Scalar adverbs in and out of focus
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1. Introduction
Positive adverbs of degree, manner, and frequency, and their negative counterparts occupy different word order positions in the Hungarian sentence. Whereas positive adverbs are adjoined to the predicative phrase (a PredP), negative adverbs undergo focus movement, landing in Spec,FocP. This chapter aims to reveal what motivates the obligatory focusing of negative predicative adverbs. It will be claimed that the constraint forcing these adverbs into focus position is semantically motivated. The adverbs of degree, manner, and frequency in question are all scalar elements. The basic meaning of a scalar element $n$ is ‘at least $n$’. It will be argued that in the negative domain of bidirectional scales the ‘at least $n$’ interpretation leads to a semantic anomaly, hence it must be blocked. It can be blocked by the focusing of the scalar element, owing to the ‘exhaustive identification’ function of structural focus.

The chapter is organized as follows. Section 2 presents the Hungarian facts to be accounted for. Section 3 examines the word order and interpretation possibilities associated with numerical modifiers, the simplest kind of scalar elements, showing that they have an ‘at least $n$’ reading out of focus, and an ‘exactly $n$’ reading in focus. Section 4 explains why the ‘at least $n$’ interpretation is regarded as the basic meaning of scalar elements, and under what condition pragmatic implicature can supplement it with an upper bound. Section 5 examines the word order position and interpretation of scalar elements representing negative values of bidirectional scales, arguing that their obligatory focusing serves the purpose of preventing them from being interpreted as ‘at least $n$’. Section 6 discusses why focusing changes the ‘at least $n$’ reading to ‘exactly $n$’. Finally, section 7 extends the generalizations to gradable adverbs.

2. The problem
One of the oldest problems of Hungarian syntax, challenging linguists for more than 130 years (see e.g. Arany 1873) is why positive adverbs of degree, manner, and frequency, and their negative counterparts occupy different word order positions; why positive adverbs are followed by a ‘particle, V’ string, whereas negative adverbs must be followed by a ‘V, particle’ order. Compare the position of a positive degree adverb with that of its negative equivalent:
(1)a. János nagyon el -fáradt.
John very.much PRT got.tired
‘John got tired very much.’
b. *János nagyon fáradt el.

(2)a.*János alig el -fáradt.
John barely PRT got.tired
‘John barely got tired.’
b. János alig fáradt el.

Positive adverbs of manner and frequency, unlike positive adverbs of degree, can occur in both word order patterns. Negative adverbs of manner and frequency, on the other hand, must be adjacent to the V, similar to negative adverbs of degree:

(3)a. János jól meg-oldotta a feladatot.
John well PRT solved the problem
‘John solved the problem well.’
b. János jól oldotta meg a feladatot.

(4)a.*János rosszul meg-oldotta a feladatot.
John badly PRT solved the problem
‘John solved the problem badly.’
b. János rosszul oldotta meg a feladatot.

(5)a. János gyakran el -késik.
John often PRT late.is
‘John is often late.’
b. János gyakran késik el.

(6)a.*János ritkán el -késik.
John seldom PRT late.is
‘John is seldom late.’
b. János ritkán késik el.

The generative syntactic literature of the past decades has had no explanation of the distribution of grammaticality in (1)-(6), either; it has merely provided a more precise formulation of the problem. Positive adverbs preceding the particle verb, e.g. those in (1a), (3a), and (5a), have
been analyzed – in the spirit of Ernst (2002) – to be adjoined to the predicate phrase (a PredP) (see chapter 1, and É. Kiss 2007):

(7) a. *János nagyon el-késett.*

‘John was late very much.’

b.  

The immediately preverbal slot occupied by negative adverbs, e.g. those in (2b), (4b), and (6b), on the other hand, has been identified as a structural focus position. Though negative adverbs appear to be closer to the verb, they have turned out to be farther out in the left periphery; they occupy the specifier of a Focus Phrase (FocP) (cf. Brody 1990, 1995). The Foc head cannot directly merge with PredP; PredP must first project a so-called Non-Neutral Phrase (NNP), perhaps a realization of Rizzi’s (1997) FinP (cf. Olsvay 2000 and É. Kiss 2008). The V raises into the NN head, crossing the verbal particle in Spec,PredP:

(8)a. *János ALIG késett el.*

‘John was barely late.’
A negative adverb of degree, manner, or frequency is ungrammatical either in a Pred-P-adjoined position or in a VP-adjoined position:

(9)a. *TopP János [PredP alig [Pred el -késett, [VP t₁ tₖ az óráról]]]
    John barely PRT late.was the class-from
b. *TopP János [Pred el-késett [VP alig [VP t₁ tₖ az óráról]]]

At the same time, negative adverbs of degree, manner, and frequency are not barred from the postverbal part of the sentence altogether. They can stand postverbally if and only if the clause contains a preverbal focus, as in (10). The grammaticality of (10) is derived in É. Kiss (1998a) from the assumption that the postverbal negative adverb occupies the specifier of a lower FocP projection. The two FocPs subsume two NNP projections, with the V landing in the higher NN head.

(10) [FocP JÁNOS [NNP késsett [FocP ALIG [NNP tₖ [PredP el t₁ [VP t₁ tₖ]]]]]]
    John was.late barely PRT
    'It was John who was barely late.'

For further evidence demonstrating that alig in (10) occupies the specifier of a lower FocP rather than moving into the specifier of the preverbal FocP in LF, see É. Kiss (1998b).

Assuming the structures in (7b), (8b), and (10), the primary research problem is why negative adverbs of degree, manner, and frequency must be moved into Spec,FocP. The distribution of their positive counterparts
also raises the question why positive adverbs of degree – unlike positive adverbs of manner and frequency – cannot be focused.\textsuperscript{2}

As was already noticed in the 19th century, noun phrases modified by \textit{sok} ‘many, much’ pattern with positive adverbs, whereas noun phrases modified by \textit{kevés} ‘few, little’ pattern with negative adverbs as regards their word order possibilities. \textit{Sok} phrases are presumably adjoined to PredP via Q-Raising. Compare:

(11)a. János [PredP \textit{sok feladatot} [PredP meg-oldott]]
   John many problem-ACC PRT solved
   ‘John solved many problems.’

   b. János [FocP SOK FELADATOT [NPP oldott [PredP meg]]]
   ‘It was many problems that John solved.’

(12)a.*János [PredP \textit{kevés feladatot} [PredP meg-oldott]]
   John few problems PRT solved

   b. János [FocP KEVÉS FELADATOT [NPP oldott [PredP meg]]]
   ‘It was few problems that John solved.’

Traditional Hungarian grammars call positive adverbs and \textit{sok} phrases, occurring in PredP-adjoined positions, „inclusive” expressions, and negative adverbs and \textit{kevés} phrases, restricted to focus position, exclusive expressions. It is the syntactic behavior of exclusive expressions that is perplexing; what needs to be explained is what property of exclusive expressions is responsible for their obligatory focusing. It will be claimed that the property interacting with focus function is their scalar nature (see Ernst (2002), who calls adverbs of degree, manner, and frequency gradable adverbs).

As a first step of understanding the correlation between the syntactic placement possibilities and the interpretations of scalar elements, let us examine the behavior of their simplest and most transparent kind, numerical modifiers.

3. The position and interpretation of numerically modified expressions

Numerically modified expressions can appear both adjoined to PredP, in the position of inclusive expressions, and in Spec,FocP, the position of exclusive expressions, and in the two positions they are associated with slightly different interpretations – as was already observed in Szabolcsi (1981a,b). Compare the following Hungarian examples and their English paraphrases:
(13)a. János [PredP két doboz cigarettát [PredP el -szívott máma]]
   'John has smoked two packets of cigarettes today.'

b. János [FocP KÉT DOBOZ CIGARETTÁT [NNP szívott [PredP el máma]]]
   'It is two packets of cigarettes that John has smoked today.'

(14)a. János [PredP 15 palacsintát [PredP meg-eszik]]
   'John eats 15 pancakes.'

b. János [FocP 15 PALACSINTÁT [NNP eszik [PredP meg]]]
   'It is 15 pancakes that John eats.'

Whereas in the (a) sentences, instantiating the inclusive word order pattern, két doboz cigarettát means ‘at least two packets of cigarettes’, and 15 palacsintát means ‘at least 15 pancakes’, in the exclusive (b) sentences két doboz cigarettát means ‘exactly two packets of cigarettes’, and 15 palacsintát means ‘exactly 15 pancakes’. In fact, the interpretation ‘at least n’ is not restricted to the PredP-adjoined position. A numerical modifier n is understood as ‘exactly n’ only in focus position; it means ‘at least n’ everywhere else, e.g. in VP-internal position – see (15a) and (16a):

(15)a. [PredP Van két fiam] mégis magam seprem a havat.
   'I have two sons, still I sweep the snow myself.'

b. [FocP KÉT FIAM [NNP van]] mégis magam seprem a havat.
   'TWO SONS I have, still I sweep the snow myself.'

(16)a. János [PredP haza-visz félmillió forintot havonta]
   'John earns half a million forints a month.'

b. János [FocP FÉLMILLIÓ FORINTOT [NNP visz [PredP haza havonta]]]
   'It is half a million forints that John earns a month.'

(15a) can also be said by a person who has three sons, but one of them does not live at home any longer. (15b), on the other hand, would be false in this situation. Similarly, (16a) is true and (16b) is false if John takes home 550 000 forints a month.³
A numerical modifier \( n \) in topic position can also be interpreted as ‘at least \( n \)’. The following sentences remain true if John took home 550,000 forints and if he eats 16 pancakes.

\[
\begin{align*}
(17)a. & \quad [\text{TopP} \quad \text{Félmillió forintot} \quad [\text{FocP csak EGYSZER} \quad [\text{NNP vitt haza} \quad \text{János}]]] \\
& \quad \text{half-a-million forint-ACC only once took home John} \\
& \quad \text{‘Half a million forints, John has earned only ONCE.’}
\\
& \quad [\text{TopP} \quad 15 \text{ palacsintát} \quad [\text{FocP csak JÁNOS} \quad [\text{NNP eszik meg a családban}]]] \\
& \quad 15 \text{ pancake-ACC only John PRT the family-in} \\
& \quad \text{‘15 pancakes, only JOHN eats in the family.’}
\end{align*}
\]

A postverbal numerically modified expression can also be understood as ‘exactly \( n \)’ provided the sentence contains a preverbal focus. Obviously, such sentences involve FocP recursion, with the postverbal numerically modified expression occupying the specifier of the lower FocP:

\[
\begin{align*}
(18)a. & \quad [\text{FocP} \quad \text{JÁNOS} \quad [\text{NNP szívő} \quad [\text{FocP} \quad \text{KÉT DOBOZ CIGARETTÁT} \quad [\text{NNP t}, \quad \text{John} \quad \text{smokes two packet cigarette} \quad [\text{PredP} \quad \text{el t naponta}]]]]] \\
& \quad \text{PRT daily} \\
& \quad \text{‘It is John who smokes TWO PACKETS OF CIGARETTES a day.’}
\\
& \quad [\text{FocP} \quad \text{PÉTERNEK} \quad [\text{NNP van} \quad [\text{FocP} \quad \text{KÉT FIA} \quad [\text{NNP t}, [\text{PredP} \quad \text{t}]]]]] \\
& \quad \text{Peter-DAT is two son-3SG} \\
& \quad \text{‘It is Peter who has TWO SONS.’}
\end{align*}
\]

(Notice that the parallelism between (18a,b), containing a numerically modified noun phrase in a second, lower Spec,FocP, and (10), containing a negative adverb in a second, lower Spec,FocP is only partial. A numerically modified noun phrase need not be focused; consequently, it is also grammatical postverbally if the sentence contains no preverbal focus (see (15a) and (16a)). A negative adverb, on the other hand, is only licensed in Spec,FocP, hence it can only appear postverbally in the case of FocP recursion, i.e., in the presence of a preverbal focus (cf. (9b) and (10)).)

On the basis of examples (13)-(18), we can formulate the following generalization:

\[
(19) \quad \text{A numerical modifier } n \text{ means ‘at least } n’ \quad \text{– unless the numerically modified expression is in Spec,FocP position, where } n \text{ means ‘exactly } n’.
\]
The meaning difference between focused and non-focused numerically modified expressions is even more transparent under negation. Compare:

(20)a. \([\text{predp } \text{Nincs } \text{két fiam}]\)
    isn’t two son-1SG
    ‘I don’t have two sons.’

    b. \([\text{Negp } \text{Nem } [\text{Focp } \text{KÉT FIAM } [\text{NNP } \text{van}_t ]]]\)
    not two son-1SG is
    ‘It is not two sons that I have.’

(21)a. \(\text{János } [\text{Negp } \text{nem } [\text{NNP } \text{visz}_t ] [\text{predp } \text{haza } t, \text{félmillió } \text{forintot } \text{havonta}]])\)
    John not takes home half-a-million forints a month
    ‘John doesn’t earn half a million forints a month.’

    b. \(\text{János } [\text{Negp } \text{nem } [\text{Focp } \text{FÉLMILLIÓ FORINTOT } [\text{NNP } \text{visz}_t [\text{predp } \text{haza } t, \text{havonta}]])\]
    ‘It is not half a million forints that John earns a month.’

(20a) expresses that ‘the number of my sons is less than two’, and (21a)
expresses that ‘John takes home less than half a million forints a month’,
i.e., a negated ‘at least \(n\); \(n\) or more’ means ‘less than \(n\)’. (20b), on the
other hand, can be true whether the number of my sons is more or less than
two. (21b), too, can be true whether John earns more or less than half a
million forints. That is, a focused numeral \(n\), when negated, is understood
as ‘a number other than \(n\)’. (The focus is associated with an existential
presupposition, hence (20b) cannot mean that I have no sons, and (21b)
cannot mean that John does not earn anything.)

The observation that numerical modifiers elicit an ‘at least \(n\)’
interpretation outside focus, and an ‘exactly \(n\)’ interpretation in focus
position, also extends to indefinite numerals. Compare:

(22)a. \(\text{János } [\text{predp } \text{félre-tett } \text{néhány/pár } \text{forintot } \text{igy } \text{el } \text{tud } \text{menni } \text{nyaralni}.] \)
    John aside put some /couple forint so off can go
    vacation-INF
    ‘John has put aside some/a couple of forints, so he can go on
vacation.’

    b.#\(\text{János } [\text{predp } \text{félre-tett } \text{néhány/pár } \text{forintot } \text{igy } \text{nem } \text{tud } \text{el } \text{-menni } \text{nyaralni}.] \)
    John aside put some /couple forint so not can off go
    vacation.
‘John has put aside some/a couple of forints, so he cannot go on vacation.’


It is some/a couple of forints that John has put aside, so he can go on vacation.


‘It is some/a couple of forints that John has put aside, so he cannot go on vacation.’

The non-focused néhány forint/pár forint ‘some forints/a couple of forints’ evokes the ‘at least n’; ‘n or more’ reading expected, hence (22a) is meaningful as an understatement, whereas (22b) is incomprehensible. The focused néhány forint/pár forint in (23), on the other hand, does not allow an upward extending interpretation; it is understood to mean literally ‘some forints/a couple of forints’, a sum too small to finance one’s vacation.

Sok ‘many, much’ phrases have been shown by Szabolcsi (1997) to be understood differently in focus position (Spec,FocP), and in quantifier and topic positions (called Spec,DistP and Spec,RefP by her). A quantified noun phrase in Spec,DistP or Spec,RefP is claimed by Szabolcsi to be interpreted as a witness set, picking out a set referent and checking its members for some property. A focused quantified noun phrase, on the other hand, involves a counting operation on the property denoted by the rest of the sentence. This meaning difference, illustrated by minimal pairs like (24a,b), can also be interpreted from the perspective of the present paper. (The quantified noun phrase in (24a), assumed to be adjoined to PredP in the present framework, occupies Spec,DistP in Szabolcsi’s theory.)

(24)a. Pál is [PredP sok könyvet] kapott a szüleitől.

Paul too many book-ACC present-for received his parents- from ‘Paul, too, received many [of his] books from his parents as a present.’

b. Pál is [FocP SOK KÖNYVET] kapott; [PredP ajándékba t, a szüleitől]]

‘As for Paul, too, it was many books that he received from his
parents as a present.’

The phrase sok könyvet ‘many books’ in (24a) has a partitive meaning; it denotes a subset of Paul’s books. It has an upward extendable interpretation; the sentence can also be true in a situation in which the number of the books that John received from his parents as a present is close to, or identical with, the total number of his books. The sok ‘many’ phrase of (24b), on the other hand, evokes no subset, and no upward extendable interpretation; the sentence simply expresses that the books that John received from his parents as a present are many in number.6

4. Scalar implicature

In the semantics of natural languages it is a widely held view that the interpretation ‘at least $n$’ represents the basic meaning of numerical modifiers – see Horn (1972), Levinson (2000), and Kadmon (2001), among others. Consider the following example:

(25) John has lifted 100 kilos.

This sentence is true whether John has lifted 100, 101, 150, or 200 kilos. After all, one cannot lift 200 kilos without also lifting 100 kilos. The possibility of an upward extendable interpretation is a consequence of the nature of scales; it follows from the fact that degree $n$ of a scale marks a section of the scale that forms a subsection of every higher degree of the given scale, as well. That is, the observation in (19) has a more general basis:

(26) The meaning of a scalar element $n$ in natural language is ‘at least $n$’.

What requires an explanation is why, nevertheless, a sentence like (25) usually implicates that John has lifted at least and at most 100 kilos, i.e., exactly 100 kilos. As has been shown in connection with definite and indefinite numerals alike, the ‘at least’ component of their meaning is obligatorily blocked in focus position. This fact will be derived below from the exhaustive identification function of structural focus. A different question is why a numeral $n$ is often interpreted as ‘exactly $n$’ also when it is not focused. In the case of non-focused scalar elements, the presence or absence of the ‘at most’ meaning component is pragmatically conditioned. Compare:
(27)a. Who can enter the competition?
    b. Anybody that has lifted 100 kilos.

(28)a. What is his best result?
    b. He has lifted 100 kilos.

In (27b) the expression *100 kilos* marks the lower bound of a set of possible scalar values; in (28b), on the other hand, it is understood to mark exactly 100 kilos. The interpretation associated with (27b) corresponds to the basic (‘at least n’) meaning of scalar elements; it is the interpretation of (28b) that also involves an upper bound (‘at least n and at most n’). Because of its pragmatic motivation, the ‘at most n’ component has been analyzed as an implicature (a so-called scalar implicature – see Horn (1972)). Scalar implicatures are derived from Grice’s Maxim of Quantity (1975), which requires speakers to make their contribution as informative as is necessary for the current purposes of the exchange. (27b) serves the purpose of marking the lower bound of the scalar values that qualify an athlete to enter a competition – hence no scalar implicature is evoked. The exchange in (28), on the other hand, serves the purpose of specifying an athlete’s best result; hence the speaker is sufficiently informative only if he/she provides an exact scalar value.

This theory of numerical indefinites has actually been questioned recently – by Horn himself in his recent studies (1992, 1996), as well as by Geurts (2006) and Breheny (2008), among others. They have put forth theories in which the ‘exactly n’ interpretation of numerals is primary, and the ‘at least n’ interpretation is derived. Breheny (2008) derives the ‘at least’ reading from the ‘exactly’ reading by pragmatic reasoning. Geurts (2006) distinguishes the quantifier and the predicate senses of a numeral, the former associated with an ‘exactly’ interpretation, and the latter associated with an ‘at least’ interpretation. The two readings are related by type-shifting rules. The Hungarian data surveyed appear to support the traditional analysis going of numerical indefinites going back to Horn (1972) and Kadmon (2001).

5. Scalar modifiers in the negative domain of bidirectional scales

*Kevés könyv* ‘few books’ is apparently a scalar expression of the same type as *sok könyv* ‘many books’, involving an indefinite numerical modifier. Nevertheless, both its word order possibilities and its interpretation possibilities are more constrained than those of *sok könyv*. Compare with (24a,b):
Unlike *sok könyvet* ‘many books’ in (24a), *kevés könyvet* ‘few books’ cannot be adjoined to PredP via Q-Raising (see 29a); it is obligatorily focused (see 29b). Accordingly, it cannot be associated with the upward extending interpretation of PredP-adjoined quantified expressions; *kevés könyvet* cannot be understood as ‘few books or more’; (29b) can only mean that the books that John received from his parents as a present are few in number.

For Hungarian speakers, *few books* and *many books* represent opposite values in the lower and upper domains of one and the same scale. This type of scale is different from the unidirectional, increasing scale of, say, positive integers; it is a bidirectional scale, proceeding from a central point into a positive and a negative direction. For Horn (1972; 1989:231), quantitative scales are defined by entailment: $P_i$ outranks $P_j$ on a given scale if a statement containing an instance of the former unilaterally entails the corresponding statement containing the latter. A bidirectional scale is not a scale of this type (it is not a „Horn scale”); a statement involving a value in the positive domain of the scale does not entail a corresponding statement involving a value in the negative domain of the scale. Although *few books* could, in principle, form a subpart of the denotation of *many books*, the bidirectionality of the scale blocks this interpretation; receiving many books from one’s parents is the opposite of receiving few books from them. Hence the interpretation of *kevés könyvet* ‘few books’ is not extendable upwards; the statement *John received few books from his parents as a present* is not true in a situation in which he received many books from them.

Unidirectional negative scales, e.g., a scale of negative integers, can actually be treated similarly to positive scales. We only have to reverse the perspective; in their case, the lower scalar values entail the higher ones (if one has a debt, i.e., if one has -100 000 forints, he also has -50 000 forints). Problems only arise in the negative domain of bidirectional scales. That is:
(30) The ‘at least $n$’; ‘$n$ or more’ reading of a scalar modifier in the negative domain of a bidirectional scale leads to a semantic anomaly.

Consequently, in the negative domain of bidirectional scales, the upward extending interpretation of scalar values must be prevented; an ‘exactly $n$’ reading is needed. Hungarian provides a grammaticalized means of blocking the upward extending interpretation: the focusing of the scalar expression. Hence

(31) A scalar expression denoting a negative value in a bidirectional scale must be focused.

Interestingly, kevés ‘few, little’ does have a counterpart with an upward extendable reading: egy kevés ‘a few, a little’. Egy ‘an, one’ turns kevés into a positive numeral, representing a low degree of a unidirectional scale. Compare:

   John little knew the exam-at hence not let-I-him pass
   ‘John knew little at the exam, therefore I didn’t let him pass.’

   John knew a little the exam-at hence not let-I-him pass
   ‘John knew a little at the exam, therefore I didn’t let him pass.’

(33)a. #János [FocP KEVESET [NNP tudott a vizsgán]] ezért át-engedtem.
    John little knew the exam-at hence pass let-I-him
    ‘John knew little at the exam, therefore I let him pass.’

   John knew a little the exam-at hence pass let-I-him
   ‘John knew a little at the exam, therefore I let him pass.’

6. Scalar elements and focus
The correlation between the ‘at least $n$’ or ‘exactly $n$’ interpretation of a numeral, and the discourse function of the numerically modified expression has already been noticed by Fretheim (1992), and van Kuppevelt (1996), among others. Fretheim observed that the interpretation of a numerical modifier $n$ in Norwegian is related to the stress of the modified expression. If $n$ is part of an unstressed, contextually given, salient expression, $n$ means ‘at least $n$’. Otherwise, $n$ is understood as ‘exactly $n$’. A crucial observation of Fretheim is that the so-called scalar implicature,
supplementing the meaning ‘at least n’ with the upper bound ‘and at most n’ under appropriate pragmatic conditions, can only be evoked by a contextually given, topical numerically modified expressions. In the case of a focus, the upper bound is obligatory, which indicates that it cannot be a mere pragmatic implicature.

Van Kuppevelt (1996) extended Fretheim’s claims to scalar elements other than numerals. Similar to Fretheim, van Kuppevelt argues that the ‘exactly n’ reading of a focused scalar expression is not a weak pragmatic implicature but a semantic entailment. Actually, van Kuppevelt uses the term satisfactory comment instead of focus. He establishes the information structure of a sentence by questions. A satisfactory comment is (the non-presupposed part of) a uniquely determining answer to an explicit or implicit question. An answer which leaves open the possibility of alternatives (to be eliminated by a further subquestion) does not count as a satisfactory comment. Compare:

(34)a. Mennyit keres János?
   how.much earns John
   ‘How much does John earn?’

   b. [pред Keres egy fémilliót havonta]
      earns a half-million monthly
      ‘He earns half a million a month.’
   c. [фок EGY FÉLMILLIÓT [NNP keres havonta]]
      ‘It is half a million that he earns monthly.’

The answer in (34b) does not give an unambiguous answer to (34a) because it does not restrict the number of alternatives to one. The amount that John earns can only be established by a further question-answer pair; thus (34b) does not count as a satisfactory comment. (34c), on the other hand, provides a clear-cut, precise reply to (34a), with the focused egy fémilliót functioning as a satisfactory comment. A satisfactory comment, restricting the number of possible answers to one, also narrows down the reading ‘at least n’ to ‘n’.

Facts of Hungarian support and elucidate van Kuppevelt’s generalization. They make it clear that the ‘exactly n’ reading of scalar elements is a concomitant of their identificational focus function, which is associated with a fixed structural position in the Hungarian sentence.

The structural focus of Hungarian plays the same semantic role that has been assigned to the English pseudo-cleft focus by Higgins (1973) and to the German and Swedish cleft focus by Huber (2000). It functions as a
specificational predicate, predicated of the open sentence constituted by the rest of the clause (the NNP, with a silent copy of the topic included). Thus a focus construction like (35a) has the logical structure in (35b):

(35)a. János [\text{FocP 15 PALACSINTÁT [NNP evett János meg]}]

\[\text{Subj amit János meg-evett} \quad \text{[Predicate 15 palacsinta]}\]
what John ate [is] 15 pancakes

In the theory of Higgins (1973) and Huber (2000), the open sentence that the focus is predicated of determines a set, and the focus specifies the referential content of this set, providing an exhaustive list of its members and excluding similar alternatives not belonging into it. In the case of scalar expressions, the excluded alternatives are the scalar values other than that denoted by the focused phrase. For example, in the case of (35) the set of things eaten by John is identical with the scalar value consisting of 15 pancakes, and the excluded alternatives are the rest of the scalar values, e.g. those consisting of 14 pancakes, 13 pancakes, 16 pancakes, 17 pancakes, etc. A focused \textit{palacsinta} cannot be understood as a set of pancakes including 15 pancakes or more because focusing excludes the alternatives other than 15 pancakes. The impossibility of the upward extension of the scalar value is a consequence of the focus meaning; therefore, it need not be blocked by a special constraint.

As suggested by Fretheim (1992) and van Kuppevelt (1996), the upper bound imposed on the reading of a focused scalar element is more than a pragmatic implicature; it is a semantic entailment (that of focus function) – for it cannot be deleted under any pragmatic conditions. (35a) is false in a situation in which John ate 16 or 17 pancakes, no matter what the circumstances are. This claim is not contradicted by focus constructions of the following type:

(36)a. János [\text{FocP 15-NÉL TÖBB PALACSINTÁT [NNP evett meg]}]

\[\text{John 15-from more pancake ate PRT}\]
\text{‘It is more than 15 pancakes that John has eaten.’}


\[\text{John 15 pancakes ate PRT in.fact more}\]
\text{‘It is 15 pancakes that John has eaten; in fact, it is even more.’}

In the case of (36a), the set of things eaten by John is specified as a set of pancakes with a cardinality larger than 15. No upward entailment is involved; the focused scalar value itself contains an indefinite numeral
expression meaning ‘larger than $n$’. In (36b) the speaker has corrected himself.

7. Scalar adverbs
The adverbs of degree, manner, and frequency whose positive and negative counterparts display the opposing word order behavior illustrated in (1)-(6) all have scalar meanings. Ernst (2002) calls them gradable adverbs. Kiefer (1964) attributes to them a [+contrast] feature, encoding the intuition that they come in pairs representing opposite values in the positive and negative domains of a bidirectional scale. It is adverbs in the negative domain of bidirectional scales that are obligatorily focused.

Being scalar elements, these adverbs are subject to the generalizations formulated in (26), (30) and (31). Thus a scalar adverb of degree, manner, or frequency denoting a scalar value $n$ means ‘at least $n$’ – owing to the fact that section $n$ of the given scale also represents a subsection of the higher values of the same scale. In case a pair of adverbs establishes a bidirectional scale (e.g. nagyon ‘very much’ – alig ‘barely’, szépen ‘beautifully’ – csúnyán ‘uglily’, gyakran ‘frequently’ – ritkán ‘rarely’), the adverb denoting a scalar value in the negative domain of the scale resists this kind of upward extending interpretation. On a bidirectional scale, a positive scalar value does not entail a negative one, e.g., very much does not entail barely, beautifully does not entail uglily, and frequently does not entail rarely – hence barely cannot be understood as an understatement for very much, uglily cannot be understood as an understatement for beautifully, and rarely cannot be understood as an understatement for frequently. The upward extending interpretation of these adverbs must be blocked, and it is blocked by their obligatory focusing.

Let us examine examples (1)-(6) in pairs.

(37)a. János [PredP nagyon [PredP el fáradt]]
   John very.much PRT got.tired
   ‘John got tired very much.’

b.*János [FocP NAGYON [NNP fáradt el]]

(38)a.*János [PredP alig [PredP el fáradt]]
   John barely PRT got.tired
   ‘John got barely tired.’

b. János [FocP ALIG [NNP fáradt el]]
‘Alig ‘barely’ and nagyon ‘very much’ can be considered to denote opposing values on a bidirectional scale marking different degrees of John’s tiredness. Nagyon, representing a value in the positive domain of the scale, allows an upward extending interpretation; thus (37a) can also be true if John was not simply tired but was tired to death. In the case of alig ‘barely’, the upward extension of the scalar value could yield a value in the positive half of the scale, in the domain of nagyon ‘very much’; however, this must be avoided because ‘John being barely tired’ and ‘John being very tired’ cannot be true in the same situation. Presumably that is why alig must be moved to focus position, where it is interpreted as ‘exactly to the degree barely’.

The question has been raised why nagyon ‘very much’ – unlike other types of inclusive expressions – cannot be focused. The reason must be that the meaning of nagyon inherently lacks an upper bound.

Consider again the examples with manner adverbs:

\[(39)a. \text{János} [\text{PredP jól} [\text{PredP meg-oldotta} a \text{ feladatot}]]
\]

‘John solved the problem well.’

\[b. \text{János} [\text{FocP JÓL} [\text{NNP oldotta} [\text{PredP meg a feladatot}]]]
\]

\[(40)a.* \text{János} [\text{PredP rosszul} [\text{PredP meg-oldotta} a \text{ feladatot}]]
\]

‘John solved the problem badly.’

\[b. \text{János} [\text{FocP ROSSZUL} [\text{NNP oldotta} [\text{PredP meg a feladatot}]]]
\]

Rosszul ‘badly’ and jól ‘well’ are considered to be located in the negative and positive domains of one and the same bidirectional scale. Jól, belonging to the positive domain, allows the extension of its meaning upwards, to the top of the scale. (39a) can be used felicitously also if John has solved the problem perfectly. The meaning of rosszul, on the other hand, cannot be extended upward; rosszul obviously cannot be used if John has solved the problem well. Therefore, rosszul must be moved to focus position, where the upward extension of its meaning is blocked.

Jól ‘well’ can not only be adjoined to PredP but can also be focused, and in these two structural positions it is associated with somewhat different interpretations:

\[(41)a. \text{János} [\text{PredP élég jól} [\text{PredP meg-oldotta} a \text{ tesztet}]]
\]

‘John solved the test quite well.’
‘John solved the test quite well.’

b. János [FocP ELÉG JÓL [NNP oldotta [PredP meg a tesztet]]]

The semantic difference between the two word order variants is that the meaning of elég jól can be extended upwards in (41a), whereas it is associated with an upper bound in (41b). This difference becomes relevant in a context of the following type:

(42)a. János [PredP elég jól [PredP meg-oldotta a tesztet]; 100-ból 100 pontot ért el.]
   ‘John solved the test quite well; he scored 100 points out of 100.’

b. János [FocP ELÉG JÓL [NNP oldotta meg a tesztet]; 100-ból 100 pontot ért el.]
   ‘John solved the test quite well; he scored 100 points out of 100.’

A number of adverbs, for example, csúnyán ‘uglily’, ijesztően ‘frighteningly’, are ambiguous between a negative manner reading and a positive degree reading. As predicted, they occupy different positions under the degree and manner interpretations:

(43)a. Jánost [PredP csúnyán [PredP meg-verték]]
   ‘John was badly beaten.’

b. Jánost [FocP CSÚNYÁN [NNP verték [PredP meg]]]

(44)a. János [PredP csúnyán [PredP ki-vasalta az inget]]
   ‘John ironed the shirt uglily.’

b. János [FocP CSÚNYÁN [NNP vasalta [PredP ki az inget]]]

In (43) csúnyán ‘uglily’ is a synonym of nagyon ‘very much’; it represents a value in the positive domain of a scale of degrees. It has an upward extendable reading: (43a) can also be true in a situation in which John has been beaten almost to death. As shown by (43b), csúnyán, similar to other positive adverbs of degree, cannot be focused. In (44), on the other hand, csúnyán represents a value in the negative domain of a bidirectional scale of manners. In accordance with generalizations (30)-(31), this value cannot be extended upwards; therefore, the manner-denoting csúnyán must be
moved to focus position, where its reading is associated with an upper bound.\(^8\)

The generalizations in (30)-(31) also apply to adverbs of frequency. *Gyakran* ‘frequently’ and *ritkán* ‘rarely’ are understood to represent opposing values in the positive and negative domains of the same scale of frequencies:

\[(45)\]
\[a. \quad \text{János } [\text{PredP } \text{gyakran } [\text{PredP el } -késik \text{ az iskolából}]] \]
\[\text{John \quad often \quad PRT late.is the school-from} \]
\[\text{‘John is often late from school.’} \]
\[b. \quad \text{János } [\text{FocP } \text{GYAKRAN } [\text{NNP késik } [\text{PredP el az iskolából}]]] \]

\[(46)\]
\[a.* \quad \text{János } [\text{PredP } \text{ritkán } [\text{PredP el } -késik \text{ az iskolából}]] \]
\[\text{John \quad rarely \quad PRT late.is the school-from} \]
\[\text{‘John is rarely late from school.’} \]
\[b. \quad \text{János } [\text{FocP } \text{RITKÁN } [\text{NNP késik } [\text{PredP el az iskolából}]]] \]

The positive/inclusive *gyakran* occupies a PredP adjoined position in (45a), where it is associated with an upward extendable interpretation; it is true also if John is late every day. *Gyakran* can also be focused, as shown in (45b). *Ritkán* ‘rarely’ in (46) must not be interpreted as the lower bound of a set of upward extending scalar values. Its obligatory focusing prevents this interpretation.

The following pairs of examples seem to contain scalar temporal adverbs, suggesting that adverbs other than those of degree, manner, and frequency may also display the kind of scalar behavior observed above. In fact, the adverbs involved, *korán* ‘early’ and *későn* ‘late’ are exceptional among temporal adverbs; apparently, the grammar of Hungarian speakers categorizes them as manner adverbs, the synonyms of *pontosan* ‘punctually’ and *pontatlanul* ‘unpunctually’. Compare:

\[(47)\]
\[a. \quad \text{János } [\text{PredP korán } [\text{PredP meg-érkezett}]] \]
\[\text{John\quad early\quad PRT\text{ arrived}} \]
\[\text{‘John arrived early.’} \]
\[b. \quad \text{János } [\text{FocP KORÁN } [\text{FocP érkezett meg}]] \]

\[(48)\]
\[a.* \quad \text{János } [\text{PredP későn } [\text{PredP meg-érkezett}]] \]
\[\text{John\quad late\quad PRT\text{ arrived}} \]
\[\text{‘John arrived late.’} \]
\[b. \quad \text{János } [\text{FocP KÉSŐN } [\text{NNP érkezett meg}]] \]
Interestingly, korán ‘early’, meaning ‘n length before the expected time’, represents the positive value and későn ‘late’, meaning ‘n length after the expected time’, represents the negative value on the scale of times they define. It is in the case of korán that the length of n can be extended at will. Whether we arrive at 1 minute, 10 minutes, or 100 minutes before the beginning of a show, we arrive early. In the case of későn ‘n length after the expected time’, on the other hand, we cannot extend the length of n proceeding backwards in time, as sooner or later we reach the time of the beginning of the show and the scalar values corresponding to korán ‘early’. That is why the upward extending interpretation of későn must be blocked by its focusing.

8. Summary
The Minimalist Program aims to build a syntax model in which operations and constraints are either the manifestations of general computational principles, or represent interface requirements. In line with this endeavor, this paper has found the motivation for the different word orders of positive and negative gradable adverbs, more precisely, for the obligatory focusing of negative gradable adverbs, in the conceptual-intentional system.

The different word order behavior of inclusive and exclusive adverbs of degree, manner, and frequency has been traced back to the fact that they have a scalar meaning. According to generalizations (26), (30) and (31), a scalar expression n is interpreted in natural language as ‘at least n’ – unless n is moved to focus position, where it is understood as ‘exactly n’. The exhaustive identification function associated with the Hungarian preverbal focus position, excluding all the alternatives but the one denoted by the focused constituent, blocks the upward extending of interpretation. In the case of scalar elements in the negative domain of a bidirectional scale, among them negative scalar adverbs, the upward extending interpretation leads to a semantic anomaly, which can be avoided by the focusing of n.

Scalar adverbs marking a value in a positive scalar domain can also be focused. In focus position, the readings ‘to at least n degree’, ‘in at least n manner’, ‘at least n times’, ‘with at least n frequency’ are changed to ‘to exactly n degree’, ‘in exactly n manner’, ‘at exactly n times’, ‘with exactly n frequency’.
Notes

1 As argued in É. Kiss (2008), postverbal constituents can be freely linearized in PF, and the variant observing the Law of Growing Constituents is valued as most neutral. Thus (10) also has a more optimal version (JÁNOS késett el ALIG).

2 Whereas positive adverbs of degree and manner can only be adjoined to PredP, positive adverbs of frequency can also have scope over, and be adjoined to, FocP. This fact has a semantic reason: whereas adverbials of degree and manner can only modify events, mapped on PredPs in syntax, adverbs of frequency are semantically compatible also with exhaustive identification, expressed by FocPs. E.g.:

(i) [TopP János [FocP gyakran [FocP csak KÉT TÁRGYAT [NNP tanít [PredP t í ]]]]]

John often only two subjects teaches
‘It is often only two subjects that John teaches.’

If a negative adverb of frequency is intended to take scope over a FocP, another NNP and another, higher FocP must be generated for it. In the case of FocP recursion, the V moves through the lower NN and Foc heads into the higher NN:

(ii) [TopP János [FocP RITKÁN [NNP tanít [FocP csak KÉT TÁRGYAT [NNP t í [PredP t í ]]]]]]

John rarely teaches only two subject
‘RARELY does John only teach TWO SUBJECTS.’

Ritkán in (ii) is bound to have scope over két tárgyat, which suggests that both of them occupy scope positions.

3 According to a reviewer, the numerical expressions in (15b) and (16b) do not have an ‘exactly n’ reading if the numeral is destressed. I disagree with this judgment, and so do the informants I asked. (15b) means ‘I have exactly two sons’, and (16b) means ‘John earns exactly half a million forints’ also if the numerals are presupposed and destressed, i.e., if (15b) appears in a context like (i), and (16b) appears in a context like (ii):

(i) A: [FocP Két LÁNYOD van]?
two daughter-2SG are
‘Is it two DAUGHTERS that you have?’
B: Nem, [FocP Két FIAM van]
no two son-1SG are
‘No, it is two SONS that I have.’

(ii) A: János valóban [FocP FÉLMILLIÓ FORINTOT [NNP visz [PredP haza] 
John indeed half-a-million forint-ACC takes home
‘Is it indeed half a million forints that John earns a month?’

B: Igen, ennél a cégnél mindenki [FocP félmillió forintot [NNP visszatenni]] yes this company-at everybody half-a-million forints-ACC

takes home monthly

‘Yes, at this company EVERYBODY earns half a million forints a month.’

The reviewer presumably had a discourse of the following type in mind:

(iii) A: János [PredP házavon - két ézer dollárt havonta] John home takes two-thousand dollar monthly

‘John earns two thousand dollars a month.’


monthly

‘You are wrong. It is two thousand EUROS that John earns a month.’

The sentence uttered by B in (iii) does not seem to be a regular focus construction. It is a corrective version of the sentence uttered by A, in which the constituent to be corrected is moved to Spec,FocP, but the interpretation of the original sentence is preserved. In corrective sentences, the constituent to be corrected is merely highlighted in Spec,FocP, without assuming a regular focus interpretation. E.g. an existential quantifier of the *vala*- ‘some-’ type is barred from Spec,FocP because its meaning is incompatible with the exhaustive identification associated with focus position – see (iv); still it must appear in Spec,FocP if it represents a correction, as in (v):

(iv)*[FocP VALAKIT [NNP vettem észre]] somebody-ACC noticed-I PRT

‘It was somebody that I noticed.’

(v) A: [PredP Észre-vettél valamit]? PRT noticed-you something-ACC

‘Have you noticed something?’

B: Nem. [FocP ValakIT [NNP vettem észre]] no something-ACC noticed-I PRT

‘No. It was someBODy that I noticed.’

A reviewer raises the possibility that Szabolcsi’s (1997) analysis of topic and quantifier positions (called RefP and DistP by her) could also explain why
negative expressions are barred from these slots. Namely, Szabolcsi argues that these positions involve existential quantification over sets and thereby they can harbor only upward monotonic expressions. In this approach, negative expressions do not need to be focussed; all they need is an interpretation that does not force existential quantification on them. Consequently, they are predicted to occur in postverbal position, as well. The problem with this theory is that it cannot explain why a postverbal negative adverb is only licensed in the presence of a preverbal focus; i.e., why (9b) is ungrammatical. This fact follows in the framework of the present chapter, where a negative expression is only allowed to surface postverbally in the lower Spec,FocP of a recursive focus projection.

5 The subject Pál is modified by the particle is ‘also’ so as to prevent sok könyvet ‘many books’ from being analyzed as a topicalized referential expression. Noun phrases modified by is occupy a post-topic quantifier position in the Hungarian sentence.

6 The upward extendability illustrated in (25a) is obviously a kind of monotone increase. A determiner is called left monotone increasing if increasing the extension of the noun phrase it modifies does not alter the truth of the given sentence. Sok ‘many, much’ is regarded as a left monotone increasing quantifier. Cf.

(i) Sok külföldi vendég érkezett. →
    many foreign guests arrived
(ii) Sok vendég érkezett.
    many guests arrived

If the foreign guests arriving are many in number, all the guests arriving (with the locals included) must also be many in number, so (ii) is a consequence of (i). However, this kind of monotonicity characterizes the ‘counting’ meaning of sok. The upward extendability of scalar elements is a kind of left monotone increase that is different from the monotonicity illustrated in (i)-(ii) – because the extension of the noun phrase modified by the scalar element is increased along a given scale. The two types of monotonicity may have opposing directions in the case of one and the same determiner. For example, legtöbb in Legtöbb diák vonattal érkezett
‘Most students arrived by train’ is left monoton decreasing in the usual sense ((iv) does not follow from (iii)), and, at the same time, it allows the upward extension of its interpretation along the scale of students.

(iii) Legtöbb diák vonattal érkezett. ≥
    most students by-train arrived
(iv) Legtöbb elsős diák vonattal érkezett.
    most first-year students by-train arrived

7 I owe this suggestion to Hans Kamp (p.c.).
Interestingly, positive and negative manner adverbs under a subject-oriented interpretation behave identically; they occupy a pre-FocP position. Cf.

(i) A küldöttek okosan [FocP JÁNOST választották meg elnöknek]  
   the representatives cleverly John-ACC elected PRT president  
   ‘The representatives cleverly elected John president.’

(ii) A küldöttek ostobán [FocP JÁNOST választották meg elnöknek]  
    the representatives stupidly John-ACC elected PRT president  
    ‘The representatives stupidly elected John president.’