantificational expression elsewhere in the sentence. In the next section I will argue that the same generalizations can be made without assuming the presence of an *ec*.

10.2.3 An alternative solution: more about *de* and *des*

---

[80] The *de NP* in specIP falls within the scope of the negation given that a universally quantified NP in this position can have narrow scope with respect to the negation:

(i)   Tout le monde n'a pas dit cela
       all the world NEG-has not said that
       'Not everybody said that'

[81] The ECP (Chomsky 1981) states that non-pronominal empty categories must be properly governed, which means that they must be governed by a lexical head or a coindexed phrase. The definition of government is as follows:

(i)   Government (definition)

In the structure $[_\beta...\gamma...\alpha...\gamma...]$ where
(a) $\alpha = X°$
(b)   where ϕ is a maximal projection, if ϕ dominates γ then ϕ dominates α
(c) α c-commands γ
α governs γ in β

<div align="right">Chomsky (1981:250)</div>

The theta-identification analysis of QAD proposed in 10.1.2, makes it possible to account for the distribution of the *de NP* without assuming that there is an *ec* in the *de NP* which is bound by the DQ. It will turn out that this view is corroborated by QAD sentences in English.

The argumentation is based on the distribution of the *de NP* as opposed to that of other indefinite plurals and mass nouns. In French the use of bare plurals is very restricted, and in the default case the indefinite plural or mass noun is preceded by the indefinite determiner *des/ de la/ du*, which literally means 'of-the'. The definite determiner *les/ la/ le* 'the PL/F/M' included in this form agrees in number and gender with the following NP. For ease of argumentation I will only use the plural form *des* here. As was shown in (2), repeated here in (35), NPs of this form can be used in the absence of negation or a DQ, while the *de NP* is then excluded:

(35) a. *Jean a lu de livres
       Jean has read of books
     b. Jean a lu des livres
       Jean has read of-the books
       'Jean read books'

In (36) is shown that only the *de NP* is allowed in the QAD construction; the *des NP* is excluded (cf. Kanazawa 1993):

(36) a. Jean a beaucoup lu de livres
       Jean has a-lot read of books
     b. *Jean a beaucoup lu des livres
       Jean has a-lot read of-the books

In the context of negation, we see a similar pattern. The presence of *des* is not excluded, but if *des* is used, the negation must have narrow scope:

(37) a. Jean n'a pas lu de livres
       Jean NEG-has not read of books
       'Jean has not been reading books'
     b. Jean n'a pas lu des romans policiers;
       Jean NEG-has not read of-the detectives
       il a lu des poèmes
       he has read of-the poems
       'Jean did not read detectives; he read poems'

In the presence of negation, the *des NP* is only allowed in the type of context given in (37b), where the negation has narrow scope. The narrow scope reading of the negation is not possible in the context of a *de NP*. The

narrow scope reading does not seem to be available for the DQ, and as a result (36b) is unacceptable.

The *des NP*, contrary to the *de NP* (cf. (34)), is to a certain extent allowed in positions other than the direct internal argument position (cf. Bosveld-de Smet 1994 for a detailed study of the distribution of *des NP*). Whereas (34a) was ungrammatical, (38), with a *des NP* instead of a *de NP*, is fine:

(38) Jean a parlé à des collègues
Jean has spoken to of-the colleagues
'Jean has spoken with colleagues'

Looking at the examples in (35)–(38) from the perspective of the theta-identification analysis, we see that the *de NP* is found in those contexts where its open *q*-position can be identified with an open position in V (measuring out), and, moreover, that the resulting position has to be saturated by an overt element. *Des NP*s, on the other hand, are found in contexts where there is no identification of *q*-positions (as in (38)) and in contexts where there is no quantificational element saturating the *q*-position.

The preceding observations can be understood within the theta-identification analysis if we make three assumptions. The first is that the *q*-position in the *des NP* is saturated. As the *q*-position in the *des NP* is saturated, identification with the *q*-position in V yields a saturated position in the matrix VP, because of saturation through identification. As a result the VP cannot be combined with a DQ, nor with sentential negation, which, I assume, also saturates the *q*-position in V.[82]

The second assumption is that iteration is not available. If it were available, (36b) should have an acceptable interpretation, in case iteration had applied. In the preceding chapter I assumed that iteration is possible in case the predicate can have a cumulative interpretation. Iteration is not available in the context of predicates such as *to buy two kilos of olives*, as this predicate is not cumulative. Given that the predicate in (36b) is cumulative, the restriction on the availability of an iterative reading seems to be more severe. Let us assume that every event in an iterated event has to have the same participants. Under this condition, indefinites can only be part of an event predicate corresponding which has an iterative interpretation, in case they are referential, i.e. refer to a specific individual or set of individuals. As the weak noun phrase *des NP* does not have a referential interpretation, iteration can be excluded. If iteration is not available, the *q*-position in sentences such as (36b) and (37b) cannot be saturated by either the DQ or negation. This predicts then that the sentence in (36b) is ungrammatical, and that the presence of the *des NP* blocks sentential negation in (37b).

---

[82] Details concerning the role of negation are beyond the scope of this thesis.

So far we have an account for the sentences in (36) and (37), which are independent of the QAD construction and the status of the *de NP*. We have to make one last assumption in order to account for the contrast in (35) as well. This assumption is that there exists a discrepancy between the *q*-positions in VPs and in NPs, in such a way that the *q*-position in the VP can remain open or contextually bound, whereas the *q*-position in an NP has to be bound by an overt quantifier. This second assumption is necessary in order to explain the impossibility of (35a), where no overt quantifier is present. Consider the sentences in (39):

(39)   a.   Jean   a   beaucoup   travaillé
            Jean   has   a-lot   worked
       b.   Jean   a   travaillé
            Jean   has   worked

I argued in chapter 3 that the DQ *beaucoup* in (39a) saturates the open *q*-position in the VP. This yields the correct interpretation, namely that the quantity of working by Jean is important. In (39b) there is no overt DQ present, and the question is whether the *q*-position is saturated through an empty adjoined DQ, or that there is a contextual interpretive device that makes sure that the open position is saturated at the level of discourse. Given that in both cases an invisible element is responsible for saturation, there is *a priori* no reason to choose either option. In the perspective of the contrast between *de NP*s and *des NP*s it might be possible to choose. If we assume that in (39b) the *q*-position in the VP is saturated by means of an empty DQ, we would expect (35a) to be grammatical and fully comparable to QAD sentences. (35a) would then be an instance of QAD involving a covert Q. If we assume that there is an interpretive device which makes sure that the *q*-position in the VP in (39b) gets bound, one could say that the *q*-position in the NP must be bound in syntax, while *q*-positions in the VP may be bound afterwards by some pragmatic device, and this would allow us to derive the ungrammaticality of (35a). The constraint we need is given in (40):

(40)   The *q*-position in the NP must be saturated in syntax, while the
            q-position in the VP can be saturated through pragmatic devices.

The asymmetry between the way saturation of the *q*-position functions in NPs and VPs might be related to other asymmetries between the nominal and verbal systems with respect to quantification. I argued in chapters 7–9 that the functional superstructure of an NP contains two Q projections, while the only elements that can saturate the open position in a VP are the

categorially insensitive DQs. The more prominent role of Qs in the syntax of noun phrases might be connected to the constraint in (40).

Within this approach, the need for theta identification yields an alternative explanation for the ungrammaticality of sentences such as (34a), which were originally explained by means of the ECP:

(41)   *Jean a   beaucoup parlé à   de collègues   (= (34a))
         Jean has a-lot   talked to   of colleagues

If we take into account that the *de NP* in (41) does not measure out the event, the ungrammaticality of (41) follows from the presence of an illegitimate, open *q*-position in the *de NP*, which cannot be saturated by the adverbial quantifier, as it is not possible to identify the *q*-position in the *de NP* with the *q*-position in the VP. We can conclude that the theta-identification analysis in combination with the constraint in (40) can account for the distribution of *de NP*s and *des NP*s without assuming that the *de NP* contains an empty category.

It is often assumed that QAD is a typically French phenomenon, but we have already seen a Dutch example of QAD in (18). In English too, there are cases which might be seen as instances of QAD, and which throw some light on the status of the *de NP* in the French QAD cases. In English a DQ can occur in an adverbial position in combination with a predicate which has a bare plural or mass direct internal argument:

(42)   a.   John reads books a lot
       b.   John drinks beer a lot

If we compare the English bare plural to the two forms found for the French indefinite plural, it seems to be the case that the English bare plural can function as either a *de NP* or a *des NP*, i.e. that it can have either an open or a closed *q*-position, as the distribution of the English bare plural includes that of both of the French forms. According to Delfitto & Schroten (1991) bare plural NPs are possible in case the NP bears plural morphology which can function as a quantifier.[83] In spoken French plural morphology is not overt so that the role of Number has to be taken over by the indefinite article *des/de la/du*. Given that plural forms in English can either function as bare plurals or define the domain of quantification in the context of an overt quantifier, we have to assume that plural morphology can function as a quantifier, but does not have to. In the context of an

---

[83]   I leave Delfitto & Schroten's treatment of mass nouns aside, but see 7.2.1 above for discussion of their account of mass nouns in relation to singular and plural morphology.

overt quantifier, as in *a lot of books* the plural morpheme crucially does not function as a quantifier, as this would result in vacuous quantification. The English plural corresponds to the French *des NP* when its plural morphology functions as a quantifier. It functions as a French *de NP*, which we find in QAD and in quantified noun phrases such as *beaucoup de livres*, in case it contains an open *q*-position and the plural morphology does not function as a quantifier.

The English examples in (42) differ from French QAD sentences in that *of*, which corresponds to French *de*, must be absent, even though *of* is present when *a lot* is directly combined with an NP:

(43) a. John reads a lot *(of) books
     b. John reads (*of) books a lot

If (43b) is indeed an example of QAD, it shows that the necessity of *de* in the French QAD examples is not a general property of QAD cross-linguistically. This is in accordance with the idea that the direct object in the QAD construction is not what is left behind by the quantifier, but an independently formed entity.[84] If this is so, the assumption that the *de NP* contains an *ec* coindexed with the adverbial DQ does not seem to be necessary.

In this section I claimed that the theta-identification hypothesis makes it possible to account for the distributional properties of *de NP*s without assuming that these contain an empty position which is coindexed with a quantificational expression. This result is attractive, since the relation between the Q and the empty position in the *de NP* must be vacuous. The *q*-position in the NP is crucially not saturated via this empty category, as this would make identification with the *q*-position in V and subsequent saturation by the binder of the *ec* impossible. The distribution of *de NP*s is constrained by (40), according to which a nominal *q*-position has to be saturated in syntax. As a result, *de NP*s must measure out the event, and there must be an adverbial quantifier present. The sentences in (2a), (28) and (34a), repeated in (44), are ungrammatical for the same reason, which is that the *q*-position in the *de NP* is left open. In (44a) there is no Q present, in (44b,c) the *de NP* does not measure out the event:

(44) a. *Jean a   lu   de   livres   (= (2a))
        Jean has read of   books
     b. *Jean a   beaucoup apprécié   de films   (= (28))
        Jean has a-lot   appreciated of movies

---

[84] I leave the question why *de* must be present in the French *de NP*s as an issue for further research.

c. *Jean a   beaucoup parlé   à   de colleagues   (= (34a))
    Jean has   a-lot   spoken   to   of   colleagues

In the next section I will discuss two issues related to QAD, and this will involve some more discussion of the presence or absence of an *ec* in the *de NP*.

10.3   Related issues

10.3.1   QAD and event related readings

The interpretation we find in QAD sentences resembles in certain respects the event related reading (ER) of quantified noun phrases. The distinction between event related and object related (OR) readings has been introduced by Krifka 1990, and can be illustrated on the basis of (45):

(45)   Four thousand ships passed through the lock

In the OR, *four thousand* corresponds to the total number of individual ships that passed, once or several times, through the lock. In the ER, the number of individual ships is irrelevant. What is counted is the number of times a ship passed through the lock. A situation which excludes the ER but not the OR is, for instance, one in which four thousand different ships each pass through the lock twice. The total number of lock traversals is then eight thousand, which is not in accordance with the ER. In a context where two thousand different ships each pass through the lock exactly twice, the ER of the sentence is acceptable but not the OR. In the ultimate case there is only one boat involved which is responsible for all four thousand lock traversals.[85]

The relation between the ER and QAD becomes clear when we look at Kanazawa's (1993) example in note 2, which is repeated in (46):

(46)   Jean a   beaucoup photographié d'éléphants
          Jean has a-lot   photographed   of-elephants
          'Jean took a lot of pictures of elephants

---

[85]   The ER is not felicitous in this situation. In general we find that the more the individuality of the participants plays a role in the situation, the less likely the ER. For a discussion of conditions that make the ER more or less felicitous, see Doetjes and Honcoop (1997).

This sentence is fine in a context where many pictures are taken of the same two elephants.[86] Kanazawa concludes that there is quantification over events and rejects the idea that there is a relation between the Q and the *de NP*. Given that in the ER, where the Q is generated in an adnominal position, a similar interpretation is obtained, Kanazawa's observation does not exclude the possibility that the Q originates in the *de NP*.

In fact, it has been argued by Honcoop (1992) and Dobrovie-Sorin (1993a,b) that ERs are derived by quantifier raising at the level of LF.[87] In their view, the ER would be the covert counterpart of QAD, which presupposes a movement analysis of QAD. The example in (47b) illustrates what the LF of the example in (47a) in its ER would look like in this approach:[88]

(47)   a.   The library lent out 400 books last week
          b.   the library [$_{VP}$ 400$_i$ [$_{VP}$ lent out [e_i books]]] last week

This covert QAD analysis of ERs might be conceived of as a reason to adopt, after all, the movement analysis of QAD. In this section I will point out some differences between the two phenomena and argue that a non-movement analysis of QAD should still be preferred.

A first reason to reject the idea that the ER is derived by covert QAD is the following. All weak quantifiers induce the ER.[89] Only a few of them are found in the QAD construction, and these are exactly the ones which function as adverbs as well. If 'covert QAD' does not exist, the reason why this is the case is clear. Only those adnominal quantifiers which can also function as adverbs (i.e. the DQs) can figure in the QAD construction. AdnQs do not occupy an adverbial position at any level of representation.

---

[86]   In a situation where many pictures are made of a single elephant, the sentence is infelicitous. This, according to Kanazawa, is a pragmatic effect, which can be cancelled out in certain contexts (the example is due to Jean-Pierre Koenig):

(i)   Marc a beaucoup écouté de disques ce weekend, mais c'était toujours le même
           'Marc listened to records a lot this weekend, but it was always the same one'

[87]   Dobrovie-Sorin does not mention the ER as introduced by Krifka. Her 'amount reading' for which she proposes covert QAD seems to correspond to the ER.

[88]   One of the two solutions Krifka proposes to account for the semantics of the ER is based on a syntactic operation which first combines the verb and the noun phrase, and then the complex of the verb and the noun phrase with the Q. The GB translation of this type of syntactic operation is similar to the covert QAD analysis in Honcoop (1992).

[89]   I will leave the ER of strong quantifiers out of consideration. ERs of strong quantifiers depend on focus or the presence of a relative clause. For discussion, cf. Honcoop and Doetjes (1996) and Doetjes and Honcoop (1997).

If we assume that there is Q raising at LF, we have to explain why only DQs can raise in overt syntax.

Typically nominal quantifiers always resist overt QAD. Take, for instance, the quantifier *plein* 'a whole lot'. The AdnQ *plein* is similar in most respects to high degree expressing DQs. The only difference between *beaucoup* 'a lot' and *plein* 'a whole lot' is that *plein* is restricted to the nominal system (cf. section 7.1 above). (48) shows that *plein* cannot be used in the QAD construction, and must be adnominal:

(48)   a.   *Pierre   a   plein   lu   de romans policiers
            Pierre   has   a-whole-lot   read   of   detectives
       b.   *Pierre   a   plein   lu
            Pierre   has   a-whole-lot   lu
       c.   Pierre a   lu   plein   de romans policiers
            Pierre has   read   a-whole-lot   of detectives

One can conclude that only DQs may occur in QAD, which is in accordance with the non-movement analysis of QAD.

The second reason is that the ER is found in a number of contexts that do not allow QAD. As I argued above the *de NP* must be a direct internal argument which measures out the event. ERs do not obey this restriction:

(49)   a.   *Jean est beaucoup allé   à   de musées
            Jean   is   a-lot   gone   to   of museums
            'Jean went to a lot of museums'
       b.   *Pierre a   beaucoup voyagé en d'endroits
            Pierre   has a-lot   travelled in   of-places
            'Pierre has travelled in a lot of places'
       c.   John went to two hundred thirty-eight movies last year
       d.   John waited for thirty five late trains last year

In (49a,b) it is shown that a preposition blocks QAD. Prepositions do not block the ER, as the sentences in (49c,d) have both an event related and an object related reading. In (49c), the OR corresponds to a situation in which there are 238 movies which John saw one or more times each, the ER to a situation in which there are 238 movie visits by John, but not necessarily 238 different movies. In (49d) the ER is the most plausible reading, given that *late* implies that the trains John waited for are trains that pass at a certain time. This sentence is very well compatible with a situation in which John waited thirty five times for the same individual train.[90]

---

[90]   The example in (49d) is due to Martin Honcoop.

The distributional differences between QAD on the one hand and the ER on the other suggest that whereas QAD depends on measuring out and *q* identification processes, the ER is an independent phenomenon. In Honcoop and Doetjes (1996) and Doetjes and Honcoop (1997) it is argued that the ER is obtained via pair quantification, and that this is possible whenever both the object predicate (the NP) and the event predicate (VP) are in the restriction of a quantifier. In that case it is possible to quantify over <event, object> pairs, which is the source of the effects found in the context of the ER. A full discussion of this proposal goes beyond the scope of this dissertation.

In conclusion, there are some clear differences between the ER and QAD which suggest that even though the semantic effects are quite similar, these effects are obtained in different ways.

10.3.2 QAD and *combien*-extraction

10.3.2.1 Some differences

At first sight *combien*-extraction is very similar to QAD. Consider the examples in (50):

(50) a. Combien de livres Jean a-t-il lu?[91]
        how-many of books Jean has-he read
        'How many books did Jean read?'
     b. Combien as-tu consulté de livres?
        how-many have-you consulted of books
        'How many books did you consult?'

One might wonder whether the source of the *combien*-phrase in (50) is the prenominal position preceding *de livres* or the adverbial position occupied by DQs in the QAD construction. It turns out that *combien*-extraction differs from QAD, and does not necessarily involve adverbial quantification.

As we have seen in 10.1.1, the adverbial status of the Q in QAD is motivated on the basis of the observation that in those contexts in which the Q cannot function as an adverbial Q, QAD is excluded. Obenauer shows that these contexts do allow for *combien*-extraction, which shows that extraction out of the prenominal position must be possible. The contexts in which adverbial quantification is excluded (and hence QAD as well) are

---

[91] There may be agreement on the participle: *lus* 'read+PL' alternates with *lu*. The presence or absence of agreement depends on the way *combien de livres* is interpreted. For an elaborated discussion of this aspect of *combien*-phrases, see Obenauer (1992, 1994).

repeated in (51), and the corresponding grammatical examples involving *combien*-extraction are given in (52):

(51) a. *En soulevant   le   couvercle il a   beaucoup   (8a)
          lifting   the   lid   he has   a-lot
          trouvé   de pièces   d'or
          found   of   coins   of-gold
      b. *Il vient de beaucoup boire de lait   (9a)
          he comes of a-lot   drink of milk
          'He just drank a lot of milk'
      c. *Jean a   beaucoup apprécié   de films   (17a)
          Jean   has a-lot   appreciated of movies

(52) a. Combien a-t-il   trouvé de pièces   d'or   en soulevant
          how-many has-he   found   of coins   of-gold   lifting
          le   couvercle?
          the   lid
          'How many gold coins did he find when he lifted the lid?'
      b. Combien vient-il   de boire   de lait?
          how-much comes-he of drink of milk
          'How much milk did he just drink?'
      c. Combien   Jean   a-t-il apprécié   de films?
          how-many   Jean   has-he appreciated   of movies
          'How many movies did Jean appreciate?'

The contrast between the examples in (51) and the ones in (52) shows that *combien*-extraction is found in contexts that do allow for a prenominal quantifier but not for an adverbial one. This suggests that *combien* can be extracted from the prenominal position.

Another difference between *combien*-extraction and QAD is, that the remnant of *combien*-extraction may be a partitive phrase, while partitive phrases are excluded in QAD (cf. Haïk 1982):

(53) a. Combien a-t-il   lu   de ces   livres?
          how-many has-he   read   of these   books
          'How many of these books did he read?'
      b. *Jean a   beaucoup lu   de ces   livres
          Jean has a-lot   read   of these books
          'Jean read a lot of these books'

Given the analysis of QAD proposed in the previous sections we do not expect to have a partitive phrase in QAD, as there is no strong quantified noun phrase in the sentence which would include the partitive phrase (cf.

6.4 above). The grammaticality of (53a) strongly suggests that *combien* is extracted out of a quantified noun phrase in the object position.

We can conclude that the *de NP* in *combien*-extraction must contain an empty category bound by *combien*, in which respect this *de NP* differs from the one found in QAD, for which it is at best unclear whether it contains an empty position. In the next subsection the interaction between QAD and *combien*-extraction will be discussed. This interaction has been argued to be a reason for adopting an empty position in the *de NP* in QAD as well, but I will argue that the evidence is not conclusive.

10.3.2.2 Intervention effects

Combien-extraction is subject to intervention effects. It is not possible to extract *combien* in case it has to be moved to the left of a quantificational element. One of the elements which blocks *combien*-extraction is *beaucoup*. The data in (54) show that *combien* cannot strand a *de NP* in case *beaucoup* intervenes. In the context of *beaucoup*, the only option is to extract *combien de NP* as a whole.

(54) a. *Combien$_i$ a-t-il beaucoup rencontré e_i de collègues?
          how-many   has-he a-lot   met   of colleagues
      b. Combien de collègues   a-t-il beaucoup rencontrés?
          how-many of colleagues has-he a-lot   met
          'How many colleagues did he meet a lot?'

According to Obenauer (1984) the source of the ungrammaticality is the syntactic configuration. *Beaucoup* qualifies as an intervening binder of the trace left behind by *combien*. His approach, which will be discussed below, depends crucially on the assumption that in QAD there is a binding relation between the DQ and an empty position in the *de NP*. It will be shown, however, that intervention effects are also provoked by elements that are not potential binders of the trace. This means that we do not have to adopt the idea that *beaucoup* is a potential binder of the trace either, which leads us to the conclusion that there need not be an *ec* in QAD.

Obenauer (1984) stresses that the impossibility of (54a) cannot simply be the consequence of *beaucoup* and *combien* occupying the same position at some level of representation. (54b) shows that *beaucoup* and *combien* can coexist in case *combien de NP* is extracted as a whole. On the other hand, the fact that *combien*-extraction is possible in those contexts that resist adverbial quantification as shown in (51) and (52) above, suggests that *combien* does not need to make use of the adverbial position occupied by *beaucoup* in (54a) on its way to SpecCP. If it did need the position occupied by *beaucoup* as an

intermediate landing site we would expect *combien*-extraction to trigger the same interpretive effects as QAD, contrary to fact. Obenauer argues that this is a reason to adopt a functional definition of variable binding, where a potential binder is not necessarily coindexed with its bindee at S-structure. *Combien* and *beaucoup* qualify as potential binders of the empty category in the *de NP*, even though this empty category is derivationally related to *combien* and not to *beaucoup*. As the closest binder must bind the *ec* independently of the derivation, and *beaucoup* is the closest binder, *combien* cannot be associated with its antecedent.

A further argument in favour of the idea that *beaucoup* is a blocking factor even though it is base generated in an adverbial position, and not moved out of the *de NP*, comes from the interaction between *beaucoup* and *combien*-extraction in the context of verbs such as *apprécier* 'to appreciate'. As was shown in (51c) and (52c) the verb *apprécier* does not allow for QAD while *combien*-extraction is possible. It is possible to use adverbial *beaucoup*, which then indicates the degree of appreciation. In the context of *apprécier* the DQ must be base generated in its adverbial position, and still it blocks *combien*-extraction:

(55)   a.   *Combien$_i$ as-tu   beaucoup apprécié e_i de films?
            how-many   have-you   a-lot   appreciated   of movies
       b.   Combien de films   as-tu   beaucoup apprécié?
            how-many   of movies   have-you a-lot   appreciated?
            'How many movies did you appreciate a lot?'
       c.   *Jean a   beaucoup apprécié   de films   (= (17a))
            Jean   has   a-lot   appreciated of movies

The impossibility of (55a) shows that even though *beaucoup* is not a suitable binder for the trace of *combien*, as QAD is not possible in the context of *apprécier* 'to appreciate', *beaucoup* does have blocking effect on the relation between *combien* and the *de NP*. This is so, Obenauer argues, because it still counts as a 'potential binder' of the trace of *combien*: *beaucoup* can be the binder of a trace in an identical configuration in QAD sentences.

Obenauer shows that adverbials such as *modérément* and *passionnément*, which in this context have a similar interpretation as the DQs, do not block *combien*-extraction:

(56)   a.   Combien a-t-il passionnément aimé de femmes?
            how-many   has-he passionately   loved   of women
            'How many women did he passionately love?'
       b.   ?Combien   a-t-il modérément   apprécié   de films?
            how-many   has-he moderately   appreciate of movies
            'How many movies did he moderately appreciate?'

The contrast between (55a) and the examples in (56) is explained by Obenauer as follows. The Q *beaucoup* can block *combien* extraction because it is a potential binder for the *ec* in the *de NP*. *Passionnément* and *modérément* do not occur in the QAD construction, as a result of which they do not qualify as potential binders, which accounts for the fact that they do not block *combien*-extraction. We can conclude that Obenauer's account of intervention effects depends on the presence of an *ec* in the *de NP* in QAD sentences, and the existence of a binding relation between the adverbial DQ and this *ec*, which goes against the claims I made in the previous section.

Obenauer's story would be very convincing if in fact all harmful interveners for *combien*-extraction occurred in the QAD construction. This, however, is not the case. One group of counterexamples he discusses (Obenauer 1984, note 18) are Q-adverbs such as *souvent*:

(57)   a.   ?*Combien   as-tu   souvent   rencontré de collègues?
            how-many   have-you often   met   of colleagues
            'How many colleagues did you often meet?'
       b.   ??Combien   as-tu   rarement   conduit de voitures?
            how-many   have-you rarely   driven   of cars
            'How many cars did you rarely drive?'

Adverbs of quantification do not occur in the QAD construction:[92]

(58)   *Il a   souvent   rencontré de   collègues
             he has   often   met   of   colleagues

Obenauer calls this a process of pseudo-binding, which is 'parasitic' on the QAD construction. According to Obenauer the interpretation of *souvent* is similar to the one of *beaucoup* in the QAD construction. In chapter 9 I showed that this is not the case. *Souvent* and *beaucoup* are fundamentally different, and only in a limited set of contexts is their interpretation alike (cf. 9.2). Given the clear syntactic and semantic differences between *souvent* and *beaucoup* it is not clear why we would expect there to be an effect of pseudo-binding.

In case we accept that the intervention effect created by *souvent* is not parasitic on QAD, however, the intervention data are no reason to assume that there is a binding relation between *beaucoup* and an *ec* in the *de NP*. *Souvent* intervenes without being a potential binder of the trace of *combien*.

---

[92]   The impossibility of using Q-adverbs in the QAD construction follows from the analysis given above and further properties of Q-adverbs discussed in chapter 9. Q-adverbs do not saturate the *q*-position in the VP, as a result of which the open *q*-position in the *de NP* will be left open so that the sentence in (58) is expected to have the same status as the examples in (44), which are ruled out by the constraint in (40).

The reason for which *souvent* blocks *combien*-extraction might in that case also apply to *beaucoup* so that we do not have to assume that *beaucoup* counts as a potential binder either.

Further investigation of *combien*-extraction on the one hand, and the blocking properties of *beaucoup* on the other, shows that the blocking effects we find constitute instances of the more general phenomenon of weak island violations (cf. Rizzi 1990). A subset of *wh*-phrases cannot be extracted out of a series of so-called weak island configurations.[93] Those *wh*-phrases that cannot be extracted include *how*, and elements that induce a weak island include negation and NPs such as *few students*:

(59)   *How did few students repair their bike?

We see in (60) that *combien*-extraction is also blocked in the context of the weak island inducer *peu d'étudiants* 'few students', which confirms the idea that *combien*-extraction is sensitive to weak islands (the example is due to De Swart 1991:403):

(60)   *Combien   est-ce que   peu d'étudiants   ont   acheté de livres?
            how-many   WH-PART   little of-students   have   bought of books
            'How many books did few students buy?'

The example in (61), taken from Rizzi (1990), shows that extraction of the weak island sensitive *wh*-phrase *comment* 'how' is impossible in the context of adverbial *beaucoup*. This suggests that *beaucoup* is a weak island inducer:

(61)   *Comment   a-t-il   beaucoup résolu   de problèmes?
            how   has-he   a lot   solved   of problems
            'How did he solve a lot of problems?'

The data in (60) and (61) reinforce the idea that *beaucoup* blocks *combien*-extraction not because it counts as a potential binder of the trace of *combien*, but because *beaucoup* induces a weak island.

Another context which blocks both *combien*-extraction and *how*-extraction is a *wh*-island (cf. Ross 1967). In (62) is shown that *how* cannot be extracted out of an indirect *wh*-question:

(62)   *How do you wonder which problem John could solve?

---

[93]   These should be distinguished from strong islands, which block *wh*-extraction altogether. An example of a strong island is the Complex NP island (Ross 1967), which always blocks extraction, independently of the nature of the extracted phrase.

The examples in (63) demonstrate that in the same type of context the *de NP* cannot be stranded in the object position:

(63) a. *Combien   sais-tu   comment résoudre de problèmes?
           how-many   know-you   how   solve   of problems
      b. ?Combien   de problèmes sais-tu   comment résoudre?
           how-many   of problems   know-you how   solve
          'How many problems do you know how to solve?'

Such phrases clearly demonstrate that *combien*-extraction is an instance of a weak island violation induced by quantification. Extraction of *combien* alone as opposed to extraction of *combien de NP* derives from the fact that the former, but not the latter, is sensitive to weak islands. Extraction of *combien de NP* is similar in this respect to *which NP*, which is not sensitive to weak islands either.

Rizzi's (1990) concept of relativized minimality is strongly influenced by Obenauer's way of treating *combien*-extraction. Contrary to Obenauer, Rizzi generalizes over the different weak island contexts. For him the relation between an A′ binder and its trace is blocked when another A′ quantifier intervenes. Rizzi argues that phrases such as *peu de livres* and *wh*-phrases as *combien* as well as *beaucoup* occupy an A′-position and hence block the binding relation between the *combien*-phrase which has been moved to an A′-position and its trace.

I will not discuss the details of relativized minimality here. What is important is that the intervener need not be a potential binder of the *ec* left behind by the *wh*-phrase, in the sense that there must be a possible configuration in which it binds a position that is structurally identical to the one it potentially binds (cf. the examples in (55) where *beaucoup* qualifies as a potential binder even though it cannot act as a real binder). The relation between the intervener and the trace of the *wh*-phrase is much looser than in Obenauer's view. Obenauer only deals with a subset of the data considered by Rizzi.

It has been observed in the literature, that *Wh*-phrases that are not — or at least less — sensitive to the presence of a weak island range over individuals that have been previously introduced into the domain of discourse (cf. for instance Pesetsky (1987), who calls *wh*-phrases that may be extracted out of a weak island D– or Discourse-linked). *Wh*-phrases introduced by *which* range over individuals by definition, and these turn out to be the best extractors. In case a *combien de NP* is extracted out of a weak island, it gets an interpretation similar to the one of a *which NP*. This correlates with the possibility of having agreement on the past participle (cf. Kayne 1985, 1989 and Obenauer 1992). The difference between the two

interpretations is well illustrated by the examples in (64), due to Obenauer (1992):[94]

(64)   Je voudrais   savoir   combien de fautes   chacun
         I would-want   know   how-many of errors F   *each*
         a   fait/faites
         *has made/made+*F
         'I would like to know how many errors each made'

If there is no agreement on the past participle we can get a pair-list reading. In that case the sentence could be paraphrased as 'I would like to know for each individual student what number of errors he or she made'. If the agreeing form of the past participle, *faites*, is used, the sentence cannot have the pair-list interpretation, and means that I am interested in the set of errors which have been made by every single student. In weak island contexts only the latter reading is available.

   The semantic aspects of weak islands have been investigated in different ways. Rizzi (1990), for instance, makes use of referential indices, which make the relation between a D-linked *wh*-phrase insensitive to interveners, because relativized minimality does not apply to the binding relation between the coindexed categories. A similar proposal has been worked out by Cinque (1991).

   More recently, a subset of weak islands have been approached in semantic terms.[95] De Swart (1992) argues that *combien*-extraction is blocked when *combien* is separated from its remnant by a scopal element which fails to take wide scope over it. The effect of this claim is nicely illustrated by the example in (64). The subject *chacun* can have either wide scope over the quantified phrase, yielding the pair-list reading, or narrow scope, in which case the *wh*-phrase is D-linked and agreement on the past participle is possible. The examples in (60) are ungrammatical because *peu d'étudiants* 'few students' and *beaucoup* fail to take wide scope over the extracted *combien*-phrase.[96, 97]

---

[94]   Note that agreement on the past participle is never obligatory. There are sharp contrasts, however, between contexts that allow for agreement and those that do not. Consequently, the lack of agreement never blocks a reading, while the presence of agreement does.

[95]   The semantic approaches usually do not extend to factive islands. Cf. Rooryck (1992) for an account of factive and negative islands in terms of syntactic restrictions on operator-variable relations.

[96]   The claim that extraction is only possible if the intervening quantifier has wide scope over the *wh*-phrase is problematic in some cases, as was Sigrid Beck showed in a talk at Tilburg University. Beck noted that *souvent*, which in some contexts is transparent for

As *beaucoup* never takes scope over an indefinite object, whether the indefinite is *in situ* or extracted (cf. 9.2), this yields a nice explanation for the interaction between adverbial *beaucoup* and *combien*-extraction. The contrast between (55) and (56) is less obvious in a fully semantic approach. There is a further difference, however, between *beaucoup* on the one hand and *passionnément* and *modérément* on the other, which is that whereas *beaucoup* must be interpreted as a degree modifier which saturates the *g*-position in the verb (cf. chapter 5), the modifiers *passionnément* and *modérément* can also be interpreted in a different way, which does not involve saturation of the *g*-position. *Passionnément*, for instance, can be interpreted as a degree modifier (as high degree adverb; cf. 5.2.1.1) but also as a subject oriented adverb. One might speculate that the reading in which *passionnément* is interpreted as a high degree adverb is excluded on a par with the use of a DQ, but that the subject oriented reading is still available. The subject oriented adverb does not interfere with *combien*-extraction, because it does not involve an operation on the VP.

In this section the interaction between *combien*-extraction and quantification at a distance has been studied. This interaction is a consequence of the larger phenomenon of weak islands. This implies that

---

extraction, does not introduce a pair list interpretation, and does not seem to have scope over *combien* in examples such as (ia). The same is true for *beaucoup d'étudiants* 'many students' in (ib).

(i)   a.   ?Combien   as-tu   souvent   mangé de toast   pour   le petit déjeuner?
            how-many   *have-you*   *often*   *eaten*   *of toast*   *for*   *the breakfast*
            'How many toast did you often eat for breakfast?'
    b.   ?Combien   est-ce que   beaucoup d'étudiants   ont acheté de livres?
            how-many   *WH-PART*   *a-lot*   *of-students*   *have bought*   *of books*
            'How many books did many students read?'

De Swart (1992) correctly states that a felicitous answer to (ia) is: 'I often ate two toasts for breakfast' and not: 'there are two toasts that I often ate for breakfast'. This does not show, however, that *combien* falls within the scope of the quantifier, precisely because it is not possible to have variation of the number of toasts. The problem becomes even clearer when we compare (ib) to the example in (ii), which corresponds to (18a) in the main text:

(ii)   *Combien   est-ce que   peu d'étudiants   ont acheté de livres?
        how-many   *WH-PART*   *few of-students*   *have bought*   *of books*

If (ii) were a possible question, an appropriate answer to it would be: 'few students bought three books', and not 'there are three books which few students bought'. This shows that the ungrammatical example in (ii) is similar in this respect to the much better sentence in (ia). I leave this problem for further research.

[97]   The idea that scope is a determining factor for weak islands has been further developed by Szabolcsi and Zwarts (1993) within the framework of algebraic semantics, while Honcoop (1996) uses dynamic semantics to tackle the problems of weak islands.

restrictions on *combien*-extraction, contrary to Obenauer's assumption, do not imply that the *de NP* in QAD contains an empty category which is coindexed with the DQ.

10.4   Conclusions

In this chapter the properties of the QAD construction have been studied. This construction contains a DQ which occupies an adverbial position, and a *de NP*. As DQs are ambiguous between adnominal and adverbial quantifiers, it is not immediately obvious where the DQ is base generated. The question gets even more complicated because on the one hand the *de NP* looks like the remnant of a moved DQ, which suggests that the construction might involve movement, and on the other the DQ clearly has adverbial properties, which suggests that the DQ might be base generated in an adverbial position.

In section 10.1 I defended a purely adverbial approach to the DQ in QAD. Even though the DQ is purely adverbial, the type of quantification in the QAD construction is not restricted to the q-position associated to the event. The quantity of individuals or stuff corresponding to the *de NP* is crucial for the interpretation of QAD sentences. I argued that this is so because the open q-position in the *de NP* measures out the event and is identified with the open position in the verb, and percolates up to the level of VP. This is the position which is saturated by the DQ, so that a hybrid type of quantification is obtained. This analysis does not make use of an empty category in the *de NP* which is bound by the DQ, and in 10.2 I argued that such an empty position might not exist.

In 10.3 I discussed two phenomena that are related to QAD. The ER of quantified NPs is very similar to QAD from an interpretive point of view. There are differences between the two phenomena that suggest that their interpretations are not obtained in the same way. Importantly, the availability of the ER is unrelated to measuring out. Another phenomenon which resembles QAD, but also differs from it in several respects is *combien*-extraction. Importantly, extracted *combien* does not have adverbial properties. I also argued that the intervention effects that prohibit QAD and *combien*-extraction in the same sentence have no consequences for the proposed analysis of QAD.

11   Conclusions

The goal of this thesis was to examine quantifying expressions such as *beaucoup* 'a lot', *plusieurs* 'several', *tous* 'all' and *souvent* 'often', in order to find out what kind of selectional properties determine their distribution. As the different quantifying expressions are found in the context of NPs and/or VPs, it is not possible to look at the distribution of Qs without considering those properties of NPs and VPs that make them compatible with Qs. In return, the study of Qs sheds light on parallels and differences between nominal and verbal projections.

I argued that Qs select the phrase that defines their domain of quantification either on the basis of categorial selection or on the basis of theta selection. Qs that categorially select the phrase that determines their domain of quantification combine with only one lexical category. Qs whose distribution is determined by theta selection can only be interpreted in the context of a special type of theta position, but may be found in the context of different lexical categories. From a syntactic point of view, the QP containing the categorially selecting Q is part of the functional superstructure of the phrase it modifies. Theta selecting Qs are adjoined to the phrase that determines their domain of quantification.

Degree quantifiers or DQs, which have the largest distribution of the different types of quantifiers, can be either adverbial or adnominal, as shown in (1):

(1) a. Les linguistes ont **beaucoup** dansé   la salsa
         the linguists   have a-lot   danced the salsa
     b. **Beaucoup** de   linguistes ont dansé la salsa
         a-lot   of   linguists have danced the salsa

I argued in favour of an underspecification analysis of DQs in chapters 3–6. DQs are insensitive to the categorial properties of the phrase they combine with, in accordance with the idea that categorial selection is unique. They

function as theta selectors, and are sensitive to the presence of an open argument position that defines a scale. In the examples in (1) this is a scalar *q*-position, which is found in mass nouns, plural nouns and VPs with a mass or a plural interpretation, as I argued in chapter 2. The insensitivity of DQs to the categorial properties of the phrase they modify is confirmed by the fact that a subset of DQs can function as adjectival degree modifiers. Incompatibility of a DQ with adjectives was not seen as a lexical property of the DQ, but as a result of the Elsewhere Condition. A DQ cannot function as an adjectival degree modifier in case there exists a Deg-head that expresses the same scalar value. Deg-heads are generated in the head position of a DegP and categorially select AP. In case a DQ coexists with a Deg-head which indicates the same scalar value, as is the case, for instance, for the DQ *autant* 'so much' and the Deg-head *aussi* 'so' in French, the Deg-head prevails over the DQ. The DQ functions as the elsewhere form, given that its distribution is less constrained. The Elsewhere Condition can also account for some cases of complementary distribution between high degree adverbs and DQs. I argued that the Dutch neutral high degree adverb *erg* 'badly, very' competes with the DQs *veel* 'a lot' and *een hoop* 'a lot', which express neutral high degree as well. DQs and high degree adverbs are both theta selectors and adjuncts, but high degree adverbs have a more restricted context specification. Contrary to DQs, high degree adverbs cannot saturate scalar theta positions in general, but only *g(rade)-*positions, which are found in scalar adjectives and individual level verbs.

The second type of Q, the adnominal Qs or AdnQs, are only found in the context of NPs. This type of Qs was discussed in chapter 7. An example of an AdnQ is French *plusieurs* 'several' (2):

(2)   a.   *Les   linguistes   ont   **plusieurs**   dansé   la   salsa
              the   *linguists*   *have*   *several*   *danced*   *the*   *salsa*
       b.   **Plusieurs**   linguistes   ont   dansé   la   salsa
              several   *linguists*   *have*   *danced*   *the*   *salsa*

AdnQs select the phrase corresponding to their domain of quantification on the basis of categorial selection. Under the assumption that Number features are selected on the basis of categorial selection as well, AdnQs can select a singular NP, a plural NP or an NP independently of its Number properties, combining with singulars, plurals and mass nouns. The last type of AdnQs are the only ones that are found in the context of mass nouns, which I argued to be unmarked for Number. Other Qs which combine with mass nouns do so because they are theta selectors of a scalar *q*-position, and have the distribution of DQs. Classifier constructions such as *two kilos* and *a piece*, which consist of an AdnQ and a classifier, are usually only compatible with NPs. Contrary to AdnQs they also impose lexical restrictions on the nouns

they combine with, and in most cases they function as theta selectors as well. Under specific conditions the classifier may lose its categorial selection properties, and as a result functions as a DQ, as shown in 4.2.3.

A special case of AdnQs is found in floating quantifier (FQ) constructions. Examples of the French FQ *tous* and its non-floating counterpart are given in (3):

(3)   a.   Les   linguistes ont   **tous** dansé   la   salsa
            the   linguists   have   all   danced   the   salsa
       b.   **Tous**   les linguistes ont   dansé   la   salsa
            all   the linguists   have   danced   the   salsa

I argued in chapter 8 that FQs are composed of an AdnQ and a silent pronominal element. The Q *tous* is actually an exceptional type of AdnQ, as it selects a DP, and not an NP (cf. also Shlonsky 1991 and Giusti 1991). The FQ in (3a) has the structure [$_{QP}$ *tous* [$_{DP}$ *ec*]].

FQs occupy an adverbial position, but the Q they contain is always adnominal. I argued in favour of the generalized L-*tous* analysis, presented in Doetjes (1991, 1992), according to which the FQ is adjoined to VP or an extended projection thereof, which must contain a trace of an argument DP to which the FQ is associated. The FQ acts as a binder of the trace of the DP. The VP internal subject hypothesis makes it possible for this analysis to account for subject related FQs. The structure in (4) corresponds to (3a):

(4)   [les linguistes]$_i$ ont [$_{VP}$ [tous [$_{DP}$ *ec*]]$_i$ [$_{VP}$ *t$_i$* dansé la salsa]]

In most cases, Q-float results in a configuration in which the FQ is lower than the DP. It is possible, however, for the FQ to c-command the DP it is associated with, as in (5):

(5)   J'ai [tous [$_{DP}$*ec*]]$_i$ [$_{VP}$ voulu les$_i$ lire *t$_i$*]

Traditionally these two possibilities have been considered to represent two different types of Q-float, which is necessary if FQ is directly related to the DP to which it is associated from a semantic point of view. In the generalized L-*tous* analysis there is no direct relation between the FQ and the DP but between the FQ and the DP trace. Bare quantifiers, such as French *tout*, can also function as floating Qs. Bare FQs function as syntactic operators and license a variable, so that sentences with a bare FQ do not contain a DP associated to the FQ. Next to *tout* and *rien*, adverbial DQs can function as bare FQs as well.

The fourth class of Qs, adverbs of quantification (Q-adverbs), cannot be used adnominally:

(6)   a.   Les   linguistes ont **souvent** dansé   la   salsa
             the   linguists   have often   danced the   salsa
       b.   ***Souvent** (de) linguistes ont   dansé   la   salsa
             often   (of)   linguists   have danced   the   salsa

In chapter 9 I discussed this and other differences between Q-adverbs and DQs, which are used both adnominally and adverbially. Whereas adnominally used DQs and AdnQs both function as saturators of the *q*-position in the NP, and differ from each other because DQs are theta selectors and AdnQs categorial selectors, the difference between adverbially used DQs and Q-adverbs is more profound. Q-adverbs behave in many respects like quantificational noun phrases of the form *Q times*. I argued that the reason why adverbs of quantification are not found in the context of NPs is not that they categorially select VPs, but that they contain nominal material themselves. In many cases there is morphological evidence for the presence of the element *time*. The syntactic difference between Q-adverbs and DQs turns out to be the source of a number of other distributional differences between the two types of Qs, such as the fact that Q-adverbs can have scope over indefinites, while DQs cannot.

   The discussion of the different types of Qs shows that there is an asymmetry between adnominal and adverbial quantifiers. We have seen three types of Qs in adverbial positions: adverbially used DQs, FQs and Q-adverbs. The latter two types were argued to contain an AdnQ and nominal material. Whereas I argued in favour of two QPs in the functional superstructure of NPs (one containing the regular AdnQs, directly selecting NPs, the other containing Qs such as *tous* 'all', which select a DP), there do not seem to be any Q projections in the superstructure of VPs. The only Qs whose domain of quantification can be determined by the VP are the category insensitive DQs.

   The fact that NPs and VPs have partially different quantificational properties is in correspondence with the findings in chapters 2 and 3. Even though NPs and VPs both may contain a *q*-position, the way the reference properties of NPs and VPs are obtained differ. In the nominal system there is a lexical distinction between mass nouns and count nouns, the latter being marked for singular and plural Number, which makes them compatible with plural and singular selecting AdnQs. In the verbal system there is no obvious counterpart of the category Number, and count or bounded VPs are often formed compositionally on the basis of a mass verb and a noun phrase with quantized reference. This phenomenon, which is due to the measuring out effect, is illustrated in (7):

(7)   a. John ate for an hour   *unbounded*
       b. John ate **an apple** in an hour   *bounded*
       c. John ate **apples** for an hour   *unbounded*

In the context of the quantized noun phrase *an apple*, the VP gets a bounded or count interpretation. In the absence of a noun phrase and in the context of the cumulative noun phrase *apples* the VP is unbounded or mass. I argued in chapter 3 that measuring out is the result of the presence of a resultative SC, which may have a covert predicate as in (7) (cf. Hoekstra 1992). This SC was argued to contain an inchoative auxiliary. The event position contained in the inchoative auxiliary was argued to undergo theta identification with the event position in the matrix VP. The measuring out phenomenon was argued to be due to identification of the *q*-position in the SC subject and the *q*-position in the inchoative auxiliary. As identification of the *e*-position in the inchoative auxiliary and the *e*-position in the main verb implies identification of the corresponding *q*-positions, the properties of the *q*-position in the subject of the resultative SC get transposed onto the *q*-position of the matrix verb. The quantized noun phrase *an apple* will thus impose its reference properties on the event as a whole. Verbal countability in many cases has a nominal source.

In chapter 10, I argued that there is a relation between the measuring out effect and quantification at a distance (QAD). In this construction we find a DQ which occupies an adverbial position, but which is also related to a noun phrase. The construction is exemplified in (8):

(8)   Jean   a   beaucoup lu   de   livres
          Jean   has   a-lot   read   of   books
          'Jean read a lot of books'

Even though the DQ occupies an adverbial position and behaves like an adverb in other respects, the DQ determines the quantity of the *de NP* as well. I argued that the QAD construction depends on measuring out. Because of measuring out, the *q*-position in the verb is identified with the *q*-position in the *de NP*. The DQ saturates the resulting *q*-position through identification.

The issues discussed in this thesis can be situated at the syntax-semantics interface. The selectional properties of DQs, for instance, are partially determined by their meaning (they define a value on a scale), but also on their syntax. The French DQ *autant* 'as much' does not differ from the Deg-head *aussi* 'as' in meaning, but in syntax. Both define the same scalar value, but *autant* only theta selects and is indifferent to the categorial properties of the phrase it combines with, while *aussi* categorially selects AP. Another case showing the autonomy of syntax is the difference between *g*-positions and

q-positions, discussed in chapter 6. I used the distribution of *veel* 'a lot' and *erg* 'very; badly' as a diagnostic for the presence of a *q*-position and a *g*-position, respectively. It turned out that a scale which we would call a grade from a conceptual point of view can be represented as a *q*-position in the theta grid of an argumental noun phrase, as in *veel geluk* 'a lot of luck'. Similarly, a scale which conceptually corresponds to a quantity may be represented as a *g*-position when found in an adjective, as in *erg zout* 'very salty'. In these cases syntax overrules the conceptual difference. Finally, in chapters 2 and 7 I argued that the presence of minimal parts in the semantic structure is not the factor that determines compatibility with AdnQs selecting a singular or a plural. These AdnQs do not need a semantic criterion for counting, but a grammatical element signalling the presence of minimal parts. This element can be either Number marking or a classifier. In certain cases, classifiers give information about what units are counted. This is clearly the case for non-individual classifiers such as *kilo* and *bottle*, and as a result these classifiers can mediate between a cardinal numeral and a mass noun that does not provide a criterion for counting. There are, however, classifiers such as Chinese *ge* 'Cl$_{unit}$', which only have the function of signalling the presence of a countable structure, as they do not introduce more information about which units are to be counted than Number morphology does. All in all these phenomena show that syntax is a non-negligible factor in determining the selectional properties of quantifiers.

Abbreviations in glosses

ACC	accusative
AGR	agreement
CL	classifier
DAT	dative
DET	determiner
DIM	diminutive
F	feminine
GEN	genitive
IMP	imparfait (the French imperfect tense)
INF	infinitive
LOC	locative marker
M	masculin
N	neuter
NEG	negation marker (French *ne*)
NOM	nominative
PL	plural
PS	passé simple (the French simple past)
SG	singular
WH-PART	wh-particle (French *est-ce que*)

References

Abney, S. (1987). *The English Noun Phrase in Its Sentential Aspect*. PhD dissertation, MIT, Cambridge, Massachusetts.

Allen, R.L. (1966). *The Verb System of Present-Day American English*. Mouton, The Hague.

Aronoff, M. (1976). *Word Formation in Generative Grammar* [= *Linguistic Inquiry Monograph* **1**]. MIT press, Cambridge, Mass.

Bach, E. (1986). 'The algebra of events.' *Linguistics & Philosophy* **9**, 5-16.

Baciu, I. (1978). *Précis de grammaire roumaine*. L'Hermès, Lyon.

Barbiers, S. (1995). *The Syntax of Interpretation*. PhD dissertation, HIL/ Leiden University.

Barwise, J. and R. Cooper (1981). 'Generalized quantifiers in natural language.' *Linguistics & Philosophy* **4**, 159-219.

Battye, A. (1991). 'Partitive and pseudo–partitive revisited: Reflections on the status of 'de' in French.' *French Language Studies* **1**, 21–43.

Belletti, A. (1982) 'On the Anaphoric Status of the Reciprocal Construction in Italian.' *The Linguistic Review* **2:2**, 101-138.

Bennis, H. (1995). 'The meaning of structure: the *wat voor* construction revisited.' *Linguistics in the Netherlands* **1995**, edited by M. den Dikken and K. Hengeveld, 25-36. John Benjamins, Amsterdam.

Bennis, H. & P. Wehrmann (1990). 'On the Categorial Status of Present Participles.' *Linguistics in the Netherlands 1990*, edited by R. Bok-Bennema & P. Coopmans, 1-11.

Berman, S. (1987). 'Situation-Based Semantics for Adverbs of Quantification.' *University of Massachusetts Occasional Papers* **12**, 45-69.

Bernstein, J. (1993). *Topics in the syntax of nominal structure across Romance*. PhD dissertation, CUNY.

Bobaljik, J. (1995). *Morphosyntax: the syntax of verbal inflection*. PhD dissertation, MIT, distributed by MIT Working Papers in Linguistics.

Bosveld-de Smet, L. (1994). 'Indefinite subjects in French and stage-level versus individul-level predicates.' Manuscript, University of Groningen.

Bovee, B. (1995). 'Une analyse unificatrice des différentes occurrences du *de* non argumental.' MA thesis, Leiden University.

Bowers, J. (1975). 'Adjectives and adverbs in English.' *Foundations of Language* **13**, 529-62.

Brame, M. (1986). 'Ungrammatical notes 11: Much ado about *much*.' *Linguistic Analysis* **16:3**, 3-24.

Bresnan, J. (1973). 'Syntax of the Comparative Clause Construction in English.' *Linguistic Inquiry* **4:3**, 275–343.

Bunt, H. (1985). *Mass terms and model–theoretic semantics*. Cambridge University Press.

Cardinaletti, A. and G. Giusti (1991). 'Partitive *NE* and the QP-Hypothesis. A Case Study.' *Working Papers in Linguistics*, University of Venice.

Carlson, G. (1977). *Reference to kinds in English*. PhD dissertation, University of Massachusetts at Amherst, distributed by GSLA.

Carlson, G. & F.J. Pelletier (eds) (1995). *The generic book*. The University of Chicago Press.

Chao, Y.R. (1968). *A grammar of spoken Chinese*. University of California Press, Berkeley.

Cheng, L. & R. Sybesma (1997a). *'yi-wan tang, yi-ge Tang:* Classifiers and massifiers.' Manuscript, University of California at Irvine and Leiden University.

Cheng, L. & R. Sybesma (1997b). 'Bare and not-so-bare nouns and the structure of NP.' Manuscript, University of California at Irvine and Leiden University.

Chierchia, G. (1995). 'Plurality of Mass Nouns and the Notion of "Semantic Parameter".' Manuscript, University of Milan.

Chomsky, N. (1981). *Lectures on Government and Binding*. Foris, Dordrecht.

Chomsky, N. (1986). *Barriers*. MIT Press, Cambridge, Mass.

Chomsky, N. (1995). *The Minimalist Program*. MIT Press, Cambridge, Mass.

Cinque, G. (1990). *Types of Ā-Dependencies* [= *Linguistic Inquiry Monograph* **17**]. MIT press, Cambridge, Mass.

Cinque, G. (1994). 'On the Evidence for Partial N–Movement in the Romance DP.' *Paths towards Grammar. Studies in Honor of Richard S. Kayne*, edited by G. Cinque *et al.*, 85–110. Georgetown University Press, Washington, D.C.

Corver, N. (1990). *The syntax of left branch extractions*. PhD dissertation, Tilburg University.

Corver, N. (1997). '*Much*-support as last resort.' *Linguistic Inquiry* **28:1**, 119-164.

Costa, J. (1997). 'On the behavior of adverbs in sentence final context.' *The Linguistic Review* **14:1**, 43-68.

Delfitto, D. & Schroten, J. (1991). 'Bare Plurals and the Number affix in DP.' *Probus* **3:2**, 155-186.

Delsing, L.-O. (1988). 'The Scandinavian Noun Phrase.' *Working Papers in Scandinavian Syntax* **42**, 57-79.

Déprez, V. (1989). *On the typology of syntactic positions and the nature of chains: Move α to the specifier of functional projections*. PhD dissertation MIT, distributed by MIT Working Papers in Linguistics.

Déprez, V. (1994). 'Questions with Floating Quantifiers.' *Proceedings from Semantics and Linguistic Theory IV*, edited by Mandy Harvey and Lynn Santelman. Cornell University, 96-113.

Déprez, V. (1997). 'Two types of negative concord.' *Probus* **9-2**, 103-143.

Diesing, M. (1992). *Indefinites* [= *Linguistic Inquiry Monograph* **20**]. MIT press, Cambridge, Mass.

den Dikken, M. (1995). *Particles. On the Syntax of Verb-Particle Triadic and Causative Constructions*, Oxford University Press, Oxford. [= PhD dissertation, HIL/Leiden University]

den Dikken, M. (1995). 'Copulas.' Paper presented at GLOW Tromsø, manuscript HIL/Vrije Universiteit Amsterdam.

Di Sciullo, A.M. & E. Williams (1987). *On the Definition of Word* [= *Linguistic Inquiry Monograph* **14**]. MIT press, Cambridge, Mass.

Dobrovie–Sorin, C. (1993a). *The syntax of Romanian*. Mouton–de Gruyter.

Dobrovie–Sorin, C. (1993b). 'On the Denotation and Scope of Indefinites.' Manuscript, Université de Paris 7.

Doetjes, J. (1991). 'L–tous. A unifying account of quantifier float in French.' MA thesis, Leiden University.

Doetjes, J. (1992). 'Rightward floating quantifiers float to the left.' *The Linguistic Review* **9:4**, 313–332.

Doetjes, J. (1994). 'Quantification at a distance and event relatedness.' Reineke Bok–Bennema & Crit Cremers, *Linguistics in the Netherlands 1994*, 13–24.

Doetjes, J. (1995). 'Quantification at a distance and iteration.' *Proceedings of NELS* **25**, edited by Jill Beckman, 111–126. GLSA, University of Massachusetts, Amherst.

Doetjes, J. (1996). 'Mass and count: syntax or semantics?' *Proceedings of Meaning on the HIL* [= *HIL Occasional Papers in Linguistics* **1**], edited by A. Arregui & C. Cremers, 34–52.

Doetjes, J. (1997a). 'French degree quantifiers and the syntax of mass and count.' *Proceedings of the Linguistic Symposium on Romance Languages* **26**, edited by José Lema and Esthela Treviño. John Benjamins, Amsterdam.

Doetjes, J. (1997b). 'Measuring out, small clauses and the semantics of telicity.' *Proceedings of ConSOLE* **7**, edited by T. Cambier-Langeveld, João Costa, Rob Goedemans & Ruben van de Vijver, 15-29. SOLE, Leiden.

Doetjes, J. and M. Honcoop (1997) 'The semantics of Event-related readings: a case for pair-quantification.' *Ways of scope taking*, edited by Anna Szabolcsi, 263-310. Kluwer, Dordrecht.

Dowty, D. (1979). *Word Meaning and Montague Grammar.* Kluwer, Dordrecht.

Emonds, J. (1970). *Root and structure preserving transformations.* PhD dissertation, MIT.

Enç, M. (1991). 'The Semantics of Specificity.' *Linguistic Inquiry* **22:1**, 1-25.

Englebert, A. (1992). *Le "petit mot" DE. Etude de sémantique historique.* Librairie Droz, Genève–Paris.

Englebert, A. (1993). 'Le statut grammatical de *DE French Language Studies* **3**, 127–144. Cambridge University Press.

Ferdinand, A. (1996). *The Development of Functional Categories.* PhD dissertation, HIL/Leiden University.

von Fintel, K. (1994). *Restrictions on Quantifier Domains.* PhD dissertation, University of Massachusetts at Amherst, distributed by GSLA.

Foulet, (1977). *Petite syntaxe de l'ancien français.* Third edition. Librairie Honoré Champion, Paris.

Fukui, N. (1986). *A theory of category projection and its application.* PhD dissertation, MIT.

Gaatone, D. (1992). '*De* négatif entre la syntaxe et la sémantique. Réflexions sur quelques propriétés du déterminant *de*.' in B. Callebaut *Les négations. Langue Française* **94**, 93–102.

Gathercole, V. (1985a). 'More and More and More about *More.' Jounal of experimental Child Psychology* **40**, 73–104.

Gathercole, V. (1985b). '"He has too much hard questions": The Acquisition of the Linguistic Mass–Count Distinction in *much* and *many.' Journal of Child Language* **12**, 395–415.

Gathercole, V. (1986). 'Child language: the mass–count distinction.' *Linguistics and Philosophy* **9**, 151–190.

Gerhardt, L. (1984). 'More on the verbal system in Zarek (Northern Nigeria) *Afrika und Übersee* **67**, 11–30.

Gillon, B. (1992). 'Towards a common semantics of English count and mass nouns.' *Linguistics & Philosophy* **15:6**, 597-639.

Giusti, G. (1991). 'The Categorial Status of Quantified Nominals.' *Linguistische Berichte* **136**, 438-454.

Gleason, H.A. (1965). *Linguistics and English Grammar.* Holt, Rinehart & Winston, New York.

Gordon, P. (1986). *The acquisition of Syntactic Categories. The Case of the Count/Mass Distinction.* PhD dissertation, MIT, Cambridge.

Gougenheim, G. (1938). *Le système grammatical de la langue française.* Bibliothèque du français moderne, Paris.

Greenberg, J. (1972). 'Numeral Classifiers and Substantival Number: Problems in the Genesis of a Linguistic Type.' *Stanford Working Papers on Language Universals 9*, 1–39. Reprinted in: *Linguistics at the crossroads*, edited by A. Makkai *et al.* (1977), 276–300. Liviana Editrice, Padova & Jupiter Press, Lake Bluff, Illinois.

Grevisse, M. (1986). *Le bon usage.* 12th edition, revised by A. Goosse. Duculot, Paris–Gembloux.

Grice, P. (1975). 'Logic and Conversation.' *Speech Acts. Syntax and Semantics* **3**, edited by P. Cole & J. Morgan, 41–58. Academic Press, London.

Le Grand Robert de la langue française. Dictionnaire alphabétique et analogique de la langue française. Edited by P. Robert. 2nd revised edition by A. Rey. Le Robert, 1985.

Guéron, J. (1995). 'Missing tenses in French and English'. Paper presented at Going Romance 1995, University of Amsterdam.

Haïk, I. (1982). 'On clitic *en* in French.' *Journal of Linguistic Research* **2:1**, 63–87.

Hale, K. and S. Keyser (1993). 'On Argument Structure and the Lexical Expression of Syntactic Relations.' *The View from Building 20. Essays in Linguistics in Honour of Sylvain Bromberger*, edited by K. Hale & S.J. Keyser, 53-110. MIT press, Cambridge, Mass.

Hall, R.A. (1968). '"Neuters", Mass Nouns and the Ablative in Romance.' *Language* **44**, 480-86.

Halle, M. & A. Marantz (1993) 'Distributed morphology and the pieces of inflection.' *The View from Building 20. Essays in Linguistics in Honour of Sylvain Bromberger*, edited by K. Hale & S.J. Keyser, 111-176. MIT press, Cambridge, Mass.

Heim, I. (1982). *The Semantics of Definite and Indefinite Noun Phrases*. PhD dissertation, University of Massachusetts at Amherst.

Heim, I. (1990). 'E-Type Pronouns and Donkey Anaphora.' *Linguistics and Philosophy* **13**, 137-177.

Herburger, E. (1992). *Proceedings of the West Coast Conference Formal Linguistics* **12**, edited by E. Duncan, D. Farkas & P. Spaelti, 517-535. CSLI Publications, Stanford University.

Hetzron, P. (1976). 'On the relative order of adjectives.' *Language Universals*, edited by H. Seiler, 165–184. Günther Narr Verlag, Tübingen.

Higginbotham, J. (1985). 'On Semantics.' *Linguistic Inquiry* **16**, 547-593.

Hoeksema, J. (1986). 'Superlatieven.' *TABU* **13**, 101-106.

Hoekstra, J. (1988). '–*fol*, *fol* en de syntaksis fan mjitteoantsjuttingen.' *Wurdfoarried en wurdgrammatika*, edited by S.Dyk and G. de Haan, 74-114. Fryske Akademy, Ljouwert.

Hoekstra, T. (1984). *Transitivity. Grammatical Relations in Government-Binding Theory*. Foris, Dordrecht. [= PhD dissertation, Leiden University]

Hoekstra, T. (1988). 'Small clause results.' *Lingua* **74**, 101-139.

Hoekstra, T. (1992). 'Aspect and Theta Theory.' *Thematic Structure. Its Role in Grammar*, edited by I. Roca, 145–174. Foris, Berlin.

Hoekstra, T. & R. Mulder (1990). 'Unergatives as copular verbs; locational and existential predication.' *The Linguistic Review* **7:1**, 1-79.

Hoepelman, J. & C. Rohrer (1981). 'On the mass-count distinction and the French Imparfait and Passé Simple'. *Time, tense and quantifiers*, edited by C. Rohrer, 85-112. Niemeyer, Tübingen.

Honcoop, M. (1992). 'ER or OR. Quantification, Intervention and Fission.' MA thesis, Leiden University.

Honcoop, M. (1996). 'Towards a Dynamic Semantics Account of Weak Islands.' *Proceedings of SALT* **6**.

Honcoop, M. and J. Doetjes (1996). 'Conditions on the Event-related reading.' *Proceedings of the West Coast Conference Formal Linguistics* **14**, edited by J. Camacho, L. Choueiri and M. Watanabe, 137-154. CSLI Publications, Stanford University.

de Hoop, H. (1992). *Case Configuration and Noun Phrase Interpretation*. PhD dissertation, Groningen University.

de Hoop, H. & Solà, J. (1995). 'Determiners, Context Sets and Focus.' *Proceedings of the West Coast Conference Formal Linguistics* **14**, edited by J. Camacho, L. Choueiri and M. Watanabe, 155-169. CSLI Publications, Stanford University.

Horn, L. (1978). 'Remarks on Neg-raising.' *Pragmatics* [= *Syntax and Semantics* **9**], edited by P. Cole, 129-220. Academic Press, New York.

Horn, L. (1989). *A natural history of negation*. University of Chicago Press, Chicago.

Huang, C.–T.J. (1982) *Logical Relations in Chinese and the Theory of Grammar*. PhD dissertation, MIT.

Hulk, A. & E. Verheugd (1994). 'Accord et opérateur nuls dans les projections adjectivales.' *Revue Québecoise de Linguistique* **23:2**, 17–47.

Hulk, A. (1996). 'L' "autre" *de*: une tête quantificationelle?' *Un bien grand mot:* de. *De la préposition au mode de quantification* [= *Langue Française* **109**], edited by L. Kupferman, 44–59, Larousse.

Ikoro, S. (1994). 'Numeral classifiers in Kana.' *Journal of African Languages and Linguistics* **15**, 7–28.

Iljic, R. (1994). 'Quantification in Mandarin Chinese: two markers or plurality.' *Linguistics* **32**, 91–116.

Jackendoff, R. (1977). *X-bar syntax: a study of phrase structure.* MIT Press, Cambridge, Massachusetts.

Jaeggli, O. (1982). *Topics in Romance Syntax.* Foris, Dordrecht.

Junker, M.-O. (1995). *Syntaxe et sémantique des quantifieurs flottants* tous *et* chacun. Librairie Droz, Genève-Paris.

Kanazawa, M. (1993). 'Semantics for Quantification at a Distance in French.' Manuscript, Stanford University.

Kamp, J. (1981). 'A Theory of Truth and Semantic Interpretation.' *Formal methods in the study of language*, edited by J. Groenendijk, T. Janssen and M. Stokhof. Mathematisch Centrum, Amsterdam. Reprinted in: *Truth, interpretation and information*, edited by J. Groenendijk, T. Janssen and M. Stokhof, 1-41. Foris, Dordrecht.

Kayne, R.S. (1975). *French Syntax.* in MIT Press, Cambridge, Mass.

Kayne, R.S. (1981). 'Binding, Quantifiers, Clitics and Control.' *Binding and Filtering*, edited by F. Heny, 191–211. Croom Helm, London/MIT press, Cambridge Mass. Reprinted in Kayne (1984), chapter 4.

Kayne, R.S. (1984). *Connectedness and binary branching.* Foris, Dordrecht.

Kayne, R.S. (1985). 'L'accord du participe passé en français et en italien.' *Modèles Linguistiques* **1**, 73–89.

Kayne, R.S. (1989). 'Facets of Romance Past Participle Agreement.' *Dialect Variation on the Theory of Grammar*, edited by P. Benincà, 85–103. Foris, Dordrecht.

Kayne, R.S. (1994). *The Antisymmetry of Syntax* [= *Linguistic Inquiry Monograph* **25**]. MIT press, Cambridge, Massachusetts.

Kester, E.-P. (1996). *The nature of adjectival inflexion.* PhD dissertation, Utrecht University.

Khalaily, S. (1997). *One Syntax for All Categories. Merging Nominal Atoms in Multiple Adjunction Structures.* PhD dissertation, HIL/Leiden University.

Kitagawa, Y (1986). *Subjects in Japanese and English.* PhD dissertation, University of Massachusetts at Amherst, distributed by GSLA.

Kiparsky, P. (1973). '"Elsewhere" in phonology.' *A Festschrift for Morris Halle*, edited by S. Anderson & P. Kiparsky, 93-106. Holt, Rinehart & Winston, New–York.

Klein, E. (1982). 'The interpretation of adjectival comaptatives.' *Journal of Linguistics* **18**, 113-36.

Koopman, H. & D. Sportiche (1986). 'A note on long extraction in Vata and the ECP.' *Natural language and Linguistic Theory* **4:3**, 357-374.

Kratzer, A. (1989) 'Stage-Level and Individual-Level predicates.' *Papers on Quantification*, edited by E. Bach, A. Kratzer & B. Partee, 147-222. GLSA, Amherst, Massachusetts. [reprinted in Carlson & Pelletier (1995), 125-175]

Krifka, M. (1986). *Nominal referenz und Zeitkonstitution. Zur Semantik von Massentermen, Pluraltermen und Aspektklassen.* PhD dissertation, Ludwig-Maximilians-Universität München.

Krifka, M. (1992). 'Thematic Relations as Links between Nominal Reference and Temporal Constitution.' *Lexical Matters*, edited I. Sag & A. Szabolcsi, 29–53. CSLI, Stanford.

Krifka, M. (1990). 'Four thousand ships passed through the lock: object–induced measure functions on events.' *Linguistics & Philosophy* **13**, 487–520.

Lakoff, G. (1970). 'Pronominalization, negation and the analysis of adverbs.' *Readings in English transformational grammar*, edited by R. Jacob & P. Rosenbaum, 145-165. Ginn, Waltham MA.

Lamarche, J. (1991). 'Problems for N^0–movement to Num–P.' *Probus* **3:2**, 215–236.

Landman, F. (1989). 'Groups, I.' *Linguistics & Philosophy* **12**, 559–605.

Landman, F. (1991). *Structures for Semantics.* Kluwer, Dordrecht.

Lasersohn, P. (1995). *Plurality, Conjunction and Events*. Kluwer, Dordrecht.

Lewis, D. (1975).'Adverbs of Quantification.' *Formal Semantics of Natural Language*, edited by E. Keenan, 3-15. Cambridge University Press.

Link, G. (1983). 'The Logical Analysis of Plurals and Mass Terms: A Lattice–theoretical Approach.' *Meaning, Use and Interpretation of Language*, edited by R. Baüerle, C. Schwarze and A. von Stechow, 302–23. Walter de Gruyter, Berlin.

Löbel, E. (1990). 'D und Q als funktionale Kategorien in der Nominalphrase.' *Linguistische Berichte* **127**, 232-264.

Lønning, J.T. (1987). 'Mass terms and quantification.' *Linguistics & Philosophy* **10-1**, 1-52.

Martí, N. (1995). '*De* in Catalan Elliptical Nominals: a Partitive Case Marker.' *Catalan Working Papers in Linguistics* **4:2**, 243-65.

ter Meulen, A. (1995). *Representing Time in Natural Language*. MIT Press, Cambridge Mass.

Milner, J.–C. (1978a). *De la syntaxe à l'interprétation*. Editions du Seuil, Paris.

Milner, J.–C. (1978b). 'Cyclicité successive, comparatives, et Cross–over en français.' *Linguistic Inquiry* **9:4**, 679–693. MIT Press, Cambridge Mass.

Milner, J.–C. (1987). 'Interpretive Chains, Floating Quantifiers and Exhaustive Interpretation.' *Studies in Romance Languages*, edited by C. Neidle & Rafael A. Nuñez Cedeño, 181–202. Foris, Dordrecht.

Morin, Y.-C. & J. Kaye (1982). 'The syntactic bases for French Liaison.' *Journal of Linguistics* **18**, 291-330.

Mourelatos, A. (1978). 'Events, processes and states.' *Linguistics & Philosophy* **2:3**, 415-134.

Mulder, R. (1992). *The Aspectual Nature of Syntactic Complementation*. PhD dissertation, HIL/Leiden University.

Muromatsu, K. (1995). 'The Classifier as a Primitive: Individuation, Referability and Argumenthood.' *University of Maryland Working Papers in Linguistics* **3**.

Newman, P. (1990). *Nominal and Verbal Plurality in Chadic*. Foris, Dordrecht.

Obenauer, H.–G. (1976). *Etudes de syntaxe interrogative du français*. Niemeyer, Tübingen.

Obenauer, H.–G. (1983). 'Une quantification non–canonique: la "quantification à distance".' *Langue Française* **58**, 66–88.

Obenauer, H.–G. (1984). 'On the identification of Empty Categories.' *The Linguistic Review* **4**, 153–202.

Obenauer, H.–G. (1992). 'L'interprétation des structures *wh* et l'accord du participe passé.' *Structure de la phrase et théorie du liage*, edited by H.–G. Obenauer & A. Zribi–Hertz, 169–93. Presses Universitaires de Vincennes.

Obenauer, H.–G. (1994). *Aspects de la syntaxe A–barre. Effets d'intervention et mouvements des quantifieurs*. Thèse de doctorat d'Etat, Université de Paris VIII.

The Oxford English Dictionary. Second edition, edited by J. Simpson & E. Weiner. Clarendon Press, Oxford 1989.

Partee, B. (1991). 'Topic, Focus and Quantification.' *Proceedings from Semantics and Linguistic Theory* **1** [= *Cornell Working Papers in Linguistics* **1**], edited by S. Moore and A. Winner, 159-188.

Partee, B. (1988). '*Many* Quantifiers.' *Proceedings of the fifth Eastern States Conference on Linguistics*, 383-402. The Ohio State University.

Pelletier, F.J. (1975). 'Non–Singular Reference: Some Preliminaries.' *Philosophia* **5–4**, 451–465, reprinted in Pelletier (1979).

Pelletier, F.J. (ed.). (1979). Mass terms: some philosophical problems, Reidel, Dordrecht.

Pesetsky, D. (1987). '*Wh*–in–situ: Movement and Unselective Binding.' in E. Reuland & A. ter Meulen (eds.) *The Representation of (In)definiteness*, 98–129. MIT Press, Cambridge, Mass.

Peyraube, A. (1995) 'On the history of classifiers in archaic and medieval Chinese.' Paper presented at the Conference on the History of Chinese Syntax, Stanford University.

Pollock, J.-Y. (1978). 'Trace theory and French syntax.' *Recent Transformational Studies in European Languages*, edited by S.J. Keyser, 65-112. MIT-press, Cambridge, Mass.

Pollock, J.-Y. (1989). 'Verb Movement, Universal Grammar and the structure of IP.' *Linguistic Inquiry* **20:3**, 365-424.

Postma, G. (1995). *Zero Semantics. A Study of the Syntactic Conception of Quantificational Meaning.* PhD dissertation, HIL/Leiden University.

Postma, G. (1996). 'The nature of quantification of high degree: 'very', 'many' and the exclamative.' *Linguistics in the Netherlands 1996*, edited by C. Cremers & M. den Dikken, 207-220.

Quine, W. (1960). *Word and object*. MIT Press, Cambridge, Mass.

Raposo, E. (1973). 'Sobre a forma *o* em Português.' *Boletim de Filologia* **XXII**, 361-415.

Ritter, E. (1991). 'Two functional categories in noun phrases: evidence from Modern Hebrew.' *Syntax and Semantics* **26**, edited by S. Rothstein, 37-62.

Rizzi, L. (1990). *Relativized Minimality* [= *Linguistic Inquiry Monograph* **16**]. MIT Press, Cambridge, Mass.

Rochette, A. (1988). *Semantic and syntactic aspects of Romance sentential complementation.* PhD dissertation, MIT.

Ross, H. (1967). *Constraints on Variables in Syntax.* PhD dissertation, MIT.

Rooryck, J. (1992). 'Negative and factive islands.' *Journal of Linguistics* **28**, 343-374.

Rooryck, J. (1994). 'On two types of underspecification: Towards a feature theory shared by syntax and phonology.' *Probus* **6**, 207-233.

Rooth, M. (1985). *Association with Focus.* PhD dissertation, University of Massachusetts at Amherst, distributed by GLSA.

Ruwet, N. (1972). *Théorie syntaxique et syntaxe du français*. Editions du Seuil, Paris.

Rygaloff, A. (1973). *Grammaire élémentaire du chinois*. Presses Universitaires de France.

Sanches, M. (1971). *Numeral Classifiers and Plural Marking: an Implicational Universal*. Manuscript.

Selkirk, E. (1970). 'On the Determiner Systems of Noun Phrases and Adjective Phrases.' Manuscript, MIT, Cambridge Mass.

Schlyter, S. (1977). *Les adverbes en –ment en français*. PhD dissertation, University of Konstanz.

Schwarzschild, R. (1996). *Pluralities*. Kluwer, Dordrecht.

Sharvy, R. (1978). 'Maybe English has no count nouns: notes on Chinese semantics.' *Studies in Language* **2:3**, 345–365.

Shlonsky, U. (1991). 'Quantifiers as functional heads: A study of Quantifier Float in Hebrew.' *Lingua* **84**, 159-180.

Sleeman, P. (1996). *Licensing Empty Nouns in French.* PhD dissertation, HIL/University of Amsterdam.

de Smet, L. (1985). 'On the semantics of the French NP *des N*.' *Linguistics in the Netherlands 1985*, edited by H. Bennis & F. Beukema, 167–176.

Speas, M. (1986). *Projections and adjunctions in syntax*. PhD dissertation, MIT.

Sportiche, D. (1988). 'A Theory of Floating Quantifiers and Its Corollaries for Constituent Structure.' *Linguistic Inquiry* **19:3**, 425–449.

Sproat, R. & C. Shih (1988) 'Adjective ordering *Proceedings of NELS* **18**, 465-489. GLSA, Amherst, Mass.

Stowell, T. (1981). *Origins of phrase structure*. PhD dissertation, MIT.

de Swart, H. (1988a). '*Quelques fois* and *quelquefois*: about iteration and frequency in French.' *Linguistics in the Netherlands 1988*, edited by A. Hulk & P. Coopmans, 149–158. Foris, Dordrecht.

de Swart, H. (1988b). 'Kwantificatie op afstand: betekenis aspecten van een adverbiale bindingsrelatie.' *TABU* **18**, 129–145.

de Swart, H. (1991). *Adverbs of Quantification: A Generalized Quantifier Approach*. PhD dissertation, University of Groningen.

de Swart, H. (1992). 'Intervention effects, Monotonicity and Scope.' *SALT II: Proceedings of the second conference on semantics and linguistic theory* [= *OSU Working Papers in Linguistics* **40**], edited by C. Barker & D. Dowty, 387–406. Ohio State University, Columbus.

de Swart, H. (to appear). 'Aspect shift and coercion.' To appear in *Natural Language and Linguistic Theory*.

de Swart, H. & A. Molendijk (1997). 'Negation and the temporal structure of narrative discourse.' Manuscript, Standford University and University of Groningen.

Sybesma, R. (1992). *Causatives and Accomplishments. The case of Chinese* ba. PhD dissertation, HIL/Leiden University.

Szabolcsi, A. & F. Zwarts (1992). 'Weak Islands and an Algebraic Semantics for Scope Taking.' *Natural Language Semantics* **1:3**, 235–284. Reprinted in Szabolcsi (1997).

Szabolsci, A. (1997). *Ways of Scope Taking*. Kluwer, Dordrecht.

Tang, C.–C.J. (1990). *Chinese phrase stucture and the extended X'theory*. PhD dissertation, Cornell University, Ithaca, N.Y.

Tenny, C. (1987). *Grammaticalizing Aspect and Affectedness*. PhD dissertation, MIT, Cambridge.

Tenny, C. (1994). *Aspectual Roles and the Syntax–Semantics Interface*. Kluwer, Dordrecht.

Thompson, L. (1965). *A Vietnamese Grammar*. University of Washington Press, Seattle.

Togeby, K. (1982-85). *Grammaire française*. Published by M. Berg, G. Merad & E. Spang-Hanssen. Akademisk Forlag, Copenhague.

Tranel, B. (1981). *Concreteness in generative phonology: evidence from French*. University of California Press, Berkeley.

Travis, L. (1984). *Parameters and Effects of Word Order Variation*. PhD dissertation, MIT, Cambridge, Massachusetts.

Trésor de la Langue Française. Dictionnaire de la langue du XIXe et du XXe siècle. Edited by Paul Imbs *et al.* Editions du Centre National de la Recherche Scientifique/Gallimard, Paris, 1991-1994.

Uriagereka, J. (1988). *On Government*. PhD dissertation, University of Washington, Maryland.

Valois, D. (1991). *The internal syntax of DP*. PhD dissertation, UCLA.

Veenstra, T. (1996). *Serial Verbs in Saramaccan. Predication and Creole Genisis*. PhD dissertation, HIL/University of Amsterdam.

in 't Veld, E. (1990). 'Een analyse van *allemaal*.' MA thesis, Leiden University.

Vendler, Z. (1957). 'Verbs and times.' *Philosophical review* **56**, 143-160. [Reprinted in Vendler (1967)].

Vendler, Z. (1967). *Linguistics in Philosophy*. Cornell University Press, Ithaca, N.Y.

Verkuyl, H. (1972). *On the Compositional Nature of the Aspects*. Reidel, Dordrecht. [= PhD dissertation, Utrecht University, 1971]

Verkuyl, H. (1993). *A theory of Aspectuality. The interaction between temporal and atemporal structure*. Cambridge University Press.

Voskuil, J. (1996). *Comparative Morphology. Verg Taxonomy in Indonesian, Tagalog and Dutch*. PhD dissertation, HIL/Leiden University.

von Wartburg (1928-66). *Französisches Etymologisches Wörterbuch*.

Westerståhl, D. (1985). 'Logical constants in quantifier languages.' *Linguistics & Philosophy* **8**, 387-413.

Williams, E. (1981). 'Argument Structure and Morphology.' *The Linguistic Review* **1:1**, 81-114.

van Wijk, N. (1971). *Franck-van Wijk-van Haringen Etymologisch Woordenboek der Nederlandse Taal*. Third edition. Martinus Nijhoff, 's Gravenhage.

van der Wouden, T. (1994). *Negative Contexts*. PhD dissertation, University of Groningen.

Woordenboek der Nederlandsche Taal, edited by M. de Vries *et al.* M. Nijhoff/SDU, 's Gravenhage, Leiden.

Zwart, J.-W. (1997). *Dutch Syntax: a Minimalist approach*. Kluwer, Dordrecht. [= PhD dissertation, University of Groningen, 1993]

Zwarts, J. (1992). *X'–syntax – X'–semantics*. PhD dissertation, OTS/ Utrecht University.

Samenvatting

Kwantificerende expressies zoals *veel*, *vaak*, *drie* en *alle(n)* verschillen van elkaar op grond van hun distributie. *Veel* kan zowel adverbiaal (*veel dansen*) als adnominaal (*veel taalkundigen*) gebruikt worden. *Vaak* is altijd adverbiaal. *De taalkundigen hebben vaak gedanst* is een correcte zin, maar **vaak taalkundigen* is ongrammaticaal. Kwantificeerders zoals *drie* modificeren altijd een nominale projectie: *drie taalkundigen* is goed, maar **De taalkundigen hebben drie gedanst* is onmogelijk. *Alle(n)*, tenslotte, lijkt net als *veel* zowel adnominaal als adverbiaal voor te komen, maar *alle taalkundigen hebben gedanst* en *de taalkundigen hebben allen gedanst* hebben dezelfde interpretatie, wat niet gezegd kan worden over *veel taalkundigen hebben gedanst* en *de taalkundigen hebben veel gedanst*.

In dit proefschrift worden de distributionele eigenschappen van verschillende types kwantificeerders met elkaar vergeleken, met als doel een beter inzicht te krijgen in hun selectie-eigenschappen. De eigenschappen die bepalen of een kwantificeerder zowel adverbiaal of adnominaal, alleen adverbiaal of alleen adnominaal gebruikt kan worden zijn afhankelijk van eigenschappen van nominale en verbale projecties. De distributie van kwantificeerders werpt dan ook licht op overeenkomsten en verschillen tussen het nominale en het verbale systeem.

Er wordt een vergelijking gemaakt tussen de kwantificationele systemen van het Frans, het Nederlands en het Engels, waarbij de nadruk ligt op het Frans. Uit deze vergelijking blijkt dat de drie talen een groot aantal verrassende overeenkomsten vertonen. Deze overeenkomsten suggereren dat verdere cross-linguïstische studies op dit gebied tot interessante inzichten kunnen leiden over universele eigenschappen van taal en kwantificatie.

Bij de verantwoording van de selectie-eigenschappen van kwantificeerders wordt een verschil gemaakt tussen twee vormen van selectie: categoriale selectie en theta-selectie. Zoals algemeen wordt aangenomen, houdt categoriale selectie in dat de kwantificeerder een XP selecteert van een bepaalde categorie. Er wordt bovendien aangenomen dat een kwantificeerder

die selecteert op basis van categoriale selectie per definitie beperkt is tot één enkele categorie. Daaruit volgt dat een kwantificeerder die met meerdere categorieën gecombineerd kan worden ongevoelig is voor categoriale informatie. Kwantificeerders die selecteren op basis van categoriale informatie worden gegenereerd in een QP die deel uit maakt van de functionele superstructuur van de categorie die zij selecteren. Kwantificeerders die ongevoelig zijn voor categoriale informatie, daarentegen, zijn adjuncten.

De tweede vorm van selectie, theta-selectie, maakt gebruik van informatie in het thematische grid van de XP die geselecteerd wordt. Theta-selectie kan geïllustreerd worden aan de hand van de distributie van het woord *minder*. *Minder* kan met adjectieven, met nomina en met verba gecombineerd worden. In al deze gevallen definieert *minder* een waarde op een schaal. Laten we eerst kijken naar de combinatie van *minder* en een adjectief. Van woordgroepen zoals *minder interessant* wordt in de literatuur aangenomen dat *minder* een scalaire theta-positie satureert in het thematische grid van het adjectief *interessant* (cf. Zwarts 1992). De mogelijkheid *minder* te gebruiken in de context van een adjectief hangt af van de aanwezigheid van een graad-positie in het thematische grid van het adjectief. Niet scalaire adjectieven kunnen dus niet gecombineerd worden met *minder*; *minder volgend* is ongrammaticaal omdat *volgend* geen scalaire theta-positie bevat. In combinatie met nomina en verba zien we iets gelijksoortigs. *Minder* kan voorkomen in de context van meervoudige en niet telbare nomina (*minder taalkundigen*, *minder plezier*), het kan niet als een kwantificeerder functioneren in de context van een telbaar enkelvoud (#*minder schotel*, waarbij # aangeeft dat de combinatie mogelijk is in het geval *schotel* als een niet telbaar nomen geïnterpreteerd wordt). Dit komt overeen met wat we zien wanneer *minder* met een adjectief gecombineerd wordt, als we aannemen dat meervoudige nomina en niet telbare nomina een thematische positie in hun grid bevatten die een schaal definieert. Ook NPs en VPs met een niet telbare of meervoudige interpretatie bevatten dus een scalaire positie, op grond waarvan ze gemodificeerd kunnen worden door kwantificeerders zoals *minder*.

Na een uiteenzetting van het doel van het proefschrift en van het theoretische kader in hoofdstuk 1, worden in hoofdstuk 2 en 3 eigenschappen van nomina en verba besproken die te maken hebben met de uitdrukking van kwantiteit en telbaarheid. Deze hoofdstukken dienen als voorbereiding op de discussie van de verschillende soorten kwantificeerders. In hoofdstuk 2 wordt een vergelijking gemaakt tussen telbaarheid van nomina en aspectuele eigenschappen van verba. Kwantiteit wordt gerepresenteerd in het thematische grid van nomina en verba in de vorm van een zogenaamde *q*-positie. Niet telbare en meervoudige predikaten hebben met elkaar gemeen dat ze cumulatief zijn: thee plus thee is thee,

taalkundigen plus taalkundigen zijn taalkundigen. Enkelvoudige telbare nomina hebben deze eigenschap niet. Als je een taalkundige bij een andere taalkundige zet, zijn ze samen niet 'een taalkundige'. De *q*-positie in een cumulatief predikaat is scalair, en die in een enkelvoudig, telbaar predikaat niet. In het hoofdstuk wordt tevens ingegaan op de status van telbaarheid in het nominale systeem van het Chinees, waarin op het eerste gezicht alleen niet telbare nomina voorkomen, en op eigenschappen van collectieve niet telbare nomina zoals *meubilair*.

In het derde hoofdstuk wordt dieper ingegaan op een zeer opvallend verschil tussen nomina en verba dat te maken heeft met telbaarheid. In het nominale systeem is telbaarheid vooral een lexicale aangelegenheid, terwijl verschillen tussen telbare en niet telbare predikaten niet alleen met het werkwoord te maken hebben, maar ook afhangen van eigenschappen van de argumenten van het werkwoord, zoals Verkuyl (1972) heeft laten zien. Het predikaat *een appel eten* kan telbaar genoemd worden, omdat het naar een gebeurtenis verwijst die niet onbeperkt door kan gaan. Dit geldt niet voor *appels eten*, waarin een kaal meervoud gebruikt wordt. In hoofdstuk 3 wordt een analyse van dit verschijnsel gegeven die gebruik maakt van de notie *q*-positie en van resultatieve Small Clauses.

In hoofdstuk 4 tot en met 6 wordt aandacht besteed aan GRAAD-KWANTIFICEERDERS (DQs) zoals *veel* en *minder* in het Nederlands en *beaucoup* en *moins* in het Frans. Er wordt een inventarisatie gemaakt van verschillende typen DQs. *Veel* heeft bijvoorbeeld adjectivale eigenschappen, en *een hoop* is een zogenaamde classificeerder-constructie die iets weg heeft van *een kilo*. Er wordt beargumenteerd dat DQs geadjugeerd zijn aan een XP en geïnterpreteerd worden doordat ze een open scalaire positie in die XP satureren door middel van theta-identificatie van een open positie (in de XP) en een gesatureerde positie (in de DQ). Er wordt gesteld dat DQs ongevoelig zijn voor de categoriale eigenschappen van de XP waaraan ze geadjugeerd worden. Een deelverzameling van de DQs, waar *minder* toe behoort, kunnen niet alleen met NPs en VPs maar ook met adjectieven voorkomen. Er wordt gesteld dat DQs in principe altijd met adjectieven gecombineerd kunnen worden, maar dat deze mogelijkheid geblokkeerd kan worden indien er een graadexpressie bestaat die dezelfde betekenis heeft, maar meer specifieke selectie-eigenschappen, door de 'Elsewhere' Conditie (Kiparsky 1973).

Hoofdstuk 5 gaat over de combinatie van DQs met VPs. Er wordt ingegaan op het verschil tussen graden en hoeveelheden en de syntactische representaties daarvan, op basis van de distributie van *veel* en *erg*. *Veel* modificeert altijd een kwantiteit (*veel/ *erg wandelen*) en *erg* altijd een graad (*erg/ *veel waarderen*).

In hoofdstuk 6 word aandacht besteed aan DQs in nominale contexten. Onderwerpen die besproken worden zijn de positie van de DQ ten opzichte

van adjectieven, de verplichte aanwezigheid van *de* in Franse woordgroepen van het type *beaucoup **de** linguistes*, letterlijk 'veel van taalkundigen', en partitiviteit.

In hoofdstuk 7 wordt ingegaan op verschillen tussen typisch ADNOMINALE KWANTIFICEERDERS zoals *enkele* en *drie* (in het Frans *plusieurs* en *trois*) en graadkwantificeerders verschillen. In tegenstelling tot DQs kunnen adnominale kwantificeerders niet adverbiaal gebruikt worden. Het blijkt dat de twee klassen kwantificeerders ook binnen het nominale systeem verschillende selectie-eigenschappen hebben. Een Q die niet met een enkelvoudig telbaar nomen gecombineerd kan worden maar wel met een niet telbaar nomen, is een graadkwantificeerder en kan ook adverbiaal gebruikt worden, terwijl een kwantificeerder die alleen met een meervoud of alleen met een enkelvoud voorkomt, altijd een AdnQ is, die niet als adverbium gebruikt kan worden. Het hoofdstuk bevat tevens een discussie over classificeerders, die het mogelijk maken AdnQs met niet telbare nomina te combineren: #*drie hout* is gek maar *drie planken hout* is goed. Er wordt ook aandacht besteed aan het element *keer*, dat het mogelijk maakt een adverbiale kwantificeerder te maken op grond van een AdnQ (*drie *(keer) dansen*).

FLOATING ('drijvende') KWANTIFICEERDERS (FQs) worden behandeld in hoofdstuk 8. FQs, zoals *allen* in *ze zijn allen gekomen* (*tous* in het Frans), worden geanalyseerd als adjuncten die gecoïndiceerd zijn met een lege categorie in de VP. In *ze zijn allen gekomen* is dat het spoor van het subject *ze*, waarvan aangenomen wordt dat het gegenereerd is in de VP-interne subject positie. Er wordt evidentie gegeven voor de aanwezigheid van een leeg pronominaal element in standaard FQs zoals *allen* en *tous*. Dit maakt het mogelijk een principieel onderscheid te maken tussen kale FQs, zoals het Franse *tout*, die onafhankelijk van een DP voorkomen, en de standaard FQs, die altijd geïnterpreteerd worden met betrekking tot een in de zin aanwezig argument.

KWANTIFICATIONELE ADVERBIA, of Q-adverbia, zoals Nederlands *vaak* en Frans *souvent* worden besproken in hoofdstuk 9. Er wordt beargumenteerd dat ze nominaal materiaal bevatten, waardoor ze, in tegenstelling tot DQs, alleen adverbiaal gebruikt kunnen worden. Q-adverbia zijn dus niet uitsluitend adverbiaal omdat ze categoriaal een VP selecteren. In het hoofdstuk worden Q-adverbia en DQs met elkaar vergeleken. Q-adverbia kunnen niet gezien worden als de adverbiale tegenhangers van de AdnQs. AdnQs selecteren een NP, en worden gegenereerd in een Q projectie in de functionele superstructuur van die NP, terwijl Q-adverbia adjuncten zijn, en geadjugeerd worden aan een constituent die functioneert als hun bereik (scope). Nominale en verbale projecties blijken in dit opzicht dus duidelijk verschillend te zijn. In de superstructuur van NP is een QP aanwezig, maar in de superstructuur van VP niet. De enige kwantificeerders waarbij een VP

het domein van kwantificatie kan aangeven zijn de categorie ongevoelige DQs, die niet van een QP projectie afhankelijk zijn.

In hoofdstuk 10, tenslotte, wordt het verschijnsel van kwantificatie op afstand besproken. Bij kwantificatie op afstand speelt een DQ als het ware een dubbelrol, en lijkt zowel adverbiale als adnominale eigenschappen te hebben. Een voorbeeld is het zinnetje: *il a beaucoup lu de livres* 'hij heeft veel gelezen van boeken', dat ongeveer hetzelfde betekent als 'hij heeft veel boeken gelezen'.

Op verschillende punten in dit proefschrift wordt de relatie tussen syntaxis en semantiek besproken. De selectie-eigenschappen van DQs, bijvoorbeeld, worden deels bepaald door hun betekenis (ze definiëren een waarde op een schaal) maar ook door hun syntactische eigenschappen. De Franse DQ *autant* 'evenveel' verschilt niet in betekenis van de graadexpressie *aussi* 'even', maar wel syntactisch. Beide expressies definiëren een gelijke waarde op een schaal. Het verschil tussen de twee is dat *autant* op basis van thematische informatie selecteert, en ongevoelig is voor categoriale informatie, terwijl *aussi* de categorie AP selecteert. Omdat *aussi* een specifiekere context selecteert, kan *autant* niet met adjectieven gecombineerd worden, volgens de 'Elsewhere' Conditie.

In hoofdstuk 2 wordt een klasse nomina besproken die, hoewel ze niet telbaar zijn wat betreft hun syntaxis, vanuit semantisch oogpunt een telbare structuur hebben. In het Chinees zijn alle nomina niet telbaar vanuit syntactisch oogpunt. Om een telwoord met een nomen te combineren moet een classificeerder worden geïnserteerd: een letterlijke nederlandse vertaling van *yi-ge ren* is 'een eenheid man'. Om de classificeerder *ge* 'CL$_{\text{UNIT}}$' te kunnen gebruiken, moet het te modificeren nomen echter een telbare semantische structuur hebben. *Ge*, anders dan *plank* in *drie planken hout*, bevat geen informatie over wat er geteld wordt, en moet gezien worden als een syntactisch element dat alleen maar signaleert dat er geteld kan worden. In dit opzicht is *ge* te vergelijken met de morfologische getalskenmerken, die ook aangeven dat er geteld kan worden, maar niet bepalen wat de eenheden zijn die geteld kunnen worden. Net als getal kan *ge* alleen gebruikt worden in de context van nomina met een telbare semantische structuur, die minimale delen bevat. De rol van *ge* wordt vergeleken met die van *stuk* in *een stuk meubilair*, en er worden argumenten gegeven om aan te nemen dat nomina zoals *meubilair* telbaar zijn vanuit semantisch perspectief maar niet telbaar vanuit syntactisch perspectief (*contra* Bunt 1985).

In hoofdstuk 6 worden data besproken die laten zien dat één en dezelfde conceptuele schaal voor de syntaxis zowel een graad als een hoeveelheid kan zijn. Hierbij wordt aangenomen dat *veel* vanuit syntactisch perspectief altijd een hoeveelheid definieert terwijl *erg* juist typisch een graadmodificeerder is. Een schaal die we conceptueel gezien een graad noemen kan zich in de syntaxis als een graad of als een hoeveelheid manifesteren; we hebben *veel*

zout naast *veel geluk* (syntactisch gezien een hoeveelheid) en *erg gelukkig* naast *erg zout* (syntactisch gezien een graad).

Al met al zijn er duidelijke redenen om aan te nemen dat syntaxis een niet te verwaarlozen rol speelt bij het bepalen van de selectie-eigenschappen van kwantificeerders.