Adverbs and quantification: degrees versus frequency

Jenny Doetjes
Leiden University Centre for Linguistics
j.doetjes@let.leidenuniv.nl

Abstract
Starting out with some intriguing parallels and differences between French *beaucoup* ‘a lot’ and *souvent* ‘often’, this paper develops an account of the distributional and semantic properties of degree adverbs as opposed to frequency adverbs. The classification can account for a number of properties of the different types of adverbs with respect to scope, selection, iteration, compatibility with stative tense forms and the possibility of so-called relational readings.

Keywords: degree adverbs, frequency adverbs, scope

1 Outline
Adverbs of quantity (Q-adverbs) such as French *beaucoup* ‘a lot’ and *souvent* ‘often’ seem to have very similar meanings in some contexts while being radically different in others (cf. Obenauer 1994 and Doetjes 1997). The sentences in (1a) and (1b), for instance, are practically synonymous. However, in most cases, *beaucoup* and *souvent* are not interchangeable, as shown in the other examples in (1). In (1c,d), *souvent* cannot be replaced by *beaucoup* at all, in the other examples replacing the choice of *souvent* or *beaucoup* has clear consequences for the semantics of the sentence.

(1) a. Sylvie va beaucoup au cinéma.
   ‘Sylvie goes to the movies a lot’
b. Sylvie va souvent au cinéma.
   ‘Sylvie goes often to the movies.’
c. *Pierre a beaucoup acheté trois kilos d’olives*¹
   ‘Pierre has bought three kilos of olives a lot’
d. Pierre a souvent acheté trois kilos d’olives.
   ‘Pierre has often bought three kilos of olives.’
e. Sylvie a beaucoup apprécié ce film.
   ‘Sylvie liked this movie a lot.’
f. Sylvie a souvent apprécié ce film.
   ‘Sylvie often appreciated this movie.’
g. Quand il est à Paris, Pierre va beaucoup au Louvre
   ‘Whenever he is in Paris, Pierre visits the Louvre a lot’
h. Quand il est à Paris, Pierre va souvent au Louvre
   1. ‘Whenever he is in Paris, Pierre often visits the Louvre’ OR
   2. ‘Often when he is in Paris, Pierre visits the Louvre’

¹ This is one of the few examples in which English *a lot* differs from French *beaucoup*. See also note 16.
In this paper I will make a detailed comparison between *beaucoup* and *souvent* in order to understand why they are so similar in some contexts and so different in others. The opposition between *beaucoup* and *souvent* is not restricted to these two lexical items. Both are representatives of a class. *Beaucoup* is a member of a rather large class of degree adverbs, including also *trop* ‘too much’, *moins* ‘less’, *énormément* ‘a whole lot’ and *un peu* ‘a bit’. *Souvent* is a frequency adverb, and as such belongs to the same class as *rarement* ‘seldom’, and *quelquefois* ‘sometimes’. Moreover, these classes are not restricted to French. Similar patterns are found in other languages as well (see the appendix for examples).

The similarity between (1a) and (1b) is related to the fact that we are dealing with a count predicate in this sentence, in the sense that a visit to the cinema is an event that is bounded in time (see, among many others, Mourelatos 1978, Krifka 1986 and Bach 1991). As soon as a mass predicate is used, we can see that *beaucoup* is not inherently iterative, as it does not necessarily indicate the number of times an event took place.

(2)  a. Il a plu beaucoup.
     it has rained a-lot
 b. Il a plu souvent.
     it has rained often
 c. Il a plu trois fois.
     it has rained three times

For (2a) to be true, we need a situation in which there is a lot of rain, but it does not need to rain many times. In fact, the sentence can be used in situations where it has rained continuously for a long period. It is the global amount of raining that counts, not the number of showers. The example in (2b), on the other hand, implies iteration: it gives information about the number of raining events or the number of times it rained. In this respect *souvent* resembles *trois fois* in (2c): neither of these two expressions is sensitive to the difference between mass and count predicates.

The difference between *beaucoup* and *souvent* is particularly clear in (3), a sentence overheard in the south of France, uttered by a woman farmer complained about the dry weather:

(3)  Il a plu souvent, mais il n’a pas plu beaucoup.
     it has rained often but it NEG-has not rained a-lot

I will argue that the contrast illustrated in (3) is due to the core difference between *beaucoup* and *souvent*. Whereas *beaucoup* is degree expression, *souvent* is a quantifier over times. Whenever they seem to be similar, this is due to the context. Certain contexts create synonymy at the sentence level. However, *beaucoup* never means ‘souvent’, and should not be treated as an ambiguous expression.

Before further motivating this proposal, I will first show in section 2 why *beaucoup* and *souvent* are so similar. More specifically, it will be shown that *beaucoup* and *souvent* define the same type of quantity. As a result, both expressions can be used in combination with stative tense forms such as the present tense (cf. (1a,b), which have a habitual interpretation). Section 3 spells out the differences between *beaucoup* and *souvent*, and shows how these can be made to follow from a distinction between degree modification

---

2 I will use the term adverb here without implying that we are dealing with single words and not with phrasal expressions.

---

2—Adverbs and quantification: degrees versus frequency, to appear in Lingua
versus quantification over times. In this section the contrast between (1a-b), which have the same interpretation, and (1c-f) and (2a,b), in which the use of either beaucoup or souvent affects the interpretation of the sentence, will be accounted for.

Section 4 deals with the contrast in (1g,h). In the second reading of (1h), souvent gets a strong interpretation, which is called a relational reading (cf. De Swart 1991). This type of interpretation is excluded for degree adverbs such as beaucoup as well as for a number of other Q-adverbs, including trois fois and de temps en temps. It will be argued that the lack of a relational reading can have different sources. This will bring us closer to an understanding of the notion of frequency: frequency expressions have a number of distinct properties, which conspire to establish relational readings.

2 Tense and homogeneous reference

2.1 Relative versus absolute quantity

In the literature on Q-adverbs and tense, it has often been observed that souvent is compatible with the present tense and the imparfait (the French imperfect tense) while trois fois is not (see Ducrot 1979, Hoepelman & Rohrer 1981, De Swart 1991, Kleiber 1987, Molendijk & de Swart 1998). This difference is illustrated in (4):

\[
\begin{align*}
\text{(4) a. } & \quad \text{Jean va/allait souvent au cinéma} \\
& \quad \text{Jean goes/went (IMP) often to-the cinema} \\
\text{b. } & \quad \#\text{Jean va/allait trois fois au cinéma} \\
& \quad \text{Jean goes/went (IMP) three times to-the cinema}
\end{align*}
\]

The (non-narrative) present tense and the French imparfait are used to describe ongoing situations and states (see, among others, Landeweerd 1998, Verkuyl et al. 2004 and Molendijk et al. 2004 for discussion on the tense system of French). This makes them incompatible with predicates that lack homogeneous reference. De Swart (1991) argues that the contrast in (4) is due to the fact that souvent is a frequency expression, while trois fois is iterative. Frequency expressions define a number of times per time interval while iterative expressions define an absolute number of times. A predicate modified by a frequency adverb can describe an ongoing situation or state, while a predicate modified by an iterative adverb cannot. The homogeneous interpretation of the present and the imparfait is incompatible with an adverbial defining an absolute quantity. This can be explained as follows. If the predicate characterizes time interval X, it should characterize every relevant subinterval of X as well (cf. a.o. Ducrot 1979, Hoepelman & Rohrer 1981). As a result the use of trois fois ‘three times’, is not felicitous. If it is true that Pierre went three times to the Louvre, we cannot say anything about the subintervals of this period. There will be subintervals in which he went to the Louvre three times, but there will also be subintervals in which he went to the Louvre once and even ones during which he did not go there at all.

It has often been observed that expressions such as trois fois are compatible with the present and the imparfait once we use a modifier of the form ‘per time unit’ such as par semaine in (5). The complex expression trois fois par semaine ‘three times per week’ is similar to a frequency expression in the sense that its interpretation depends on the time interval one picks.
Depending on the number of weeks the interval contains, the number of times Pierre went to the Louvre during this interval will vary. Note that in this case, we need minimally a time interval of a week (see also note 4 below). We may conclude that *souvent* differs from *trois fois* by the fact that its interpretation can be dependent on a time interval in the absence of an explicit mention of the form ‘per time unit’.

Dependency on a time interval can also be illustrated on the basis of the examples in (6), in the absence of the present or the imparfait. In (6a) and (6c) the number of times depends on the time adverbial we pick, in (6b) it does not.

(6) a. La semaine dernière/pendant sa jeunesse, Pierre est souvent allé au Louvre.
   ‘Last week/during his youth, Pierre went often to the Louvre.’
   b. La semaine dernière/pendant sa jeunesse, Pierre est trois fois allé au Louvre.
   ‘Last week/during his youth, Pierre went three times to the Louvre.’
   c. L’année dernière/pendant sa jeunesse, Pierre est allé au Louvre trois fois par semaine.
   ‘Last year/during his youth, Pierre went three times per week to the Louvre.’

Even though *beaucoup* is not a frequency expression, as shown in (3) above, it is compatible with a stative interpretation. Consider the cases in (7):

(7) a. Pierre va beaucoup au Louvre.
   ‘Pierre goes to the Louvre a lot.’
   b. Pierre dort beaucoup.
   ‘Pierre sleeps a lot.’

It is clear that the opposition between frequency and iteration, as used by De Swart, is not enough to account for the compatibility of *beaucoup* and the present/imperfect. *Beaucoup* is not a frequency expression, and yet it is used in habitual contexts. Moreover, the data

---

3 This is also possible when *beaucoup* ‘a lot’ is used as a determiner.

(i) Jean lit beaucoup de livres
   Jean reads a lot of books
   ‘Jean has the habit of reading many books’

The same is true for other adverbial degree expressions that may function as determiners (*trop* ‘too much/many’, *davantage* ‘more’), as well as for true determiners with similar meanings (*many, few*). The use of degree adverbs as determiners will be briefly discussed in section 3.2 below. The example in (i) confirms the basic idea defended in this paper: *souvent* and *beaucoup* (whether the latter is used as an adverb or as a determiner) share part of their meaning and as a result of this shared meaning they are compatible with tenses that force a homogeneous interpretation of the predicate. Not surprisingly, *trois* ‘three’ and *trois fois* have a parallel behavior as well. Compare (ii) and (iii) with (3b) and (4):

(ii) #Jean lit trois livres
    Jean reads three books

---

4—Adverbs and quantification: degrees versus frequency, to appear in *Lingua*
strongly suggest that *beaucoup* and *souvent* are compatible with habituality for the very same reason: in (7) – as in the case of *souvent* in (3a) – the habitual reading is possible because the interpretation of the quantity defined by *beaucoup* depends on the time interval we pick. The example in (8) is parallel to the one in (6a).

(8) La semaine dernière/ l’année dernière, Pierre est beaucoup allé au Louvre.
‘Last week/ last year, Pierre went to the Louvre a lot.’

We can conclude that *beaucoup* and *souvent* seem to have a meaning component in common, which makes it possible to interpret them differently depending on the time interval one considers. As a result. They are both compatible with stative tense forms.

2.2 The role of a ‘quantity of reference’

In order to interpret *beaucoup* and *souvent* we need a quantity of reference: *souvent* can be defined as ‘more than n times’ while *beaucoup* is interpreted as the global quantity ‘more than n’, where n is a contextually defined quantity of reference, in this case the ‘norm’ (see for instance Cohen 2001 and Neeleman et al. 2004 for recent discussion of this problematic notion). It is this quantity of reference that may vary with the time interval, and therefore it seems to be at the source of the compatibility of *beaucoup* and *souvent* with the present and the imparfait.

This hypothesis is confirmed by the behavior of *plus souvent* and *davantage*. These comparative expressions are also interpreted with respect to a contextually given quantity of reference, which may be explicitly indicated in a *que*-clause. *Plus souvent* ‘more often’ and *davantage* ‘more’ can be used in habitual sentences depending on the scope position of the *que*-phrase that introduces the quantity of comparison:

(9) a. Pierre va au Louvre plus souvent que Jean
Pierre goes to-the Louvre more often than Jean
b. #Pierre va au Louvre plus souvent que Jean y est allé l’année dernière
#Pierre goes to-the Louvre more often than Jean there is gone the-year last
#‘Pierre goes more often to the Louvre than Jean went there last year’

(10) a. Il pleut davantage à Paris qu’à Amsterdam
it rains more in Paris than in Amsterdam
b. #Il pleut davantage à Paris qu’il a plu à Amsterdam la semaine dernière
#it rains more in Paris than it has rained in Amsterdam last week

The reason for the contrasts in (9) and (10) is clear: in (9a) and (10a) the quantity of reference indicated in the *que*-clause varies with the time interval picked for the event described in the matrix clause. Thus (9a) can be paraphrased as: during any relevant time interval, Pierre goes to the Louvre more often than Jean does during that same time interval. Similarly, (10a) means something like the following: during any relevant time

(iii) Jean lit trois livres par semaine
Jean reads three books per week
‘Jean has the habit of reading three books per week’

Note that the time interval needs to be sufficiently long. If Jean goes once a week and Pierre goes every day, the sentence is obviously true. However, there will be time intervals of, for instance, four hours, during which

5 –Adverbs and quantification: degrees versus frequency, to appear in Lingua
interval, there is more raining in Paris than in Amsterdam during that same time interval. If we specify the time interval in the *que*-clause, the quantity of reference gets a fixed interpretation, and cannot be accommodated on the basis of the time interval we pick for the interpretation of the matrix clause.

The contrasts in (9) and (10) correlate, as expected, with the contrasts in (11) and (12). In (11a), the adverbial expression at the beginning of the sentence determines the interpretation of the *que*-phrase. Depending on the choice of time interval, the interpretation of the quantity of reference which determines the interpretation of plus souven/ davantage changes. These cases correspond to the ones where the use of a stative tense is fine ((9a) and (10a)). In the examples in (9b) and (10b), the time interval for the *que*-clause is fixed by the time interval it includes, and this results in an absolute interpretation of the quantity of reference (the number of times Pierre’s grandfather went to the Louvre during his entire life and the number of times it rained in Amsterdam during the past one and a half years).

(11)  
   a. La semaine dernière/ Pendant sa jeunesse, Pierre est allé plus souvent au Louvre que son grand-père.  
      ‘Last week/ during his youth, Pierre went to the Louvre more often than his grandfather did during his whole life.’
   b. La semaine dernière/ Pendant sa jeunesse, Pierre est allé plus souvent au Louvre que son grand-père y est allé pendant toute sa vie.  
      ‘Last week/ during his youth, Pierre went to the Louvre more often than his grandfather did during his whole life.’

(12)  
   a. La semaine dernière/ l’année dernière, il a plu davantage à Paris qu’à Amsterdam.  
      ‘Last week/ last year, it rained more in Paris than in Amsterdam.’
   b. La semaine dernière/ l’année dernière, il a plu davantage à Paris qu’il n’a plu à Amsterdam depuis un an et demi.  
      ‘Last week/ last year, it rained more in Paris than in Amsterdam during the past one and a half years.’

I will call expressions such as beaucoup, souven, davantage and plus souven dependent quantity expressions. These expressions depend for their interpretation on a contextually given ‘quantity of reference’. In the example in (4a), containing souven, this quantity of reference corresponds to the number of times we would normally expect Pierre to go to the Louvre in a given time interval. The use of souven indicates that the number of times Pierre went to the Louvre exceeds this quantity of reference. Trois fois on the other hand, is an independent quantity expression. It indicates an absolute quantity which does not depend on a contextually given ‘quantity of reference’. As a result the number of times indicated by trois fois does not depend on contextual factors such as the time interval, unless we add an adverbial modifier of the type par semaine ‘per week’, as in (5).

So far we can summarize our findings as follows. Tenses that force a homogeneous interpretation of the predicate are compatible with Q expressions that depend for their interpretation on the time interval one picks. In the case of beaucoup and souven, this is due to an interpretation of the Q expression with respect to a contextually determined quantity of Pierre did not go to the Louvre while Jean did. These intervals clearly should not be taken into account, and this is why ‘relevant’ is added. See also Verkuyl (1993, chapter 9) for a general discussion on homogeneity in relation to truth at intervals.
reference. This quantity of reference has to be in the scope of the stative verb so that it varies with the time interval one picks when evaluating the truth of the sentence. Independent Q expressions can be made dependent on the time interval by adding a modifier such as *par semaine* ‘per week’.

### 2.3 Classes of Q expressions

The next question that will addressed is how the distinction between dependent and independent Q expressions as defined in the previous section interacts with the three main classes of Q expressions considered in this paper: frequency expressions (*souvent*), *x times* expressions (*trois fois*) and degree expressions (*beaucoup, un peu*).

Frequency expressions are by definition dependent on the time interval. In most cases this is due to their interpretation with respect to a quantity of reference. In these cases, they often have a non frequency counterpart which functions as a degree expression or a degree determiner. Examples are *souvent* ‘often’ and *beaucoup* ‘a lot’; *plus souvent* ‘more often’ and *davantage* ‘more’; and *rarement* ‘rarely’ and *peu* ‘few’. In other cases the dependency on the time interval seems to be due to real frequency, that is, an ‘*n* times per time unit’ interpretation. This seems to be the case of *quelquesfois* ‘sometimes’, which means something like ‘a small number of times per relatively large time unit’. *Jamais* ‘never’ is also a special case. Given its zero times interpretation, it is compatible with the homogeneous nature of stative tenses while defining an absolute quantity. Two further special cases are *toujours* ‘always’ and *le plus souvent* ‘mostly’. These frequency expressions describe a number of times which depends on the cardinality of the set of eventualities defining their restriction. The restriction varies, among other things, with the time interval we pick. We will come back to a number of special properties of *toujours* and *le plus souvent* below in the context of relational readings (section 4).

Expressions of the form *x times* typically function as independent Q expressions and are incompatible with stative tenses unless they are modified (cf. (5)). A question one may ask at this point is how to classify *x times* expressions that contain a vague Q expression such as *quelques* ‘some’ and *plusieurs* ‘several’. The example in (13) shows that *quelquesfois* ‘a small number of times’ and *plusieursfois* ‘several times’ are not dependent on a contextually given quantity of reference.\(^5\) *Quelquesfois* can be defined as ‘a small number of times’, and *plusieursfois* as ‘more than once’. As such, their interpretation does not involve a quantity of reference which is strongly dependent on the context:

\[(13)\] La semaine dernière/ Pendant sa jeunesse, Pierre est quelques fois/ plusieurs fois allé au Louvre.  
‘Last week/ during his youth, Pierre went to the Louvre a few times/several times.’

Whereas *beaucoup* is similar to *souvent*, the degree adverb *un peu* could be characterised as the degree counterpart of *quelquesfois* ‘a small number of times’. As such, we expect *un peu* to be independent of the time interval which means that it is not interpreted with respect to a contextually given quantity of reference that may vary with the time interval we pick. The examples in (14) show that this is in fact the case:

\[(14)\] Note that *quelquesfois* written in one word is a frequency adverb, and corresponds to English *sometimes* (cf. De Swart 1988).

---

\(^7\) – Adverbs and quantification: degrees versus frequency, to appear in *Lingua*
(14)  a. Entre midi et deux heures, Pierre a dormi un peu.
   ‘Between noon and two o’clock, Pierre slept a bit.’

b. Pendant la journée, Pierre a dormi un peu. (‘during the day’)

c. Pendant le weekend, Pierre a dormi un peu. (‘during the weekend’)

d. Strange La semaine dernière, Pierre a dormi un peu. (‘last week’)

e. Very strange L’année dernière, Pierre a dormi un peu. (‘last year’)

With respect to these examples we can make two observations. In the first place the sentence in (14a), where the time interval is very short, does not exclude a situation in which Pierre sleeps during a very large proportion of this time interval (one and a half hour for instance). In the second place, the sentences become strange when the time interval is getting larger. Sleeping a bit during a day or a weekend is possible. However, the amount of sleep one needs in a week or a year exceeds the quantity we can refer to by using un peu.

These examples illustrate that vague Q adverbs such as un peu are not completely context independent, as is trois fois. Rather, they could be qualified as ‘weakly context dependent’ or ‘semi-independent’. I will use this latter term rather than the former, as this avoids confusion with the dependent Q expressions discussed above. Comparing (14b) and (14c), we will tend to interpret un peu in (14b) as a smaller quantity than un peu in (14c). The strangeness of (14d) and (14e) and the fact that the interpretation in (13a) is completely independent of the time interval shows that this effect is different from the stronger contextual effect we find for dependent Q expressions. This stronger effect is what we are interested in here, and is ascribed to the interpretation of the Q adverb with respect to a contextually given quantity of reference. The weak influence of context exemplified in (14b) and (14c) seems to be due to a combination of vagueness and world knowledge. Vagueness allows for a certain range of possible interpretations, and context/world knowledge plays a role in the way we interpret the vague expression.6

An anonymous reviewer suggests that plusieurs ‘more than one’ and plusieurs fois ‘more than once’ do not depend on any possibly variable standard of comparison, contrary to un peu ‘a small quantity’ and quelques fois ‘a small number (of times)’, the paraphrases of which contain the word small. However, plusieurs seems to be weakly context sensitive, as illustrated by the following examples (based on some examples given by Liliane Tasmowski during a discussion on this topic):

(i)  a. Il y avait plusieurs livres sur la table
    there were several books on the table

b. L’association a déjà réuni plusieurs livres pour sa nouvelle bibliothèque
    the association has already collected several books for its new library

Even though the number of books can be the same in the two sentences, there is a tendency to interpret these sentences in such a way that the number of books on the table is smaller than the number of books collected for the library, simply because libraries are associated to many books. Similarly, in the sentence below, the interpretation of plusieurs in plusieurs fois seems to vary slightly with the choice of the time interval:

(ii) Plusieurs fois par an/ par semaine, il va au théâtre

In the context of per week, plusieurs fois is interpreted as ‘two to three times’. In combination with per year this is slightly more, say ‘six to twelve times’ (Johan Rooryck, p.c.). The presence of context sensitivity in the context of expressions that lack any possible standard of comparison might be related to scalar implicatures and Grice’s maxim of quantity: if the number of books/times qualifies as ‘a lot’ in a certain context, we are supposed to use an expression meaning ‘a lot’ rather than plusieurs. As such plusieurs means more than one, while it implicates ‘less than a lot’.

8 —Adverbs and quantification: degrees versus frequency, to appear in Lingua

---

6 An anonymous reviewer suggests that plusieurs ‘more than one’ and plusieurs fois ‘more than once’ do not depend on any possibly variable standard of comparison, contrary to un peu ‘a small quantity’ and quelques fois ‘a small number (of times)’, the paraphrases of which contain the word small. However, plusieurs seems to be weakly context sensitive, as illustrated by the following examples (based on some examples given by Liliane Tasmowski during a discussion on this topic):

(i)  a. Il y avait plusieurs livres sur la table
    there were several books on the table

b. L’association a déjà réuni plusieurs livres pour sa nouvelle bibliothèque
    the association has already collected several books for its new library

Even though the number of books can be the same in the two sentences, there is a tendency to interpret these sentences in such a way that the number of books on the table is smaller than the number of books collected for the library, simply because libraries are associated to many books. Similarly, in the sentence below, the interpretation of plusieurs in plusieurs fois seems to vary slightly with the choice of the time interval:

(ii) Plusieurs fois par an/ par semaine, il va au théâtre

In the context of per week, plusieurs fois is interpreted as ‘two to three times’. In combination with per year this is slightly more, say ‘six to twelve times’ (Johan Rooryck, p.c.). The presence of context sensitivity in the context of expressions that lack any possible standard of comparison might be related to scalar implicatures and Grice’s maxim of quantity: if the number of books/times qualifies as ‘a lot’ in a certain context, we are supposed to use an expression meaning ‘a lot’ rather than plusieurs. As such plusieurs means more than one, while it implicates ‘less than a lot’.
Given this, we expect semi-independent Q expressions to be incompatible with tense forms that force a homogeneous interpretation of the predicate, unless they are modified by an expression that makes them dependent on the time interval. This is in fact the case, as shown in (15) for un peu ‘a bit’. Even though the use of un peu with a stative tense is not excluded, it does not have the intended interpretation. Instead of indicating the amount of sleeping Pierre is involved in, it rather indicates that Pierre is only half asleep. As shown in (15b), un peu can modify the quantity associated with the event of sleeping when modified by tous les après-midi, which makes its interpretation dependent on the time interval one picks.7

(15) a. Pierre dort/dormait un peu
   Pierre sleeps/slept a bit
   ‘Pierre is/was half asleep’
   b. L’année dernière, Pierre a dormi un peu tous les après-midi.
   ‘Last year, Pierre slept a bit every afternoon.’

The properties of the different Q expressions considered so far are summarized in table 1 below. Informal descriptions corresponding to their meanings are added, which make clear why they belong to a certain category rather than to another. These descriptions are sketchy, but a more fine-grained description is not necessary for the arguments made in this paper.

For discussion on the interpretation of frequency adverbs see for instance De Swart (1991); degree adverbs are best described in the literature on adjectival degree modification (see, among many others, Bierwisch 1989, Von Stechow 1985, Kennedy & McNally 2005 and Neeleman et al. 2004). The interpretation of beaucoup/ souvent and peu/ rarement is related to the interpretation of many and few which has been extensively discussed in the literature (see, for instance, Westerståhl 1985, Partee 1988, Cohen 2001, Doetjes 2004). The bold faced members are used in this paper as prototypical members, and will be the only ones the paper refers to, unless reference to other members of the class is necessary.

Table 1: Classification of Q expressions

<table>
<thead>
<tr>
<th>1. dependent quantity</th>
<th>a. frequency adverbs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>souvent</strong></td>
</tr>
<tr>
<td></td>
<td><strong>rarement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>plus souvent</strong></td>
</tr>
</tbody>
</table>

7 Expressions such as par semaine (par + time unit) always modify count expressions. This makes them incompatible with mass quantifiers such as un peu (cf. un peu de vin ‘a bit of wine’ vs. #un peu de livres). The Q expression tous les après-midi has the same effect: the quantity expressed by un peu is relativized with respect to a time interval.

9 –Adverbs and quantification: degrees versus frequency, to appear in Lingua
On the basis of this schema we can make a number of generalizations. In the first place, frequency expressions never define (semi-)independent quantities. This is hardly surprising, as frequency crucially involves an interpretation which depends on the time interval. In the second place, all \textit{x-times} adverbs are (semi-)independent.\footnote{Ducrot (1979) observes that \textit{beaucoup de fois} is incompatible with the imparfait. This suggests that \textit{beaucoup de fois} is a semi-independent quantity expression, and cannot be in the scope of a stative tense. This is strange, especially because the determiner \textit{beaucoup} is normally a dependent Q expression, as shown in note 3 above. Why would \textit{beaucoup} be semi-independent when combined with \textit{fois} and dependent when combined with an ordinary noun? It might be that the existence of the frequency expression \textit{souvent} blocks a frequency interpretation of \textit{beaucoup de fois}. Obviously this issue needs further investigation. A question one may want to ask, for instance, is whether \textit{souvent} can be interpreted independently of a time interval at all. See also the discussion on \textit{veel} ‘a lot’ and \textit{een hoop} ‘a lot’ in Hoekstra (2000). Hoekstra argues that the determiner \textit{veel} typically occurs in the presence of a stative tense, while \textit{een hoop} does not. This suggests that \textit{een hoop} is not a dependent Q expression, and means something like ‘a big quantity’, rather than ‘more than the norm’ (cf. also \textit{un peu} ‘a small quantity’). I will leave these questions for further research.} Note also that all members of the class of semi-independent degree adverbs (class 3b) have roughly the same interpretation (`a bit’, `a little’). We can observe that \textit{un peu} (or \textit{un tantinet}) is the counterpart of \textit{quelques}.
fois. There are no counterparts of \textit{NUMERAL fois} and \textit{plusieurs fois} in the class of degree adverbs. This is not surprising, as these expressions contain a cardinal and as such explicitly involve counting. Degree adverbs typically do not involve counting. This issue will be further discussed below. Truly independent Q expressions, on the other hand, always involve counting, and show up as \textit{x-times} expressions where \textit{x} is a numeral.

3 Degree modification versus quantification over times

3.1 Differences between \textit{beaucoup} and \textit{souvent}

Having discussed so far some parallels between \textit{souvent} and \textit{beaucoup} we will now look at the differences. In the previous section, we saw that \textit{beaucoup} and \textit{souvent} can be opposed to cardinal count expressions such as \textit{trois fois}. In this section, we will oppose \textit{beaucoup} on the one hand, and \textit{souvent} and \textit{trois fois} on the other. The following claims will be defended. In the first place, \textit{beaucoup} is a degree expression, while \textit{souvent} quantifies over times. This is why \textit{souvent} always introduces a many events interpretation, while \textit{beaucoup} does not. In the second place, \textit{beaucoup} is not ambiguous between a degree expression and a quantifier over times. That is, it never has the meaning ‘often’, even though at the sentence level a sentence containing \textit{souvent} and a sentence containing \textit{beaucoup} may be synonymous.

These claims will be defended on the basis of three correlating basic distinctions between \textit{beaucoup} and \textit{souvent} that will be extensively discussed in the rest of this section. Section 3.2 deals with the distribution of degree expressions. Expressions such as \textit{beaucoup} are typically found in contexts where they specify a degree. When combined with verb phrases or with nominal expressions, this is a degree of quantity: more or less on a quantitative scale. This quantity can be plural (iterated) or mass and thus global (non-iterated). On the other hand, frequency expressions and \textit{x-times} expressions typically indicate the number of times something happened. Section 3.3 explores the opposition between the inherently iterative nature of \textit{x-times} expressions and \textit{souvent} and the global quantity readings of degree expressions, which are not inherently iterative, and depend for an iterative reading on iterativity of the predicate. Section 3.4 deals with a remarkable difference between \textit{beaucoup} and \textit{souvent}: whereas \textit{souvent} can have wide scope over an indefinite, \textit{beaucoup} cannot. This difference follows from the analysis. As a result, the data constitute strong evidence against an ambiguity analysis of \textit{beaucoup}. If \textit{beaucoup} were ambiguous between \textit{beaucoup1}, a degree expression, and \textit{beaucoup2}, a quantifier over times, we would expect \textit{beaucoup2} to take scope over indefinites on a par with \textit{souvent}.

3.2 \textit{Beaucoup} and degree modification

Contrary to \textit{souvent} and \textit{trois fois}, \textit{beaucoup} and \textit{un peu} can be used as degree modifiers of nominal expressions:

\begin{enumerate}
  \item a. beaucoup de livres. ‘a lot of books’
  \item b. beaucoup de soupe ‘a lot of soup’
  \item c. un peu de soupe ‘a bit of soup’
\end{enumerate}
In these cases, *beaucoup* and *un peu* are similar to determiners such as *plusieurs* ‘several’.\(^9\)

*Souvent* and *trois fois*, on the other hand, are always adverbial, and cannot indicate quantity with respect to a nominal expression:

\[(17) \quad \star \text{souvent/trois fois (de) livres/ de soupe} \]

\[\quad \text{often/three times (of) books/ soup} \]

Many degree adverbs, including *un peu*, can be used to modify adjectival projections as well. *Beaucoup* is an exception to this generalization (see Doetjes 1997, 2001a,b). *Assez* ‘enough, quite’ and *moins* ‘less’, are examples of degree adverbs that can be used in adjectival contexts:

\[(18) \quad \text{assez/moins/un peu difficile} \]

\[\quad \text{quite/ less/ a bit difficult} \]

When used with adjectives, these expressions resemble degree words that are found in the context of adjectives, such as *très* ‘very’, *aussi* ‘as’. Compare for instance English *too*, which only combines with adjectives and French *trop* ‘too, too much’. When combined with an adjective it translates as ‘too’ and when combined with an NP or a VP it translates as ‘too much/many’:

\[(19) \quad \begin{align*}
\text{a. trop difficile} & \quad \text{too difficult} \\
\text{b. trop de livres} & \quad \text{too many books} \\
\text{c. Pierre parle trop} & \quad \text{Pierre talks too-much}
\end{align*} \]

The generalization one can make about the contexts in which degree adverbs such as *beaucoup*, *trop* and *un peu* can be used, is that the modified phrase must introduce a scale, rather than that it must be a phrase of a specific category. In the case of NPs this is a quantitative scale: when using the plural *books* or the mass noun *soup*, the number of books or the amount of soup may vary on an ascending scale. The noun *books* can be used to refer to any number of books, while the noun *soup* can be used to refer to any quantity of soup. Link (1983) and Krifka (1992), among others, define this property in terms of cumulative reference in a lattice theoretic framework. In this framework, the denotation of *books* corresponds to all possible sets of more than one book, which are partially ordered in a join semilattice by the part-of relation (each of the possible sets of two books is a subset of a number of possible sets of three books and so forth). Similarly *soup* corresponds to all possible masses of *soup*. The predicates *books* and *soup* have (strict) cumulative reference because the following holds:

\[(20) \quad \forall P \ (CUM(P) \leftrightarrow \forall x,y[P(x) \land P(y) \rightarrow P(x \lor y)] \land \exists x,y[P(x) \land P(y) \land x \neq y]) \]

\[^9\text{I will not discuss the syntactic position of *beaucoup* and *souvent* in any detail here. I assume they occupy an adjunction position. The adjunction approach to adverbials has recently been defended by Costa (2004) and Ernst (2004). See also Neeleman et al. (2004) who defend an adjunction approach for degree expressions such as *more* and *less* in all contexts where they appear.}\]
A predicate $P$ has cumulative reference iff for every $x$ and for every $y$ that have the property $P$, the join of $x$ and $y$ $(x \lor y)$ has the property $P$ as well, where the join of $x$ and $y$ corresponds, roughly speaking, to $x$ and $y$ put together. Moreover, $x$ and $y$ should be possibly different. I assume the lattice structure corresponding to strictly cumulative predicates maps onto an open ended scale, and as such licenses the use of degree expressions such as *beaucoup*.

Strict cumulative reference holds for plurals and mass nouns, but not for count singulars. Count singulars denote a set of singularities. Predictably, it is not possible to use degree expressions with a singular count noun, which does not introduce a quantitative scale: *Beaucoup de théière* ‘a lot of tea pot’ is excluded, unless we would manage to assign a mass interpretation to the singular *théière* ‘tea pot’. This analysis can be extended to the adverbial use of *beaucoup*. Following Bach (1986), verbal predicates can be taken to be the counterparts of plural, singular or mass nominal predicates. A predicate such as *to rain* is a mass predicate, while *to go to the movies* corresponds to a count predicate, which is ambiguous between a singular or a plural reading. ‘Once only’ predicates such as *to write the letter* (where *the letter* is a token) cannot be interpreted as a plural predicate, and could therefore be compared to singular count nouns. It is important to note that ‘once only’ predicates differ from ordinary singular count nouns in not having a plural counterpart. In this respect ‘once only’ predicates are similar to predicates denoting a unique object or individual, such as *préident actuel de la République Française* ‘actual president of the French Republic’. The distinction between singular predicates denoting a singleton set and those denoting a set of singular events will play a role in sections 3.3.3 and 4.2.

---

10 This second requirement makes the definition of cumulativity ‘strict’ in the sense that it excludes the possibility that a predicate such as *sun*, which denotes a singleton set, gets classified as a cumulative predicate. In that case there is exactly one $x$ for which $P(x)$ obtains, so that, if $P(x)$ holds and $P(y)$ holds, $x$ and $y$ must be identical, and $P(x \lor y)$ holds vacuously.

11 Matushansky and Ionin (2004) argue that plurals when used in combination with a cardinal count expression (e.g. *three books*) are not interpreted as cumulative expressions. They rather denote singulars and get a plural form because they agree with the cardinal. It is clear that this analysis should not be extended to *beaucoup de livres* ‘a lot of books’. It is not clear were plurality would come from if not from the predicate, as *beaucoup* is not necessarily plural (*beaucoup de soupe* ‘a lot of soup’, *beaucoup de plaisir* ‘much/great pleasure’). The only possibility would be an ambiguity analysis, which is exactly what we intend to avoid here.

12 David Lewis introduced the term ‘Universal Grinder’ in this context. The Universal Grinder produces mass nouns on the basis of any count noun that has physical objects in its extension. Gleason (1965) illustrates how context helps to make the shift possible for nouns such as *shelf* and *book*. A mother termit complains about her son, saying: ‘Johnny is very choosy about his food. He will eat book, but he won’t touch shelf.’
Table 2: Cumulative reference and degree modification of quantity

<table>
<thead>
<tr>
<th>EXPRESSIONS THAT HAVE CUMULATIVE REFERENCE (QUANTITATIVE SCALE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>count plural nouns : horses + horses = horses</td>
</tr>
<tr>
<td>mass nouns : tea + tea = tea</td>
</tr>
<tr>
<td>count (plural) verb phrases : visiting the Louvre + visiting the Louvre = visiting the Louvre</td>
</tr>
<tr>
<td>mass verb phrases : raining + raining = raining</td>
</tr>
<tr>
<td>EXPRESSIONS THAT DO NOT HAVE CUMULATIVE REFERENCE (NO QUANTITATIVE SCALE)</td>
</tr>
<tr>
<td>count singular nouns : teapot + teapot ≠ teapot</td>
</tr>
<tr>
<td>count singular verb phrases : write this letter + write this letter ≠ write this letter</td>
</tr>
</tbody>
</table>

The adverbial use of *beaucoup* is possible in contexts where the VP has cumulative reference, which means that it allows for either a plural or a mass interpretation. In these cases the predicate introduces a quantitative scale similar to the one found in plural and mass nouns:

(21) a. beaucoup de livres
     a lot of books
     [Plural count NP/VP]

b. Jean va beaucoup au Louvre.
   Jean goes a lot to the Louvre

c. beaucoup de soupe
   a lot of soup
   [Mass NP/VP]

d. Il a plu beaucoup
   it has rained a lot

e. #beaucoup de théière
   a lot of teapot
   [Singular count NP/VP]

f. #Jeanne a beaucoup écrit la lettre.
   Jeanne has a lot written the letter

In both the nominal and the verbal domain we find *beaucoup* in abstract contexts. In these cases the scale does not seem to be a quantitative one, but a qualitative one. Consider for instance the examples in (22). In (22a), *beaucoup* expresses the intensity of the pleasure, and in (22b) the intensity of the appreciation (the example in (22b) is due to Obenauer 1983, 1984). For an extensive discussion on abstract nouns see, among others, Tovena (2001a,b) and Van de Velde (1995).

(22) a. avec beaucoup de plaisir
       with a lot of pleasure
       ‘with great pleasure’

b. J’ai beaucoup apprécié ses conseils.
   ‘I appreciated his advice a lot.’

When degree adverbs combine with adjectives, they also depend on the presence of a scale. Non gradable adjectives such as *dernier* ‘last’ cannot be modified by these expressions (*moins dernier*). The scale introduced by these adjectives is obviously not a quantitative one. In these contexts *moins, trop, and un peu* indicate a qualitative degree or intensity, as in

---

14 --Adverbs and quantification: degrees versus frequency, to appear in Lingua
the examples in (22). A pure degree interpretation in which no quantity is involved is completely excluded for frequency adverbs such as souvent and x-times adverbs such as trois fois. In (23), the adverbials souvent and trois fois modify the number of times Sylvie was ill, not the degree of illness (see also Abeillé et al. 2004):

(23) Sylvie a été souvent/ trois fois malade
Sylvie has been often/ three times ill

This follows from the hypothesis according to which they both quantify over times, and as such do not have access to the scale contained in the meaning of the adjective. This hypothesis will be further developed and motivated in the next section. Cases where souvent modifies predicates such as apprécier will be discussed in section 4.

Summarizing, we have seen that beaucoup and un peu are not restricted to adverbial contexts. They function as degree modifiers in verbal, nominal, and often also adjectival contexts alike. In all of these contexts, they have in common that they are sensitive to the presence of a scale which can be either quantitative or qualitative in nature. This scale can be provided by expressions of different categories, as a result of which expressions such as beaucoup and un peu can be used as modifiers of different categories. Depending on the context, they will indicate a degree of quantity or an intensity. Souvent and three times, on the other hand, do not function as degree expressions, and always quantify over times.

### 3.3 Sources of iteration

#### 3.3.1 The case of beaucoup: iteration of the predicate

Consider again the examples in (1a,b) repeated here as (24):

(24) a. Sylvie va beaucoup au cinéma.
    ‘Sylvie goes to the movies a lot.’

b. Sylvie va souvent au cinéma.
    ‘Sylvie goes often to the movies.’

These sentences are judged to be synonymous and both have an iterated reading: there are many events of going to the movies. Some speakers, however, assign to (24a) a second reading that (24b) lacks. Beaucoup can modify the number of visits, but it can also be used to stress that someone has spent a lot of time in the cinema. As in the ‘rain’-example in (3), repeated in (25), beaucoup can be used to refer to the global quantity, while souvent cannot.

(25) Il a plu souvent, mais il n’a pas plu beaucoup.
    ‘It has rained often but it NEG-has not rained a-lot’

The global, non-iterated, reading is much more straightforward for (25) than for (24). This has to do with the nature of the predicate. Verbal predicates such as pleuvoir ‘to rain’ are similar to mass nouns (water, rain). Mass nouns denote unbounded entities, while mass verbal predicates denote unbounded situations. Predicates such as aller au cinéma ‘to go to the movies’ constitute count predicates and can have a plural interpretation, as I argued in the previous section. Degree adverbs make use of the plurality of the predicate. In beaucoup aller au cinéma a set of sets of visits to the cinema is defined, the cardinality of which...
exceeds the quantity of reference \( n \), where \( n \) corresponds to what we expect in a given context.

**Table 3: Iteration in the context of beaucoup.**

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>set of plural events</td>
<td>a subset of this set containing all plural events with ( n &gt; q_{\text{ref}} ) subevents</td>
</tr>
</tbody>
</table>

suppose the singular events \( a, b, c, d \):

\[
\{a \triangleright b, a \triangleright c, a \triangleright d, b \triangleright c, b \triangleright d, c \triangleright d, a \triangleright b \triangleright c, a \triangleright b \triangleright d, a \triangleright c \triangleright d, a \triangleright b \triangleright c \triangleright d\}
\]

suppose \( q_{\text{ref}} = 2 \):

\[
\{a \triangleright b \triangleright c, a \triangleright b \triangleright d, a \triangleright c \triangleright d, a \triangleright c \triangleright d\}
\]

In this approach the iterative reading of a sentence containing *beaucoup* is not connected to the meaning of *beaucoup* but to the meaning of the predicate. Turning to the second reading that some speakers assign to (24a), we can assume that speakers who accept this reading allow the predicate *aller au cinéma* to shift to a mass interpretation. As a result, the sentence in (24b) does not necessarily refer to a high number of cinema visits, but can also describe a large amount of time spent in the cinema watching movies. Similarly, *Il a plu beaucoup* can be used in a context where there have been a lot of showers. This is not very plausible in the case of (25), as this sentence would then turn into a contradiction. However, the reading seems to be possible in other contexts. Instead of assuming that *beaucoup* is ambiguous, I propose that the predicate *pleuvrir* shifts from a mass to a count interpretation. This allows us to conclude that *beaucoup* never introduces iteration. The source of iteration is always the plural interpretation of the predicate.

The shifting processes described above are very similar to the ones we find in the nominal system, which were already briefly mentioned in the previous section. In the nominal domain shifts from a mass to a count interpretation and vice versa are very common. The mass noun *vin* ‘wine’, for instance, can be used as a count noun in cases such as *Nous servons trois vins blancs* ‘We serve three white wines/ types of white wine’. On the other hand, count nouns such as *pomme* can be used as mass nouns in cases such as *Il faut ajouter un peu de pomme à la salade* ‘One should add some apple to the salad’. In the nominal system, *beaucoup* can be combined with a singular mass noun or with a plural count noun. In case the noun has a count interpretation, *beaucoup* can be replaced by *un grand nombre* ‘an important number’. When it combines with a mass noun, it can be replaced by *une grande quantité* ‘a large amount’. The difference between these two ‘readings’ does not seem to be a matter of ambiguity, as it is purely dependent on the predicate.

(26)  
a. beaucoup de vin/vins  
    a-lot of wine/wines  
b. beaucoup de pommes/pomme  
    a-lot of apples/apple

16 — *Adverbs and quantification: degrees versus frequency*, to appear in *Lingua*
To summarize, this section argued that *beaucoup* always corresponds to a high degree expression. The illusion of ambiguity is due to the semantics of the predicates with which *beaucoup* is combined.

### 3.3.2 The case of *souvent*: inherent iteration

*Souvent*, contrary to *beaucoup*, is inherently iterative, by which I mean that it introduces a ‘many-times’-interpretation, independently of the mass/count properties of the predicate. Moreover, as we have seen in the preceding section, it never has an intensity reading in the context of scalar predicates (cf. *Il l’apprécie souvent* ‘He often appreciates it’, not ‘He appreciates it a lot’). These observations can be accounted for in different ways. One might argue, for instance, that *souvent* is the adverbial counterpart of *many*. Instead of combining with nouns and verbs and plurals and masses alike, *many* is restricted to the nominal system and only combines with plurals. Similarly, *souvent* could be restricted to the verbal system and only combine with plurals. According to this hypothesis, *souvent* and *beaucoup* differ minimally: *beaucoup* combines with masses and plurals alike while *souvent* only combines with plurals, and *beaucoup* is not sensitive to categorial information (verb vs. noun) while *souvent* is.

I will argue that this type of analysis is not attractive. Instead, I will defend the hypothesis according to which all frequency expressions, whether they are morphologically complex or not, are semantically complex in the sense that they contain a Q element and a restriction, which corresponds to the element *fois* ‘times’ in *trois fois*. As for frequency expressions such as *souvent*, this means that we follow in essence Von Fintel’s (1994) hypothesis according to which adverbs of quantification quantify over situations and contain a hidden domain anaphor. I take this domain anaphor to be an abstract *fois*.

\[
\text{(27) a. } \text{*souvent* (Q+restriction):} \\
\text{Q (abstract *many*): [restriction abstract *fois* [nuclear scope VP/IP]}
\]

\[
\text{b. } \text{*trois fois:} \\
\text{trois: [restriction *fois* [nuclear scope VP/IP]}
\]

Pure degree expressions, such as *beaucoup*, consistently lack such a restriction. The inherent iterative nature of *souvent* and *trois fois*, which typically introduce iterative readings, is due to the presence of *fois*. The reason I chose to talk about ‘times’ is that this is the form we find in *x-times* adverbs, and in many other frequency adverbs as well. I use this term in the sense of situation or spatio-temporal location (see, among many others, Parsons 1990 and Landman 2000 for discussion). From a logical point of view, frequency adverbs can be used in contexts in which it seems inappropriate to talk about quantification over times, as shown by Lewis (1975):

\[
\text{(28) A quadratic equation often has more than two solutions}
\]

However, Schubert & Pelletier (1989) argue that, from a linguistic point of view, a tensed sentence is always tied to a particular time index, even when talking about atemporal objects

---

13 According to Verkuyl (1993) adverbials of the form *x times* range over indexed time intervals. There is a clear distinction, however, between *quelquefois* ‘some times’ and *de temps en temps* ‘from time to time’ (see Molendijk & de Swart 1998 and section 4.4 below), which might be hard to resolve if we assume that in both cases a quantifier ranges over time intervals. Note the lexical difference between the count noun *fois* ‘time’ and the mass noun *temps* ‘time’ in French. I will briefly get back to this issue in section 4.4.

---

17 *Adverbs and quantification: degrees versus frequency*, to appear in *Lingua*
such as quadratic equations (see also de Swart 1991 for discussion).

The present analysis makes iteration in the context of *souvent* very different from iteration in the context of *beaucoup*. Instead of selecting a plural predicate, *souvent* contains a plural entity corresponding to *times*. The presence of the plural makes multiplication possible. As a result, a verbal predicate with singular reference can be multiplied by *souvent*. This issue will be treated in detail in section 3.3.3 below.\(^{14}\)

A first argument in favour of the present approach is morphology. *X-times* adverbs such as *trois fois* ‘three times’ typically contain the element *fois* ‘times’. We find this type of element in the Dutch and English counterparts of the *x-times* adverbs as well (cf. English *three times* and its Dutch counterpart *drie keer*). When looking at the morphology of *souvent*-type expressions, we can observe that these often (though not always) contain morphological material that corresponds to something like *fois* or *times* (see also Parsons 1990). The presence of @ indicates that the form is archaic.

\[(29)\]
\[
a. \text{ quelquefois; parfois; @maintefois;} \\
[\text{[French]}]
\text{sometimes by-time (‘sometimes’) many-times plus d’une fois more than once (‘regularly’) }
\]
\[
b. \text{ dikwijls; menigmaal; @dikmaal(s)} \\
[\text{[Dutch]}
\text{many-while+GEN many-time many-time(\(\text{GEN}\))}
\]
\[
c. \text{ sometimes; oft(en)times; @oftenwhile} \\
[\text{[English]}
\]

In degree adverbs such as *beaucoup* and *un peu* we may find elements that mean ‘large amount’ or ‘small amount’ as in French *beaucoup* (litt. ‘a good strike’)/ *un peu* ‘a little’, English *a lot*/*a bit* and Dutch *een hoop* ‘a lot’ (litt. a heap)/ *een beetje* ‘a bit’, but we never find elements corresponding to *fois/times*.

The hypothesis according to which *beaucoup* and *souvent* create iterative readings in a radically different way (depending on the plural reading of the predicate in the case of *beaucoup* and due to quantification over times in the case of *souvent*) makes an interesting prediction about the types of VPs they are compatible with. More specifically, we expect that *beaucoup* is always incompatible with singular predicates, whereas *souvent* can combine with singular predicates as long as they denote a non singular set of singular events. The next section argues that contexts where *souvent* takes scope over an indefinite constitutes such a case.

### 3.3.3 Scope effects

A striking difference between *beaucoup* and *souvent* is that only the latter can take scope over an indefinite. The impossibility of assigning wide scope to *beaucoup* with respect to an indefinite, even in contexts where *beaucoup* is in a higher position than the indefinite, has already been noticed by Milner (1978), who discusses the contrast in (30) (cf. also Moltmann 1998 for German):

\[^{14}\text{A similar contrast is discussed by Van Geenhoven (2004) in relation to frequency adverbs as opposed to frequentative aspect.}\]

\[^{18}\text{Adverbs and quantification: degrees versus frequency, to appear in Lingua}\]
(30) a.  Trois Allemands sont beaucoup venus chez toi l’an dernier.
three Germans are a-lot come at your-place the-year last
‘Three Germans visited you a lot last year.’
b.  *Il est beaucoup venu trois Allemands chez toi l’an dernier.
it is a-lot come three Germans at your-place the-year last
‘Last year, there came three Germans to your place a lot.’

In the sentence in (30a), a specific reading of the subject *trois Allemands* ‘three Germans’ is obligatory. The Q-expression *beaucoup* cannot have scope over the subject. This cannot be due to the position of the subject with respect to *beaucoup* only. In (30b), where *beaucoup* occupies a higher position than the indefinite, the narrow scope reading of the object is excluded as well. As the impersonal construction does not allow for a specific reading of the subject, the sentence is ruled out.  

If we compare the behaviour of *beaucoup* with that of *souvent*, it is immediately clear that *souvent* can take scope over the subject in an impersonal construction as in (31b). Wide scope of *souvent* over a subject is rather restricted, so the subject of (31a) will be interpreted outside of the scope of *souvent* (cf. Obenauer 1994 for a discussion of examples where *souvent* does take wide scope over an indefinite subject):

(31) a.  Trois Allemands sont souvent venus chez toi.
three Germans are often come at your-place
‘Three Germans visited you a lot last year.’
b.  Il est souvent venu trois Allemands chez toi.
it is often come three Germans at your-place
‘There often came three Germans to your place.’

The difference between *souvent* and *beaucoup* is systematic. Consider for instance the following examples (cf. (1c,d)):

(32) a.  *Jean achète beaucoup deux kilos d’olives.
Jean buys a-lot two kilos of olives
‘Jean buys two kilos of olives a lot.’

15 Only weak indefinite subjects are allowed in impersonal sentences, as shown by (ia). Strong indefinites are incompatible with impersonal *il* and need to be preverbal (ib). Note that the impersonal construction differs in this respect from so-called ‘inversion’, where no *il* is present, and where the verb agrees with the postverbal subject. Inversion allows for a specific subject in a postverbal position (ic). Note that inversion in French is possible in a limited number of contexts (see Kampers-Manhe et al. 2004 for an overview).

(i) a.  *Il est entré trois de ses amis
it is-SG entered many of his friends
b.  Trois de ses amis sont entrés
three of his friends are-PL entered-PL
   c.  Alors entrèrent trois de ses amis,
   entered-SIMPLE PAST-PL three of his friends
   ‘Three of his friends arrived.’

16 Note that English *a lot* can take scope over the indefinite, unlike its French counterpart *beaucoup*. This is not due to a systematic difference between English and French, though. Other pairs formed by a frequency adverb and a degree adverb exhibit the same pattern as the French data in the text, as illustrated by the pair *more often-more* in (i):

19 --Adverbs and quantification: degrees versus frequency, to appear in Lingua
b. Jean achète souvent deux kilos d’olives.
Jean buys often two kilos of olives
‘Jean often buys two kilos of olives.’

Un peu similar to beaucoup is in this respect. It can not take scope over an indefinite. Trois fois, on the other hand, is like souvent in that it easily takes scope over an indefinite:

(33) a. *Jean a un peu acheté deux kilos d’olives.
Jean has a bit bought two kilos of olives
b. Jean a trois fois acheté deux kilos d’olives.
Jean has three times bought two kilos of olives

We can conclude that the possibility to have wide scope over an indefinite correlates with quantification over times and inherent iteration.

Let us first examine the reason why beaucoup and other degree expressions cannot take wide scope over an indefinite. As I argued above, beaucoup operates on the meaning of a predicate, which has to be interpretable as a scale. In the case of NPs and VPs this scale corresponds either to a global scale in the case of a mass predicate, or to a discrete one in the context of a plural count predicate. Expressions such as beaucoup cannot be combined with singular NPs because these correspond to a specific quantity, not to a scale. As I have argued above, #beaucoup de théière is strange, because beaucoup forces a mass interpretation of théière and such an interpretation is hard to get.

Given this, we expect that modification of a singular count VP is excluded as well. This can offer an explanation for the scope properties of beaucoup exemplified above. As will be shown below, the presence of an indefinite blocks a plural reading of the predicate, unless the indefinite is interpreted referentially. Only then, the predicate can be understood as a plural predicate. Going back to the examples above, consider two events in which two kilos of olives are bought. It is not possible to refer to this plural event by using the predicate acheter deux kilos d’olives ‘to buy two kilos of olives’, because the total amount of olives that has been bought does not correspond to two kilos but to four kilos. In case the indefinite is referential, a plural interpretation of the predicate is predicted to be possible, as then the problem does not arise; as soon as the same two kilos of olives are bought several times, the plural event corresponding to this can be characterised by the predicate acheter deux kilos d’olives. Given that the referential reading is not very likely in the case of the indefinite deux kilos d’olives in the example in (32a), the predicate acheter deux kilos d’olives resists modification by beaucoup (see also table 3).

Let us turn now to souvent and trois fois. The fact that these expressions take scope over an indefinite shows that their interpretation cannot depend on a plural interpretation of the predicate. The sentence in (32b) should rather be paraphrased as: there are many events each of which can be defined by the predicate buying two kilos of olives.

(i) a. John buys two kilos of olives more often than Peter does
b. John buys two kilos of olives more than Peter does

The example in (ib) is ungrammatical in the intended reading: more, on a par with beaucoup, cannot take scope over an indefinite. This suggests that the difference is due to an exceptional property of a lot, which, at least in some contexts, can be interpreted as a lot of times. I will leave this issue aside.

17 Unless the degree expression is used to modify a scale of intensity in a gradable verb, as in Pierre l'apprécie beaucoup ‘Pierre appreciates it/him a lot’. This type of examples will be discussed in section 4.3 below.
As *souvent* and *trois fois* contain a restriction, they are formally similar to quantified plural noun phrases, which obviously also take scope over indefinites:

(34) Beaucoup de/trois personnes ont acheté deux kilos d’olives.
    a-lot of /three persons have bought two kilos of-olives
    ‘Many/three people bought two kilos of olives.’

In all cases where singular VP predicates are allowed, we are dealing with structures as in (35), where the singular VP defines the scope of a quantified phrase. Moreover, in all of these cases, plurality seems to be involved, the element *fois* ‘times’, which is ambiguous between a singular and a plural, being interpreted as a plural.

(35) Structures in which singular VP predicates are allowed
    a.  [Q [abstract *fois*]] [VP]
    b.  [plusieurs [fois]] [VP]
    c.  [beaucoup [NPplural]] [VP]

This is in accordance with the claim made in the literature that all essentially quantificational DPs, that is, those DPs that can take scope over an indefinite, are distributive (see Partee 1995, Szabolcsi 1997, Vanden Wyngaerd 1999). The present approach to frequency adverbs allows us to generalize this claim to expressions such as *souvent*. *Souvent* and *trois fois* can take scope because they contain a plural *fois*, which is abstract in the case of *souvent*, and overtly realised in the case of *trois fois*.

At this point it is important to see that there is a difference between singular predicates such as *to buy two kilos of olives* and ‘once only’ predicates such as *to write the letter*, where the *letter* is a token. ‘Once only’ predicates cannot be interpreted as plurals because of the nature of the event they refer to. Once a letter has been written, it is there, and it cannot be written again, unless we talk about a letter type. As a result, ‘once only’ predicates are not only incompatible with *beaucoup*, but also with *souvent*. Both in *Jean a beaucoup écrit cette lettre* ‘Jean wrote this letter a lot’ and in *Jean a souvent écrit cette lettre* ‘Jean often wrote this letter’, the token interpretation of *cette lettre* ‘this letter’ is excluded.

Singular predicates containing indefinites cannot have a plural interpretation, but this is not due to the impossibility of the described event to take place more than once. Predicates such as *to buy two kilos of olives* are singular, but nothing prevents the existence of two singular events in which two kilos of olives are bought. This is why quantification can result in a plurality of singular events, contrary to what we see in the case of ‘once only’ predicates, which are inherently singular. *Beaucoup*, which depends on the inherent possibility of a predicate to be interpreted as a plural (or a mass), is incompatible with both types of predicate.

The data we considered in this section lead to the conclusion that there is a systematic difference between *beaucoup* and *souvent*. The former is always interpreted as a degree expression. This is why it functions as a degree expression in combination with nouns and abstract verbs, and why it cannot take scope over indefinites. Iterative readings of sentences containing *beaucoup* are triggered by a plural interpretation of the predicate, and not obtained by quantification. On the other hand, *souvent* indicates the number of times a certain type of event took place. This turns it into an inherently iterative expression similar to *trois fois*, and as such it may have scope over an indefinite.
Given the data discussed in this section, an analysis treating *beaucoup* as an expression which is ambiguous between *beaucoup1* (a degree modifier) and a *beaucoup2* (a synonym of *souvent*) is very unlikely: If such an analysis were right, we would not expect there to be any contrast between *beaucoup* and *souvent* with respect to scope taking: *beaucoup2* would be predicted to function on a par with *souvent*. The contrast we find strongly suggests that in the case of *beaucoup* a plural interpretation always comes from the use of a plural predicate.

4 Relational readings

4.1 Conditions on relational readings

Frequency adverbs such as *souvent* have a further property that distinguishes them from all other Q-adverbs discussed in this paper: they allow for so-called relational readings (cf. De Swart 1991). Consider the following example, which has both a relational and a non-relational reading (cf. (1h)):

(36) Quand il est à Paris, Pierre va souvent au Louvre.

RELATIONAL: ‘Often when he is in Paris, Pierre goes to the Louvre.’

NON-RELATIONAL: ‘Whenever he is in Paris, Pierre goes often to the Louvre.’

In the relational reading, the sentence as a whole should be characterised as describing a state (cf. Partee 1983). This is clearly the case in (36), which contains a stative tense form. As argued in section 2.1 above, stative tense forms are only compatible with homogeneous predicates. As a result, a Q expression that allows for a relational reading should not be interpreted as an absolute quantity. This correctly predicts that the sentence in (37) cannot be interpreted as: ‘three of the times he is in Paris, Pierre goes to the Louvre’. Only the non-relational reading, in which the Q expression is interpreted within the scope of the *quand*-clause is available.

(37) Quand il est à Paris, Pierre va trois fois au Louvre.

when he is in Paris Pierre goes three times to-the Louvre

‘Whenever he is in Paris, Pierre goes three times to the Louvre.’

(37) is in fact similar to (5), repeated in (38), where the *x-times* expression is modified by *par semaine* ‘per week’.

(38) Pierre va au Louvre trois fois par semaine. (= (5))

‘Pierre goes to the Louvre three times per week.’

In both (37) and (38) the *x-times* expression is embedded under another quantifying expression. As a result, the number of times Pierre goes to the Louvre in a given time interval depends on the number of visits to Paris (in (36)) or the number of weeks (in (38)) this interval contains. Because of this dependency on the time interval it is possible to use the independent Q expression in combination with a stative tense form (see section 2 above). Given that the independent Q expression has to be within the scope of the *quand*-clause in order to allow for a stative interpretation, we expect the relational reading, which involves a wide scope reading of the Q expression with respect to the *quand*-clause, to be excluded. Adding *par semaine* ‘per week’ does not make the relational reading possible, as the *x-times*
expression has to remain within the scope of *par semaine*, which in turn remains in the scope of the *quand*-clause: (39) only has a non-relational reading.

(39) Quand il est à Paris, Pierre va trois fois par semaine au Louvre.
when he is in Paris Pierre goes three times per week to-the Louvre
‘Whenever he is in Paris, Pierre goes three times per week to the Louvre.’

The impossibility of (38) and (39) is directly due to the incompatibility of *trois fois* and the stative tense form used in these sentences. The present tense excludes a non-stative interpretation and as such excludes the use of *trois fois*.

In order to see what happens to *x-times* adverbs are in relational sentences, we have to turn to non-stative tense forms, and more in particular to the passé simple, which is compatible with *trois fois* (see Hoepelman & Rohrer 1981 for discussion). As shown by De Swart (1991), relational readings in French allow for the use of a passé simple:

(40) a. Pierre dansa trois fois.
‘Pierre danced three times’

b. A partir de ce jour-là, quand Marie rentra (PS), Pierre descendit (PS) toujours l’escalier à sa rencontre.
‘From that day on, when Marie came home, Pierre always went down to meet her.’

c. ?#A partir de ce jour-là, quand Marie rentra (PS), Pierre descendit (PS) trois fois l’escalier à sa rencontre.
‘From that day on, when Marie came home, Pierre generally went down three times to meet her.’

NOT: ‘From that day on, three of the times that Marie came home, Pierre went down to meet her.’

As shown in (40c), the relational reading is, also in this context, excluded for *trois fois*. At this point it is not the inherent incompatibility of *trois fois* and the tense form that can be taken to be responsible for the impossibility of having a relational reading for *trois fois*.

Interestingly, de Swart argues that in sentences such as (40) tense must have wide scope with respect to the Q-adverb. This claim is motivated by the fact that the imperfect cannot be used in the consequent clause of (40b), while this would be possible in the absence of the Q-adverb. Consider the pair in (41):

(41) a. Quand Marie rentra (PS), Paul descendait (IMP) l’escalier.
‘When Marie came home, Paul was going downstairs.’

b. Quand Marie rentra (PS), Paul monta (PS) l’escalier.
‘When Marie came home, Paul went downstairs.’

As the translations show, there is simultaneity between Marie’s coming home and Paul’s climbing the stairs in (41a), while in (41b) the two events happen in succession. Both readings are possible in (40). In the context of a relational reading the possibility of disambiguation is blocked. As such, the simple past in (41) presents the relation as a whole as bounded, closed off in time. This strongly suggests that first a state has to be created
corresponding to “always (Marie rentrer) (Paul monter)”. The use of the passé simple turns this state into an event (cf. Kamp & Rohrer 1983). If this is correct, the relational reading always starts out with a stative interpretation, even in cases where a simple past is used. The simple past in (40b) indicates that this state is turned into an eventuality. This explains why trois fois still does not allow for a relational reading: it is impossible to create a state “three times (Marie rentre) (Paul monter)”, due to the incompatibility of trois fois/three times and a stative interpretation.

We can conclude at this point that Qs that allow the relational reading cannot be (semi-)independent quantity expressions, as Q expressions must be compatible with a stative interpretation in order to allow for relational readings.

However, this cannot be a sufficient condition for allowing relational readings. Beaucoup ‘a lot’, which is compatible with stative tense forms, cannot yield a relational reading:

(42) Quand il est à Paris, Pierre va beaucoup au Louvre.
    ‘When he is in Paris, Pierre goes to the Louvre a lot.’
    NOT: ‘A lot of Pierres visits to Paris are visits during which Pierre goes to the Louvre.’

This shows us that the availability of the relational reading depends also on yet another property of frequency adverbs such as souvent. I will argue that this difference between beaucoup and souvent can be understood in terms of the opposition between degree expressions versus quantification over times. In this view, relational readings are possible with expressions that a. are compatible with a stative tense form (this excludes trois fois) and b. quantify over times (this excludes degree expressions).

In the relational reading, the quand-clause determines how the restriction of Q is interpreted. In what preceded we adopted the idea, following Von Fintel (1994), that frequency adverbs contain a hidden domain anaphor. This domain anaphor is the target of pragmatic anaphora resolution, which means that it is filled in by the context and the situation in which the sentence is uttered. In a sentence such as John often beats Mary at ping-pong, often is restricted to situations in which John and Mary play ping-pong and probably also by some further contextual factors. This contextual restriction can be linguistically expressed in a when-clause. The when-clause functions as a topic, and as such identifies the domain anaphor contained in the frequency expression. In this respect Von Fintel’s approach differs from many other approaches in which the when-clause is seen as the semantic restrictor of the quantifier. Partee (1991) for instance, proposes a tripartite structure of quantification that obtains for determiners and adverbial Q expressions alike. when-clauses are parallel to NPs:

(43)

\[
\begin{array}{c}
Q \\
\text{every} \quad \text{happy student} \quad \text{laughed} \\
\text{often} \quad \text{when it rains} \quad \text{we play soccer}
\end{array}
\]

Von Fintel argues that the schema in (43) may be a convenient meta-level notation. It is not the case however that the semantic (and syntactic) status of the noun phrase happy student

---

18 As we will see below, this formal representation will be slightly modified.
with respect to the Q every is the same as that of when it rains with respect to often. Instead of Partee’s tripartite structure, Von Fintel argues in favour of the following schema:

(44)

\[
S \quad \text{Restriction} \quad \text{Nuclear scope}
\]

\[
\text{Q} \quad \text{every} \quad \text{happy student} \quad \text{laughed}
\]

\[
\text{often} \quad \text{domain anaphor} \quad \text{we play soccer}
\]

identified by: when it rains

Within Partee’s view, the impossibility of having beaucoup in relational readings is not easily accounted for. Beaucoup can be interpreted with respect to an NP (cf. section 3.2). So if the quand-clause were similar to an NP, why would it be impossible to interpret beaucoup with respect to a quand-clause? Within Von Fintel’s approach, however, the quand-clause identifies the domain anaphor and it is not comparable to an NP which constitutes itself the restriction of the Q. The presence of the domain anaphor plays thus a crucial role in relating the Q expression and the quand-clause. As this anaphor is present in souvent and absent in beaucoup, we expect that relational readings are only possible in the context of souvent. In section 3 I adopted the idea that frequency adverbs contain a hidden element fois/times, which accounted for a number of properties of souvent. If we assume that fois can function as an anaphoric element which can be identified by a quand-clause, its presence allows us to account for the availability of relational readings in such a way that we can understand why this reading is not available for degree expressions such as beaucoup. Beaucoup lacks a hidden fois and is therefore incapable of introducing a relational reading.

Summarizing we can state that frequency adverbs such as souvent can have relational readings because they have two essential properties that are needed for such readings. First, they are compatible with a stative interpretation and homogeneous predicates. In this respect they differ from expressions such as trois fois. Second, they contain a hidden domain anaphor which makes sure that a preposed when-clause can modify them. In this respect they differ from degree expressions such as beaucoup.

4.2 Individual level predicates

The difference between beaucoup and souvent discussed in the previous section sheds light on a number of interesting contrasts between beaucoup and souvent that have been observed by Obenauer (1983, 1984, 1994). In the context of certain predicates, beaucoup fails to get a quantitative interpretation, but the use of souvent is still possible. In the examples in (49), beaucoup is completely excluded:

(45)

a. *Cette élève sait beaucoup la réponse.
   this student knows a lot the answer

a’. Cette élève sait souvent la réponse.
   this student knows often the answer

b. *Son jeu égale beaucoup celui de Lendl.
   her/his playing equals a-lot that of Lendl

b’. Son jeu égale souvent celui de Lendl.
    her/his playing equals often that of Lendl
In (46), *beaucoup* is allowed, but it can only be interpreted as an intensifier. The interpretation of the sentence is radically different depending on whether we use *beaucoup* or *souvent*:

\[(46)\]
\[
\begin{align*}
a & . \quad \text{J’ai beaucoup apprécié ses conseils.} \\
& \quad \text{‘I appreciated his advice a lot.’} \\
a’ & . \quad \text{J’ai souvent apprécié ses conseils.} \\
& \quad \text{‘I often appreciated his advice.’} \\
b & . \quad \text{Son regard m’a beaucoup impressionné.} \\
& \quad \text{‘His glance impressed me a great deal.’} \\
b’ & . \quad \text{Son regard m’a souvent impressionné.} \\
& \quad \text{‘His glance often impressed me.’} \\
c & . \quad \text{Cela a beaucoup accéléré la procédure.} \\
& \quad \text{‘That sped the procedure up a lot.’} \\
c’ & . \quad \text{Cela a souvent accéléré la procédure.} \\
& \quad \text{‘That often sped the procedure.’}
\end{align*}
\]

*Un peu* patterns with *beaucoup* while *trois fois* is excluded in all of these contexts.

When looking more closely to these examples, it turns out that they all contain individual level predicates. This allows us to understand the contrasts. The absence of the quantity reading of *beaucoup* can be understood when we take into account the meaning of individual level predicates. According to de Swart (1991), the set of spatio-temporal locations that is associated with an individual-level or ‘once only’ predicate is a singleton set for all models and each assignment of individuals to the arguments of the predicate. As a result, they lack a quantitative scale to which *beaucoup* can be applied. As shown in the previous section, *beaucoup* is incompatible with singular predicates. One could also say that the examples in (46) are similar to non-scalar adjectives, another context in which the use of *beaucoup* is blocked.

\[(48)\]
\[
\begin{align*}
\text{*peu/un peu dernier} & \quad \text{[non-scalar adjective ; cf. (46)]}
\text{little/a little last}
\end{align*}
\]

In all of these cases the use of *beaucoup* is excluded, because the XP it modifies does not provide *beaucoup* with a scale to which it could be applied.

The predicates in (45) on the other hand resemble abstract nouns and scalar adjectives, both of which allow for modification by *beaucoup*, but not for the quantitative use of *beaucoup*, given the absence of a quantitative scale in their denotation:

\[(49)\]
\[
\begin{align*}
a & . \quad \text{beaucoup de plaisir} \quad \text{[abstract noun ; cf. (45)]} \\
& \quad \text{a-lot of pleasure} \\
b & . \quad \text{peu/un peu difficile} \quad \text{[scalar adjective ; cf. (45)]} \\
& \quad \text{little/a bit difficult}
\end{align*}
\]

The observation that we are dealing with individual level predicates also accounts for the impossibility of *trois fois*. Given that we are dealing with ‘once only’ predicates, quantification is excluded. But what about *souvent*? First, it has to be noticed that *souvent* is in certain cases excluded in the context of predicates that disallow the quantitative use of *beaucoup* (note that the English translations of (50a-b) are as ungrammatical as their French counterparts):
The data in (50) follow if we take into account relational readings. Consider the well-known contrast in (51) (cf. Kratzer 1989):

(51)  

a. *When Mary knows French, she often knows it, well.
  b.  When Mary knows a foreign language, she often knows it well.

(51b) has a relational reading. The when-clause contains an indefinite, which is the antecedent of a pronoun (a so-called donkey anaphor) in the consequent clause. This makes it possible for souvent to quantify over assignments: there is a set of events each of which is characterised as ‘Mary knows x’ where x is a foreign language. For most of the members of this set, it obtains that ‘Mary knows x well’. As a result, the ‘once only’ character of savoir is circumvented.

Turning back now to the examples of Obenauer in which souvent contrasts with rarement, we can observe that they all must have a relational reading and they all contain a donkey anaphor. This becomes clear when we look at the paraphrases of (45a’,b’) and (46a’–c’) in (52):

(52)  

a. Often when a question is asked, she knows the answer to it/that question.
  b. Often when she plays tennis, her playing resembles that of Lendl.
  c. Often when she gave me advice, I appreciated it/the advice she gave.
  d. Often when I saw his look, it/ the look I saw impressed me.
  e. Often when a procedure was followed, that speeded it up/ speeded up the procedure that was followed.

These are the only readings the sentences can have, and that is what we expect, given the presence of the individual level verb.

### 4.3 Relational readings, strength and iteration

Relational readings do not implicate iteration of the situation described by the predicate in the main clause. As we have seen in section 3.3, non-relational souvenir indicates that a given event took place many times. This is not the case, however, in the examples in (53), where we are dealing with a relational reading. In order to illustrate the point even more clearly, souvent is in these examples opposed to its antonym rarement.

(53)  

a. Quand Pierre voit Sylvie, il est souvent de bonne humeur.
  ‘When Pierre sees Sylvie, he is often in a good mood.’
  b. Quand Pierre voit Sylvie, il est rarement de bonne humeur.
  ‘When Pierre sees Sylvie, he is seldom in a good mood.’
The frequency adverb indicates the proportion of times at which Pierre sees Sylvie and he is in a good mood with respect to the number of times he sees her. The sentences do not implicate that the number of times Pierre is in a good mood is particularly important (souvent) or unimportant (rarement). Basically, we know very little about the number of times Pierre is in a good mood. In (53a), it is possible that he is hardly ever in a good mood, but that he usually gets in a good mood whenever he has the chance to run into Sylvie. On the other hand it might be that Pierre is constantly in a good mood, except for may be one of the times he saw Sylvie. Moreover, if Pierre saw Sylvie on Friday and on Saturday, and at both occasions he was in a good mood, the sentence does not give any information about Pierre’s mood in between these occasions. Similarly, (53b) can be true even though Pierre is very often in a good mood, except for the times when he runs into Sylvie.

The opposition between the relational and the non-relational reading of souvent is comparable to the opposition between the strong and weak reading of many (for a detailed comparison of meanings of frequency adverbs and determiners within the framework of generalized quantifiers, cf. De Swart 1991). Consider the sentences in (54):

(54)  a. There are many books in the library.
    b. Many of the books are interesting.

There-sentences force a weak interpretation of many (cf. Milsark 1977). Partitives, as in (54b), only have a strong reading. In (54a), we are dealing with a large number of books. In (54b), however, many has a proportional reading. We have to take the proportion of books into account: a large proportion of a previously determined set of books is said to be interesting. Depending on the size of this set, we will determine what counts as many. In (53), the total number of times Pierre is in a good mood is left undetermined. Similarly, the sentence in (54b) does not say anything about the number of interesting things. This is only to be expected, given conservativity. Note that the nominal case and the verbal case are slightly different. In (54b), each interesting book is a separate interesting object. In (53), the events in which Pierre sees Sylvie only overlap with situations in which Pierre is in a good mood. They do not necessarily involve separate situations in which Pierre is in a good mood.

We can conclude that souvent is strong in relational sentences, while it is weak in non-relational sentences. The inherently iterative reading of souvent (the ‘many times’ reading) is the weak reading. The strong reading does not say much about the number of times the event described in the consequent occurred. It indicates the proportion of the events described by the antecedent clause that co-occur with situations in which the consequent clause holds.

Certain frequency expressions, of which we would like to say that they quantify over times, on a par with souvent, only have a strong reading. This is for instance the case of toujours ‘always’. Given that toujours ‘always’ involves universal quantification, and that universal quantification is necessarily strong, this is not surprising. Compare for instance the sentences in (55), which clearly do not have the same interpretation (see also section 5.4 below):

(55)  a. Jean regarde ma sœur tout le temps.
     ‘Jean looks at my sister all the time.’
    b. Jean regarde toujours ma sœur.
     ‘Jean always looks at my sister.’
(55a) corresponds to a situation in which Jean keeps looking at my sister. (55b), on the other hand, describes a habit of Jean. He looks at my sister whenever he has the chance to do so. A question is whether this analysis should be extended even to cases such as (56).\footnote{The intended reading of *toujours* is ‘always’ in this example. As the reviewer pointed out, *toujours* can also mean ‘still’ in this sentence. I will leave this interpretation of *toujours* out of consideration.}

(56) La porte est toujours ouverte.

‘The door is always open.’

According to De Swart (1991: 280), *toujours* in sentences such as (56) is not a frequency expression but a phase quantifier. As a phase quantifier *toujours* can be assigned the following informal characterisation: ‘P is the case at the reference time R and indefinitely long before and afterwards.’ The only frequency adverbs that may function as phase quantifiers are *toujours* and *jamais*, as these involve at most one interval that is characterised by the predicate P (in the case of *toujours*) or $\neg$P (in the case of *jamais*). Interestingly, however, other frequency adverbs, such as the ones in (57), seem to have similar readings:

(57) a. La porte est le plus souvent ouverte.
   b. La porte est parfois ouverte.

‘The door is usually/sometimes open.’

The sentence in (57a) can be used to indicate that the chance to find the door open is rather large. This can be illustrated by the fact that we can use (57a) in the following context:

(58) Pierre forgot his sweater in Sylvie’s house. Jean tells him:

   Tu peux toujours essayer d’aller chercher ton pull dans la maison de Sylvie. Sa porte est le plus souvent ouverte, donc même si elle n’est pas là, tu pourras probablement rentrer.

   ‘You can always try to get your sweater in Sylvie’s house. Her door is usually open, so even if she turns out to be absent, it will probably be possible to go inside.’

The sentences in (58) suggest (probably by conversational implicature) that in some cases the door is closed. This in turn implies that there are several intervals characterised by P, and not a single one, which makes the example incompatible with an analysis in terms of phase quantification. I leave the analysis of the readings of the frequency adverbs in (56)-(58) for further research.

4.4 Setting independent readings and relational readings
In the type of interpretation illustrated by the examples (56) and (57) above, frequency adverbs are very close to temporal Q adverbs such as *de temps en temps* ‘from time to time’ and *tout le temps* ‘all the time’. However, there is an interesting difference between this latter class of expressions and frequency expressions in terms of dependency of the Q adverb with respect to a situation described in the preceding context, as shown by Molendijk & De Swart (1998).
Frequency adverbs such as *souvent* and *parfois* introduce a so-called independent reading, which I will call a ‘setting independent reading’ here, in order to avoid confusion with the independent interpretations of cardinal count expressions discussed above. The setting independent reading is illustrated in the fragment in (59):

(59) Pauline et Jean jouent dans le jardin. Il la taquine souvent/parfois. Mais maintenant (qu’ils jouent dans le jardin), il ne la taquine pas.
‘Pauline and Jean play in the garden. He teases her often/sometimes. But now (that they play in the garden), he does not tease her.’

The interpretation of *souvent*/*parfois* is not dependent on what is referred to in the first sentence (the setting). This is why the third sentence is appropriate in this context and does not lead to a contradiction.

In this respect *souvent* and *parfois* differ from setting dependent quantifiers such as *de temps en temps* ‘from time to time’. *De temps en temps* necessarily refers back to a contextually determinable situation, which it qualifies globally. This can be illustrated by the fragment in (60). The second sentence, which contains *de temps en temps*, must be interpreted such that it globally qualifies the situation described in the first sentence. As a result, the third sentence of (60) leads to a contradiction:

(60) Pauline et Jean jouent dans le jardin. De temps en temps, ils s’assoient dans l’herbe. #Mais maintenant (qu’ils jouent dans le jardin), ils ne s’assoient pas dans l’herbe.
‘Pauline and Jean play in the garden. From time to time, they sit down in the grass. But now (that they play in the garden), they do not sit down in the grass.’

If we turn to degree adverbs that are compatible with the present tense, we can observe that they are similar to the dependent adverbs. Given that *beaucoup* is not felicitous in combination with small time intervals, we have to slightly adapt the example:

(61) Pauline et Jean passent leur vacances au bord de la mer. Ils lisent beaucoup. #Mais maintenant (qu’ils passent leurs vacances au bord de la mer) ils ne lisent pas.
‘Pauline and Jean are on vacation at the sea side. They read a lot. But now (that they are on vacation at the sea side) they don’t read.’

A further observation about the dependent/nondependent contrast is, that the fragments become fine once we add *normalement* ‘normally’ or *en général* ‘in general’ in front of the sentence containing the dependent adverb. This shows that sentences containing the dependent adverb do not need to make global reference to a concrete situation.

Independency seems to be correlated with the availability of the relational reading. *De temps en temps* is incompatible with relational readings, on a par with degree adverbs such as *beaucoup*:

(62) Quand il est à Paris, Paul va de temps en temps au Louvre.
‘Whenever he is in Paris, Paul goes now and then to the Louvre.’
NOT: ‘Sometimes when he is in Paris, Paul goes to the Louvre.’
This suggests that the independent readings might be the result of the possibility of triggering a relational reading, which allows us to give an account for the possibility of independent readings. The sentence containing *parfois/souvent* in (59) can be interpreted as follows: When they are together, or, alternatively, when they are playing together in the garden, Jean sometimes/often teases Pauline. This is expected, given that the domain anaphor corresponding to the restriction of *parfois/souvent* will be contextually identified. The antecedent of the domain anaphor cannot be a concrete, singular situation as this would result in vacuous quantification. As a result, the sentence containing *souvent/parfois* must be interpreted independently of the concrete situation described at the beginning of the fragment in (59). In the case of dependent quantifiers, a ‘setting independent’ reading hinges on the explicit presence of a frequency term (*normalement, en général*), which allows us to accommodate a restriction and a different setting for the interpretation of the dependent adverb.

The discussion in this section shows that temporal Q-adverbs such as *de temps en temps* constitute yet another class of Q-adverbs. Note that other Q expressions that contain *temps* do allow for relational readings. *La plupart du temps* ‘most of the time’ for instance, can act as a frequency adverb when used in a relational sentence. In sentences with an initial temporal modifier such as *pendant nos vacances* ‘during our vacation’, however, it rather functions as a temporal expression, quantifying over amounts of time. The two uses are illustrated in (63):

(63)  
\[ \begin{align*}  
\text{a. } & \text{Quand Pierre voit Sylvie, il est la plupart du temps de bonne humeur.} \\
& \text{‘When Pierre meets Sylvie, he is usually/ most of the time in a good mood.’} \\
\text{b. } & \text{Pendant nos vacances, Pierre était la plupart du temps de bonne humeur.} \\
& \text{‘During our vacation, Pierre was most of the time in a good mood.’} 
\end{align*} \]

Thus some temporal Q-adverbs can be used as frequency adverbs, while others do not. It remains to be investigated under what conditions the frequency reading becomes available.

5 Conclusions

*Beaucoup* and *souvent* turn out to have in common that they define dependent quantities, which makes it possible to interpret them in such a way that they are dependent on a time interval. As a result they can be used in homogeneous predicates, and can be combined with tense forms that require such predicates. This property distinguishes *beaucoup* and *souvent* from *x times* expressions such as *trois fois* and *plusieurs fois* and from the independent degree adverb *un peu*.

In other respects, *souvent* resembles expressions such as *trois fois*. Both can take scope over an indefinite, both imply iteration of the event. *Beaucoup* differs from these expressions by being a true degree expression. It combines with expressions that contain a scale with respect to which they can be interpreted. Degree adverbs are typically not restricted to ordinary adverbial positions. They modify nouns, for instance, and sometimes also adjectives and gradable verbs such as *appréciier* ‘to appreciate’.

An important conclusion of the paper is that frequency adverbs (*souvent*) have to be distinguished from all other Q adverbs because they allow for relational readings. It has been argued that these readings depend on two crucial properties of frequency adverbs: their

---

\[ ^{20} \text{I would like to thank Richard Kayne for pointing out to me that } \text{*la plupart du temps* acts as a frequency adverb in relational sentences.} \]

---

31 --Adverbs and quantification: degrees versus frequency, to appear in *Lingua*
compatibility with a stative interpretation on the one hand, and the presence of the abstract element *fois* on the other. The abstract element *fois* functions as the hidden domain anaphor postulated by Von Fintel (1994). *X*-times adverbs (*trois fois*) and degree adverbs (*beaucoup*) pattern alike and do not allow for relational readings, but this is not because they have anything in common: whereas *trois fois* lacks a dependent interpretation which would make it compatible with stative tense forms, *beaucoup* fails to range over *quand*-clauses because it lacks a domain anaphor. Thus the analysis shows that they are both incompatible with relational readings for different reasons.

In the last part of the paper we have seen that the classification of adverbial Q expressions can be further extended in order to include so-called dependent quantifiers such as *de temps en temps* and *tut le temps*. Contrary to degree adverbs, these expressions can be argued to contain a Q expression and a restriction (*temps*). Yet they do not allow for relational readings, which in my view causes the fact that they trigger a setting dependent reading in terms of Molendijk & De Swart (1998). However, it is not the case that temporal quantifiers containing *temps* as their restriction never allow for relational readings. *La plupart du temps* ‘most of the time’ allows for a relational frequency reading. In the relevant contexts, the expression may be interpreted as if it were a frequency adverb. Given the difference between the two types of durative expressions, one would like to know why *temps* is sometimes but not always a proper antecedent for a *quand*-clause. This is an issue that needs further investigation.

Another issue deserving further research concerns the cross-linguistic scope of the analysis. As stated in the introduction, the French facts are not typically French and not even typically Romance: the same patterns can be found in Germanic languages such as English, as shown by the translations. This raises the question to what extent languages from other language families exhibit similar patterns as well. The appendix contains small sample of data from Hungarian, Dutch, Moroccan Arabic and Indonesian. The data show that the main generalizations described in this paper are found in these languages as well, which can be seen as a first indication that we might well be dealing with a cross-linguistically common pattern.
Appendix

This appendix contains a small set of data for three non Romance languages from different language families (Hungarian, Dutch, Moroccan Arabic and Indonesian). The data are a first indication that the phenomena dealt with in this paper have a much larger scope than French or Romance alone. More specifically, all of these languages have an adverbial Q expression that can also be used as a ‘determiner’ (1). This Q adverb, which can be identified as a degree adverb, has a global interpretation, contrary to the counterpart of often and souvenir (a frequency expression) (2). In contexts where the predicate is most easily interpreted as a count predicate, both the degree adverb and the frequency adverb can be used, yielding a similar interpretation (3). The examples in (4) show that frequency adverbs but not degree adverbs can have relational readings. Finally, the data in (5) indicate that the degree adverb cannot take scope over an indefinite, while frequency adverbs and expressions of the form x times can.

1. Hungarian

(1) a. sok könyv
   a.lot book
b. sok tea
   a.lot tea
   ‘a lot of books / tea’

(2) Gyakran esett, de nem esett sokat.
   often rain-PAST.3SG, but not rain-PAST.3SG much-ACC
   ‘It often rained but it did not rain a lot’

(3) a. János gyakran látogatja Marit
    János often visit-DEF.3SG Mari-ACC
    ‘János often visits Mary’

b. János sokat látogatja Marit
    János much-ACC visit-DEF.3SG Mari-ACC
    János visits Mari a lot

(4) a. Amikor Budapesten van, János gyakran megy a Nemzetibe
    When Budapest-on is János often go-3SG the National-into
    1. ‘Many of the times he visits Budapest, János goes to the National Museum’
    2. ‘Whenever he visits Budapest, János often goes to the National Museum’

b. Amikor Budapesten van, János sokat megy a Nemzetibe.
    when Budapest-on is, János a.lot go-3SG the National-into
    ONLY: ‘Whenever he visits Budapest, János often goes to the National Museum’

(5) a. János gyakran vett két kiló olivabogyót
    János often bought 2 kilo olive-acc
    ‘János often bought two kilo’s of olives’

b. János kétszer vett két kiló olivabogyót
    János twice bought 2 kilo olive-acc
    ‘János bought two kilo’s of olives twice’

33 – Adverbs and quantification: degrees versus frequency, to appear in Lingua
2. **Dutch**

(1) a. veel boeken  
   a.lot books  
   b. veel thee  
   a.lot tea  
   ‘a lot of books/ tea’

(2) Het heeft vaak geregend, maar het heeft niet veel geregend  
   it has often rained but it has not a.lot rained  
   ‘It often rained but it did not rain a lot’

(3) b. Jan komt vaak bij Marie  
    Jan comes often at Marie  
    a. Jan komt veel bij Marie  
    Jan comes a.lot at Marie  
    ‘Jan visits Marie a lot/often’

(4) a. Wanneer hij in Amsterdam is, gaat Jan vaak naar het Rijksmuseum  
    when he in Amsterdam is, goes Jan often to the Rijksmuseum  
    1. ‘Many of the times he visits Amsterdam, Jan goes to the Rijksmuseum’  
    2. ‘Whenever he visits Amsterdam, Jan often goes to the Rijksmuseum’  
    b. Wanneer hij in Amsterdam is, gaat Jan veel naar het Rijksmuseum  
    when he in Amsterdam is, goes Jan a.lot to the Rijksmuseum  
    only : ‘Whenever he visits Amsterdam, Jan often goes to the Rijksmuseum’

(5) a. Jan heeft vaak 2 kilo olijven gekocht  
    Jan has often 2 kilo olives bought  
    b. Jan heeft drie keer 2 kilo olijven gekocht  
    Jan has three times 2 kilo olives bought  
    c. *Jan heeft veel 2 kilo olijven gekocht  
    Jan has a.lot 2 kilo olives bought

3. **Moroccan Arabic**

(1) a. bzzaf dial lktub  
    lots of books  
    b. bzzaf dial attai  
    lots of tea

(2) Dima kttaih shtta walakin ma kattaih sh bzzaf  
    often fall rain but NEG falls NEG a lot

(3) a. Mouhamed dima kymshi and Hasna  
    Mouhamed often goes to Hasna

---

34 – *Adverbs and quantification: degrees versus frequency, to appear in Lingua*
(4) a. Mnin ka y kun f Essaouira, Mouhamed kymshi dima ll Mmthaf
when he.be in Essouira Mouhamed he.goes often to Museum
Lbarhri
Lbarhri
1. ‘Many of the times he visits Essouira, Mouhamed goes to the Lbarhri
museum’
2. ‘Whenever he visits Essouira, Mouhamed often goes to the Lbarhri
museum’
b. Mnin ka y kun f Essaouira, Mouhamed kymshi bzbzaf ll Mmthaf
when he.be in Essouira Mouhamed he.goes bzbzaf to Museum
Lbarhri
Lbarhri
‘Whenever he visits Essouira, Mouhamed often goes to the Lbarhri
museum’

(5) a. Mouhamed shra dima juj kilo dial zitwn
Mouhamed bought often two kilo of olives
b. Mouhamed shra juj kilo dial zitwn juj marat
Mouhamed bought two kilo of olives two times
c. *Mouhamed shra juj kilo dial zitwn bzbzaf
Mouhamed bought two kilo of olives a lot

4. **Indonesian**

(1) a. banyakbuku
   a.lot book
b. banyakteh
   a.lot tea
   ‘a lot of books/tea’

(2) a. Yanto sering memakan pisang\(^{21}\)
    Yanto often ACTIVE.eat banana
    ‘Yanto often eats banana’s’
b. Yanto banyak memakan pisang
    Yanto a.lot ACTIVE.eat banana
    ‘Yanto eats bananas a lot’

(3) a. Yanto sering mengunjungi Dewi
    Yanto often ACTIVE.visit Dewi
b. Yanto banyak mengunjungi Dewi
    Yanto a.lot ACTIVE.visit Dewi

\(^{21}\) In Indonesian to rain corresponds to the sequence turun hujan ‘fall rain’ containing the noun hujan ‘rain’. This makes an exact translation of the corresponding examples in the other language samples difficult to interpret: it rains a lot translates as banyak hujan ‘a lot of rain’. The examples in (2) illustrate, however, that there is a clear difference in meaning between banyak and sering in the context of mass predicates, while this difference is absent in the examples in (3), where a count predicate is used.
(4) a. Bila Yanto berada di Jakarta, dia sering mengunjungi Museum Nasional\(^{22}\) when Yanto be in Jakarta he often visits Museum Nasional ‘Whenever Yanto is in Jakarta, he visits the National Museum a lot’

b. Bila Yanto berada di Jakarta, dia banyak mengunjungi Museum Nasional when Yanto be in Jakarta he a.lot visits Museum Nasional ‘Whenever Yanto is in Jakarta, he visits the National Museum a lot’

(4’) a. Apabila Yanto terlambat tidur, dia sering mendapat sakit kepala when Yanto late sleep he often gets headache ‘Many of the times Yanto goes to bed late, he gets a headache’

b. Apabila Yanto terlambat tidur, dia banyak mendapat sakit kepala when Yanto late sleep he a.lot gets headache ‘Whenever Yanto goes to bed late, he gets a heavy headache’

(5) a. Yanto sudah sering membeli 2 kilo buah zaitun Yanto already often buys 2 kilo fruit olive ‘Yanto often bought two kilos of olives’

b. Yanto sudah 2 kali membeli 2 kilo buah zaitun Yanto already 2 times buys 2 kilo fruit olive ‘Yanto bought two kilos of olives twice’

c. *Yanto sudah banyak membeli 2 kilo buah zaitun Yanto already a.lot buys 2 kilo fruit olive

\(^{22}\) For some reason that I do not understand, the speakers I consulted did not get a relational reading for (4a). However, the relational reading is possible with \textit{sering} when the non-relational reading is not readily available, as in (4’). Crucially, \textit{banyak} does not allow for a relational reading. In (4b’) \textit{banyak} is interpreted as a degree modifier indicating the degree of headache.

---

36 – Adverbs and quantification: degrees versus frequency, to appear in Lingua
Acknowledgements
This paper has been presented at various occasions: Going Romance 1999, research seminars in Nijmegen and Utrecht, a meeting with members of the PICS project group on adverbs and lectures at the Universitaire Instelling Antwerpen and the Sorbonne. Besides the audiences of these presentations, I would like to thank Anne Abeillé, Claire Beyssade, Lisa Cheng, Francis Corblin, Danièle Godard, Helen de Hoop, Fred Landman, Richard Kayne, Hans Obenauer, Johan Rooryck, Susan Rothstein, Henriëtte de Swart, Liliane Tasmowski and Elisabeth Villalta for their comments on this paper and/ or on issues discussed in this paper. A special word of thanks for the anonymous reviewer, who carefully read the manuscript and gave me very useful comments. Anikó Lipták, Kriszta Szendrői, Lilie Roosman, Nurhayu Santoso, Jan Voskuil and Nouredine Elouazizi kindly helped me out with the data in the appendix. Obviously all usual disclaimers apply. The financial support of the Netherlands Organisation for Scientific Research (NWO) is also gratefully acknowledged (NWO dossier 355-70-003).
References


Partee, Barbara, 1995. Quantificational structures and compositionality. In: E. Bach et al.,
Schubert, Lenhart & Francis Pelletier, 1989. Generally speaking or using Discourse
Properties, types and meaning II. Reidel, Dordrecht, 193-268.
de Swart, Henriëtte, 1988. *Quelques fois* and *quelquefois*: about iteration and frequency in
Foris, Dordrecht, 149-158.
Tovena, Lucia (2001a). Between mass and count. In: Karine Mergerdoomian and Leora
Anne Bar-el (Eds.), Proceedings of WCCFL. Cascadilla Press, Medford, 565-578.
Tovena, Lucia (2001b). Determiners and weakly discretised domains. In: Josep Quer, Jan
Schroten, Mauro Scoretti, Petra Sleeman & Els Verheugd, Romance Languages and
d’abstractions. Peeters, Louvain.
Verkuyl, Henk, 1993. A theory of aspectuality. The interaction between temporal and
Verkuyl, Henk, Co Vet, Andrée Borillo, Myriam Bras, Anne Le Draoulec, Arie Molendijk,
Francis Corblin and Henriëtte de Swart (Eds.), Handbook of French semantics. CSLI,
Stanford, 233-270.
Massachusetts at Amherst, distributed by GSLA.
Semantics 3, 1-77.
Westerståhl, Dag, 1985. Logical constants in quantifier languages. Linguistics & Philosophy
8, 387-413.

40 --Adverbs and quantification: degrees versus frequency, to appear in Lingua