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Adverbs of Quantity: Entities of Different Kinds*

Aniko Csirmaz

1 Introduction

Adverbs which specify the quantity or frequency of multiple situations are sometimes treated as a homogeneous group, or as a group of adverbs with distinctions along different lines from what is proposed below. This paper provides arguments for distinguishing three types of adverbs in this group: multiplicatives, frequency adverbs, and adverbs of quantification. The paper is structured as follows. Section 2 notes the properties that distinguish the adverb types noted above and some non-distinguishing characteristics as well. Section 3 points out some morphological generalizations about adverbs belonging to each type. Section 4 provides some extensions and concludes the paper.

The following conventions are employed in the paper. The term *situation* is used to describe a situation that the adverb of quantity applies to, usually one of multiple, iterated situations. *Situation description* refers to the description of the situation in the examples on hand. Subindices on the adverb indicate the specific adverb type (M(ultiplicative); F(requency adverb); or Q (adverb of quantification)).

2 Distinctions Among Adverbs

The adverbs which characterize multiple situations—either in terms of number of occurrence or in terms of frequency or quantity—will be collectively referred to as "adverbs of quantity." Within this class of adverbs, multiplicatives, frequency adverbs and adverbs of quantification display significantly different characteristics. Taking Jóhannsdóttir (2005, 2007) and van Geenhoven (2004, 2005) as a departure point, this section enumerates some properties that delineate the three classes of adverbs.

2.1 Adverb Types

The types of adverbs of quantity can be characterized as follows. *Multiplicatives*, which include adverbs such as *twice, five times,* and *many times*, specify the cardinality of multiple situations. In addition, these adverbs are pluractional operators; they can introduce plurality of situations themselves. In other words, multiplicatives can modify a situation description which, if no multiplicative is present, cannot be iterated. In this case, the multiplicative introduces iteration in addition to specifying the number of occurrences.

The pluractional nature of multiplicatives is shown in the following examples. In absence of a multiplicative, the description can only refer to a single occurrence of the situation; no iteration is possible (1a, 2a). If a multiplicative is present, however, then the description can refer to multiple situations (1b, 2b). The unique situation interpretation in the Hungarian example (2a) is a consequence of the semelfactive suffix *-int* on the verb.

(1) a. Fred nodded.
b. Fred nodded twice$_M$.

(2) a. Feri ból-int-ott.
F.NOM nod-SEMELFACTIVE-PAST.3.SG
'Feri nodded (once).' (Hungarian)

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b. Feri kétszer$_M$ ból-int-ott.
F.NOM twice nod-SEMELFACTIVE-PAST.3.SG
'Feri nodded twice.' (Hungarian)

Frequency adverbs, including both relative (3a) and fixed frequency adverbs (3b), specify the frequency of multiple situations (cf. Stump, 1985). The frequency can be determined either with respect to a fixed, absolute time interval, or the adverb can specify—in the case of relative frequency adverbs—the frequency of occurrence with respect to some contextually determined standard.

(3) a. frequently, occasionally, rarely
b. daily, hourly

In contrast with van Geenhoven (2004, 2005), I suggest that frequency adverbs should not be seen as being pluractional operators necessarily. In other words, frequency adverbs do not yield iterated situations, unlike multiplicatives. Rather, they can modify situation descriptions that are iterable independently of the frequency adverb modification. Frequency adverbs in Hungarian, for example, cannot appear if the verb bears a semelfactive affix (cf. (2a)), where the affix enforces a unique situation interpretation:

(4) Feri sűrűn$_F$ * ból-*int*-ott / ból-*ogat*-ott.
F.NOM frequently nod-SEMELFACTIVE-PAST.3.SG / nod-ITERATIVE-PAST.3.SG
'Feri frequently *nodded once / nodded multiple times.'

The non-pluractionality of frequency adverbs is supported by the following set of examples. Building on (5a) and (5b), van Geenhoven (2004) argues that frequency adverbs are pluractional operators. The quantificational *every five minutes* permits a natural interpretation where it is distinct golf balls that are shot into the lake (the iterative interpretation—involving either a single golf ball or multiple golf balls—is enforced by the durative *for*-adverb).

(5) a. Jim hit a golf ball into the lake for an hour.
(same golf ball; # different golf balls); (van Geenhoven, 2004)
b. Jim hit a golf ball into the lake *every five minutes* for an hour.
(same golf ball; different golf balls); (van Geenhoven, 2004)
c. Jim hit a golf ball *frequently*$_F$ into the lake for an hour.
(same golf ball; # different golf balls)

It should be noted, however, that if a frequency adverb is present, as in (5c), the resulting interpretation is identical to the adverb-less (5a). The frequency adverb by itself is not a pluractional operator and cannot yield varying participants per iterated situation. In (5b) it is the universally quantified *every five minutes* which is responsible for this interpretation[1].

Adverbs of quantification are purely quantificational and quantify over situations of a specific type. Some examples from English are the following:

(6) always, often, sometimes

In contrast with frequency adverbs, adverbs of quantification can introduce iteration. In Hungarian, for example, adverbs of quantification can appear with a verb bearing a semelfactive suffix. The resulting interpretation is that there were several situations of Feri nodding once.

(7) Feri gyakran$_Q$ ból-int-ott.
F.NOM often nod-SEMELFACTIVE-PAST.3.SG
'Feri often nodded.'

[1]An adverb of quantification can also introduce distinct participants, as in *For an hour, Jim often hit a golf ball into the lake* (assuming that there is a standard for the number of such situations).

In order to account for the temporal restriction on an utterance such as (8), which may hold only for a specific time interval but not outside of it, it is assumed that a time interval is the restrictor of the quantifier in question.

(8) Fred always$_Q$ / often$_Q$ arrives late.

The adoption of a time interval as the restrictor yields a purely intersective interpretation, as in (9b). Proportional readings, which are available with adverbs of quantification (cf. (9c)), are ignored here.

(9) a. Fred often$_Q$ drank mango juice.
b. There were many (maximal, disjoint) situations where Fred drank mango juice.
c. The ratio of situations of Fred drinking mango juice and of those of Fred drinking something is high relative to a contextually determined standard.

2.2 Distinguishing the Adverb Classes

The three types of adverbs of quantity described above are distinguished by a number of properties. This subsection enumerates a number of differences among these adverbs, while some characteristics that fail to reliably identify the adverb classes are mentioned in the following subsection. Section 3 lists additional formal properties which provide a heuristic for establishing adverb class membership.

2.2.1 Multiplicatives and Adverbs of Quantification

Multiplicatives and adverbs of quantification both specify the quantity of iterated, repeated events (and they can both introduce iteration). The two types of adverbs show similar behavior, and they are only distinguished by the formal properties noted in section 3.

If only absolute multiplicatives are considered, it appears that at least two properties distinguish multiplicatives and adverbs of quantification: the availability of (a) proportional interpretation and (b) habitual readings.

As noted above, adverbs of quantification permit a proportional interpretation, where the adverb specifies the relative proportion of (multiple) situations of some type, rather than the mere quantity of situations. No such interpretation is possible for a multiplicative such as *three times*.

(10) a. Fred often$_Q$ invited Phil.
b. Proportional reading is possible
(Situations of Fred inviting Phil) / (Situations of Fred inviting someone) $>$ a contextually determined standard

(11) a. Fred invited Phil three times$_M$.
b. Proportional readings are not available
(Situations of Fred inviting Phil) / (Situations of Fred inviting someone) $= 3$

In addition, adverbs of quantification can yield habitual interpretation, but a multiplicative like *twice* cannot do so. For example, while (12a) can describe a habit, in (12b) neither Fred inviting Phil, nor Fred inviting Phil twice can occur habitually.

(12) a. Fred often$_Q$ invited Phil.
b. Fred invited Phil twice$_M$.

Note, however, that both *three times* and *twice* are absolute multiplicatives. A vague multiplicative such as *many times* behaves differently. (13) can have a proportional interpretation. If Fred invited Filomena and Frank only once, but Phil three times, then (13) is true: compared to the standard, Phil was invited on many occasions. Similarly, (13) can have a habitual interpretation.

(13) Fred invited Phil many times$_M$.

In sum: neither proportional nor habitual interpretations distinguish multiplicatives and adverbs of quantification. Rather, they distinguish absolute and vague quantifiers (including determiners as well as adverbs).

2.2.2 Frequency Adverbs and Adverbs of Quantification

Frequency adverbs and adverbs of quantification are, however, distinguished by a number of criteria. These include atemporal statements, *when*-clauses and unique situations.

Quantification over abstract, atemporal entities has been proposed as distinguishing between the two adverb types (Jóhannsdóttir, 2005, 2007). Abstract entities lack a time coordinate, and an adverb of quantity in sentences such as (14) must have an interpretation independent of any time interval or specific situation (Lewis, 1975). In these examples, only adverbs of quantification are acceptable:

(14) a. A quadratic equation usually$_Q$ has two different solutions.
b. * A quadratic equation constantly$_F$ has two different solutions.

Nevertheless, frequency adverbs can also appear with abstract entities, as shown below.

(15) It is frequently$_F$ / rarely$_F$ the case that a quadratic equation has (more than) two solutions.

The biclausal structure of (15) sheds some light on the source of the contrast. The frequency adverb in (15) modifies the times when the statement expressed by the embedded clause is evaluated. Thus, the quadratic equation in question can vary according to the cases considered.

Individual-level predicates also reveal an asymmetry between the two adverbs. Adverbs of quantification are acceptable with these predicates, but frequency adverbs are marked:

(16) a. Germans are often$_Q$ tall.
b. * Germans are frequently$_F$ tall.

The interpretation with *when*-clauses distinguishes the two types of adverbs as well[2]. If the main clause contains an adverb of quantity, only adverbs of quantification can take scope over the *when*-clause. This difference is responsible for the following contrast in interpretation:

(17) a. When Fred was talking on the phone, Phil often$_Q$ shut the door loudly.
b. Possibly Phil shut the door once per phone conversation; true for many situations of Fred talking on the phone.

(18) a. When Fred was talking on the phone, Phil frequently$_F$ shut the door loudly.
b. Multiple instances of shutting the door during one conversation; can hold for a single phone conversation, or for Fred's phone conversations in general.

The adverb of quantification can take scope over the entire clause, with the resulting interpretation that there were many situations such that when Fred was talking on the phone, Phil shut the door loudly (cf. (17)). Such an interpretation is not available for frequency adverbs; frequency modification does not extend to the *when*-clause (18).

Finally, once-only predicates, which can hold only once for some participant in the situation, also behave differently with respect to the two adverb types. Adverbs of quantification are grammatical, while frequency adverbs are marked in such examples:

(19) a. Fred often$_Q$ ate a sandwich.

[2]The different behavior of adverbs with *when*-clauses is also acknowledged by Jóhannsdóttir (2005, 2007) (who considers adverbs that occur with perfective and progressive situation descriptions), from a different perspective.

b. Fred often$_Q$ wrote a letter.

(20) a. ? Fred frequently$_F$ ate a sandwich. / Fred ate a sandwich frequently$_F$.

b. ? Fred frequently$_F$ wrote a letter.

The differences between the two adverb classes can be ascribed to the following properties of the adverbs. On the assumption that frequency adverbs are not pluractional operators, as discussed in section 2.1, the difference with once-only predicates is expected. If frequency adverbs, unlike adverbs of quantification, can only take surface scope and require a time argument (cf. section 2.1), then the remaining differences between the adverbs also follow.

Establishing the difference between the class of frequency adverbs and that of adverbs of quantification is especially relevant since several discussions of adverbs of quantity (including de Swart, 1993 and Cinque, 1999, among others) do not distinguish between these classes, or do not provide explicit criteria for doing so.

2.3 Non-distinguishing Properties

A number of characteristics of adverbs of quantity have been described as distinguishing properties, which identify the class of frequency adverbs and that of adverbs of quantification (cf. van Geenhoven, 2005; Jóhannsdóttir, 2005, 2007). In this section I briefly argue that these properties cannot serve as reliable indicators of adverb class.

Jóhannsdóttir (2005, 2007) argues that focus sensitivity distinguishes the two types of adverbs. Specifically, she claims that different placement of focus (on some constituent other than the adverb) yields different truth conditions for adverbs of quantification, but not for frequency adverbs.

The following examples challenge this view. Consider a situation with the following participants: Fred, Phil and Filomena, two donuts and a danish.

(21a) is true and (21b) is false if Phil also received a danish often from Fred. Similarly, (22a) is true, while (22b) is false if Phil frequently received a danish (as well as a donut) from Fred. (21a) is false, while (21b) is true if not only Phil, but also Filomena received a donut often. Finally, if both Phil and Filomena are frequently given a donut by Fred, then (22a) is false, and (22b) is true.

The distinct placement of focus can thus affect truth conditions with both frequency adverbs and adverbs of quantification[3].

(21) a. Fred often$_Q$ gave PHIL a donut.

b. Fred often$_Q$ gave Phil a DONUT.

(22) a. Fred frequently$_F$ gave PHIL a donut.

b. Fred frequently$_F$ gave Phil a DONUT.

The times affected were also suggested to distinguish the two types of adverbs (cf. van Geenhoven (2005)). Under this view, frequency adverbs affect the event time and adverbs of quantification affect the topic time.

Minimally, this characterization needs to be further clarified, as the following example shows; and it is possible that it should be discarded as an identifying property. On the one hand, frequency adverbs can modify a time distinct from the event time (a time during which an atomic situation is iterated) (23a). In this case, it is the iterated, complex situation which occurs with the frequency specified. On the other hand, an adverb of quantification can affect either the event time (23b) or the iterated time (23c); it is not clear why the time affected should be equated with the topic time.

(23) a. Fred knocked (twice) frequently$_F$.

b. Fred often$_Q$ arrived late.

c. Fred often$_Q$ knocked (twice).

[3]This claim contrasts directly with that of Jóhannsdóttir (2005, 2007). If her observations are accepted, it is possible that truth conditions can remain identical with distinct focus placement with some frequency adverbs. This property, however, cannot be taken to reliably identify (all) frequency adverbs.

In addition, homogeneity was also suggested to distinguish the adverb classes in question (cf. van Geenhoven, 2004, 2005). According to the original observation, only frequency adverbs (but not adverbs of quantification) can affect homogeneity. Homogeneity is diagnosed by *for*-adverb modification; an adverb affects homogeneity if it can license *for*-adverbs.

In fact, both adverb types permit *for*-adverb modification, even if this is impossible whenever either adverb is absent:

(24) a. * For a month / for an hour, Fred discovered a flea.

b. For an hour, Fred coughed frequently$_F$.

c. For a (whole) month, Fred always$_Q$ discovered a flea on his dog (when he checked).

The complementary distribution of adverbs is also presented as a diagnostic of adverb classes. Under the strict uniqueness view (cf. van Geenhoven, 2005), any two adverbs which co-occur in a single clause must belong to distinct adverb classes. Other approaches to adverbs take a more permissive stance. Cinque (1999, 2004), for instance, assumes a more relaxed approach, and argues that at most two adverbs of the relevant type can occur, since there are two distinct syntactic positions for them.

The uniqueness restriction cannot be upheld for either adverb type (cf. (25, 26)). Furthermore, even though three—and possibly more—adverbs of the same type are marked, they are nevertheless possible, as shown below. Therefore, this diagnostic also fails to distinguish frequency adverbs and adverbs of quantification (see also Ernst, 2004).

(25) a. Fred rarely$_F$ coughed frequently$_F$.

b. Fred was regularly$_F$ shaking his head frequently$_F$.

(26) a. Fred often$_Q$ always$_Q$ contradicts the others.

b. The modem light is usually$_Q$ always$_Q$ often$_Q$ blinking.

3 Morphological Properties

In addition to the distinguishing characteristics noted above, formal, morphological properties can also be of help in identifying the different types of adverbs of quantity. The properties mentioned below are presented as generalizations, which are not predicted to hold necessarily for all languages. That is, the observations are presented as heuristics applicable in some, but not necessarily all languages.

3.1 Multiplicatives

Among adverbs of quantity, it is only multiplicatives which can appear as bare adverbs, or as adverbs with structural case marking. The following Korean example illustrates structurally case marked multiplicatives. The genitive marking on *once, twice* can also fall under this generalization[4].

(27) Yenghi-ka ku pyenci-lul twu pen-*ul* ilk-ess-ta.
Y-NOM the letter-ACC two times-ACC read-PAST-DEC
'Yenghi read the letter twice.' (Sohng, 2004)

If the multiplicative has some morphological marking other than structural case, then that marking can also appear when referring to occasions or times (e.g., *sometimes*), or in expressions of multiplication (cf. *two times four*).

[4]See Payne et al. (2007) for a different approach.

3.2 Frequency Adverbs

Frequency adverbs can differ in morphological form according to whether they are relative or fixed frequency adverbs. In Hungarian, fixed frequency adverbs have distributive morphology: the suffix has a clearly distributive interpretation if it appears on a stem other than a stem denoting a time interval. The distributive interpretation is shown for both fixed frequency adverb suffixes, *-ként* and *-OntA* below[5].

(28) a. ór-án-*ként*
hour-on-DISTRIBUTIVE
'hourly' (fixed frequency adverb)

b. mérföld-en-*ként*
mile-on-DISTRIBUTIVE
'by mile' (spatial measure)

c. szelet-en-*ként*
slice-on-DISTRIBUTIVE
'by slice' (distributive)

(29) a. het-*ente*
week-DISTRIBUTIVE
'weekly' (fixed frequency adverb)

b. darab-*onta*
piece-DISTRIBUTIVE
'by piece' (distributive)

Relative frequency adverbs in Hungarian display a generic adverbial suffix, *-n*[6]. The stem that the suffix attaches to has a temporal and spatial interpretation as well. That is, the same adverbial form can describe both temporal and spatial relative frequency:

(30) a. Feri sűrűn$_F$ / ritkán$_F$ sütött pizzát.
F.NOM frequently / rarely baked pizza.ACC
'Feri frequently / rarely baked pizza.' (relative frequency adverb)

b. Az erdőben sűrűn / ritkán nőttek a fák.
the forest-in frequently / rarely grew the trees.NOM
'The trees grew densely / thinly in the forest.' (spatial frequency)

c. A házak sűrűn / ritkán álltak az utcában.
the houses.NOM frequently / rarely stood the street-in
'The houses stood densely / thinly in the street.' (spatial frequency)

Other languages do not necessarily display a morphological difference between fixed and relative frequency adverbs. For a number of languages it is true, however, that both types of frequency adverbs bear a general adverbial suffix, or that the adverb and the corresponding adjective are homonyms (as in the case of the German *häufig* 'frequently'):

(31) a. week*ly*, semanal*mente* (Spanish), wöchent*lich* (German)

b. frequent*ly*, frequente*mente* (Spanish), häufig (German)

Given the presence of a general adverbial suffix on some frequency adverbs, it is not surprising that relative frequency adverbs can have an adjectival stem (cf. *a frequent / rare occurrence*). In addition, the corresponding adjective and adverb may be homonymous as well, as noted above.

[5]Capital letters in Hungarian examples mark an abstract vowel. The specific realization of the vowel is determined by vowel harmony.

[6]The suffix productively attaches to adjectives to form an adverb; cf. *kitűnő* 'outstanding' ∼ *kitűnő-en* 'in an outstanding manner.'

3.3 Adverbs of Quantification

The last group, adverbs of quantification, are unlike either multiplicatives or frequency adverbs. Adverbs of quantification are often morphologically simple, though at times a quantificational component can be detected. The Hungarian adverb of quantification *mindig* 'always,' for instance, transparently contains the universal quantifier *mind*; the universal quantifier morpheme is present, among others, in *minden-ki* 'everyone' and *minden-képpen* 'by all means.'

As expected, adverbs of quantification cannot, for the most part, be used as adjectives, and lack corresponding morphologically related adjectives as well (e.g. **an often / seldom occurrence*).

It was noted earlier that there are exceptions to these generalizations. For instance, the Hungarian adverb of quantification *gyakran* 'often' contains the general adverbial suffix *-n* and it has a related adjectival counterpart.

(32) a. gyakr-an 'often' (adverb of quantification)
b. gyakori 'frequent' (corresponding adjective)

In spite of these exceptions, the morphological heuristics noted above correctly distinguish between adverbs that show strong morphological or semantic similarity. Consider, for example, the Hungarian frequency adverb *időnként* 'sometimes' and the adverb of quantification *néha* 'sometimes.' The former adverb contains the distributive suffix *-ként* and behaves as a frequency adverb based on the properties discussed in section 2.2. The latter adverb, *néha*, does not contain a distributive suffix (however, an existential quantificational stem, *né-*, can be identified in the adverb)[7]. Similarly, the pair of Hungarian adverbs *rendszeresen* 'regularly' and *rendszerint* 'usually,' which both contain the stem *rendszer* 'system,' are distinguished by both the properties in section 2.2 and by morphological rules of thumb. *Rendszeresen* 'regularly' contains the general adverbial suffix *-n*, and it is therefore predicted to be a frequency adverb. *Rendszerint*, with neither an adverbial nor a distributive suffix, is expected to be an adverb of quantification. The predictions are borne out for both adverbs.

It is worth reiterating a point made earlier. Multiplicatives and adverbs of quantification are not distinguished by any of the non-morphological criteria discussed above. If the two adverb classes are to be distinguished, only morphological properties can do so.

4 Extensions

The variation in the specific properties of adverbs across languages and the distribution of these adverbs merits a more in-depth discussion. For reasons of space, however, only a few remarks on these issues are included in this section.

In addition to the morphological structure discussed in the preceding section, languages also differ in terms of the properties noted in section 2.2. The characteristics noted there do not apply to all languages equally. Consider, for instance, the following examples from Italian and Hungarian, which show adverbial modification with atemporal expressions. Italian behaves as expected; a frequency adverb is marked, while an adverb of quantification is grammatical. In Hungarian, however, both adverbs are acceptable.

(33) a. Una equazione quadratica spesso$_Q$ / *? frequentemente$_F$ ha due soluzioni distinte.
an equation quadratic often / frequently has two solutions distinct
'A quadratic equation often / frequently has two distinct solutions.' (Italian)
b. Egy másodfokú egyenletnek gyakran$_Q$ / sűrűn$_F$ van két különböző megoldása.
a quadratic equation-DAT often / frequently is two distinct solution-POSS
'A quadratic equation often / frequently has two distinct solutions.' (Hungarian)

[7]The same quantificational component is present in *né-melyik* 'some (of a specific set)' or *né-hol* 'somewhere,' among others.

When accounting for the behavior of Hungarian, it is crucial to note that the structure of the unexpected (33b) is not neutral. The adverbs, which immediately precede the copula *van* 'be,' are focused. In the neutral, focus-less example below, it is the subject, rather than the adverb, which precedes the copula. In this example, the frequency adverb is marked, as expected:

(34) Egy másodfokú egyenletnek gyakran$_Q$ / * sűrűn$_F$ két különböző megoldása van.
a quadratic equation-DAT often / frequently two distinct solution-POSS is
'A quadratic equation often / frequently has two distinct solutions.'

A non-neutral frequency adverb with main stress also permits an exceptional interpretation where the adverb takes scope over the entire sentence, including the *when*-clause (compare (18))[8]:

(35) Amikor Feri telefonált, Frici **sűrűn**$_F$ be csapta az ajtót.
when F.NOM phoned, F.NOM frequently in shut the door.ACC
'When Feri was talking on the phone, Frici frequently shut the door. (Possibly: it frequently happened that when Feri was talking on the phone, Frici shut the door (once).)'

The unexpected behavior of frequency adverbs is tied to the fact that they are focused, which apparently permits the adverb to take wider scope than otherwise. This may be a strategy available in Hungarian, but not in Italian.

Once-only predicates also show divergent behavior across languages. If frequency adverbs are not pluractional operators (as discussed in section 2.2), then they cannot modify once-only predicates in examples such as (36). The iteration of the situation requires multiple patient participants under a natural interpretation, but only a unique participant is available:

(36) Fred often$_Q$ / ? frequently$_F$ ate a sandwich.

This contrast between adverbs of quantification and frequency adverbs is not universal. A number of speakers report a contrast in English and Hungarian, but adverbs apparently behave uniformly in French and Italian, for example. This difference among languages can be captured if frequency adverbs can differ across languages in whether they are pluractional operators or not.

Apart from the specific properties of adverbs, languages can also differ in structural constraints on their distribution. In a number of languages, including Hungarian and Yiddish (B. Santorini, p.c.), adverbs of quantification and frequency adverbs have different distributions. The former tend to occur at the periphery of a sentence, and the latter often appear in lower structural positions (cf. Csirmaz (to appear)). The ordering of the two adverbs in the following Hungarian example conforms to this generalization; an adverb of quantification must precede a frequency adverb if both are preverbal.

(37) a. Feri néha$_Q$ sűrűn$_F$ el ejtette a táskát.
F.NOM sometimes frequently down dropped the bag.ACC
'Feri sometimes frequently dropped the bag (there were occasional periods during which he dropped the bag frequently).'

b. ?? Feri sűrűn$_F$ néha$_Q$ el ejtette a táskát.
F.NOM frequently sometimes down dropped the bag.ACC
'Feri frequently dropped the bag sometimes (there were frequent times during which he dropped the bag sometimes).'

The ordering restriction can be ascribed to the fact that frequency adverbs require a time interval argument, a property which straightforwardly derives the incompatibility with atemporal entities. The restriction of frequency adverbs to a lower domain, specifically to TP, can be derived with the additional assumption that temporal arguments can only be introduced below the TP projection in

[8]The adverb receives main stress, but it does not appear in the canonical focus position in Hungarian, which immediately precedes the verb. A characterization of the specific position of the adverb is outside of the scope of this paper.

the clausal structure. Adverbs of quantification impose no similar restriction; in fact, they are purely quantificational adverbs. As such, they are expected to appear within a designated quantificational domain, if there is one. As Csirmaz (to appear) argues, no additional stipulations are necessary to derive the distribution of adverbs of quantification; the positions they occupy follow from their quantificational properties alone. Since quantifier positions fall outside of TP, the relative positions of frequency adverbs and adverbs of quantification follow immediately.

The distribution of adverbs of quantity cannot be derived in a similar fashion for all languages. If a language lacks designated quantificational positions, or if it allows freer adverb scrambling, then these generalizations do not carry over.

To summarize: three groups can be distinguished among adverbs of quantity. Multiplicatives and adverbs of quantification show similar properties, and they are distinguished only by morphological features. Frequency adverbs constitute a group on their own, with fixed and relative frequency adverbs distinguishable within the group. All of these adverbs have a number of distinguishing characteristics discussed in section 2.2, some of which can vary across languages. In addition to those characteristics, morphological criteria can also identify adverbs as members of a specific group of adverbs. The above discussion of adverb properties, crosslinguistic variation, and structural positions is by no means exhaustive; all of these warrant further research.

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