Rethinking the narrow scope

reading of contrastive topic

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1. THE PHENOMENON

The aim of this paper[*] is to outline a new account of why quantificational noun phrases that function as contrastive topics can, and in some cases must, take narrow scope with respect to other operators in the Hungarian sentence.

The term *contrastive topic* will be used here, as in Szabolcsi (1980, 1981a), to refer to constituents that are situated in the so-called 'topic position' of the Hungarian sentence, according to the model proposed by Katalin É. Kiss (see É. Kiss 1981, 1987, 1994, 2002, among others), but that are pronounced with a rising, 'contrastive' accent instead of the falling accent characteristic of 'ordinary topics'. Instead of being optionally stressed, as ordinary topics are, contrastive topics bear main stress (Kálmán and Nádasdy 1994: 398, 459). (In the following examples, prosodic prominence within the contrastive topic constituent will be marked with '/' before the relevant syllable.)[1]

É. Kiss (1994) proposes two criteria for determining whether a constituent is situated in the topic position (which she refers to as Spec, TopP in É. Kiss (2002)). One is that the topic position precedes the first obligatory stress in the Hungarian sentence, in fact the heaviest grammatical stress, which falls on the first constituent of the predicate part of the sentence.[2] (In É. Kiss 2002, this part of a sentence is assumed to be identical to the highest of the following positions present: DistP, FP, NegP, or AspP; this will be discussed below.) The other is that sentence adverbials can occur before, between, or directly after topics, but not in any position later in the sentence.

Constituents that are pronounced with a rising contrastive accent also satisfy the above criteria: they need to precede the first obligatorily stressed constituent of the sentence, and sentence adverbials can also occur after them. As Alberti and Medve (2000: 107) point out, these constituents can both precede and follow 'ordinary topics'. This seems to justify postulating a syntactic structure for Hungarian in which several TopP positions can dominate each other and host either ordinary or contrastive topics, which move there from postverbal positions, as all constituents occupying preverbal operator positions do in É. Kiss's framework. However, certain other syntactic

properties of contrastive topics - their ability to license resumptive pronouns, their being much less sensitive to islands than ordinary topics, and their unacceptability in certain subordinate clauses, including relative clauses - are better explained in terms of the proposal made in É. Kiss (1987, 1994), according to which contrastive topics are base-generated in a left-dislocated position.[3] Although I will not be concentrating on syntactic issues in this paper, the proposal that I will be making here about the semantics of contrastive topics seems more consistent with É. Kiss's earlier proposal.

In spite of their (possibly) identical syntactic positions, the prosodic difference between ordinary and contrastive topics is tied to important syntactic and semantic differences between them. One is that only noun phrases can be pronounced with the falling intonation characteristic of non-contrastive topics, and these must, additionally, be referential and specific or generic (see É. Kiss 2002). In contrast, any type of constituent can be pronounced with a contrastive topic intonation (see Szabolcsi 1980, 1981a), among them quantificational noun phrases, bare nominals, adjectives, and even verbs. In addition, as Szabolcsi shows, contrastive accent seems to be tied up with some non-truth-conditional aspects of meaning, to be discussed below.

In this paper, I will be seeking to account for the following observation about contrastive topics:namely, that quantificational noun phrases in contrastive topic position (as well as adverbs of quantification) always seem to be able to take narrow scope with respect to at least one other operator following them in the sentence (sometimes in addition to a wide scope reading). The reason why this phenomenon needs special attention is that it constitutes an exception to the generalization that the scope principle of generative grammar - operators precede and c-command their scope - is already satisfied at S-structure in Hungarian. The contrast is illustrated in (1)-(2) and (3)-(4) below: In (2) and (4), the sentence-initial quantificational noun phrases are pronounced with contrastive intonation, whereas in (1) and (3), they bear a falling accent, which signals that they occupy the Spec, TopP and Spec, DistP positions, respectively. In the following examples, the first obligatory accent of the predicate part of the sentence is marked by '\'. The constituent containing the word pronounced with a contrastive accent is labelled 'CT'. (To simplify comparison of the truth-conditional

interpretation of sentences with and without contrastive topics, in the translations of the former I will mostly make no reference to non-truth-conditional aspects of their meaning.)

(1) [TopP Két   tanár [DistP \minden   diákot   levizsgáztatott.]]
          two   teacher   every   student-acc   VM-examined
      i. 'There are two specific teachers that examined every student.'
      ii.* 'Every student was examined by at least two (possibly different) teachers.'

(2) [CT   /Két   tanár] [DistP \minden   diákot   levizsgáztatott.]
          two   teacher   every   student-acc   VM-examined
      i. 'There are two specific teachers that examined every student.'
      ii. 'Every student was examined by at least two (possibly different) teachers.'

(3) [DistP Több, mint   három könyvet   [FP   \János olvasott   el.]]
          more   than   three book-acc   John   read   VM
      i. 'There are more than three books that were read by JOHN.'
      ii. *'It is John who read more than three books.'

(4) [CT   /Több, mint   három könyvet]   [FP   \János olvasott   el.]
          more   than   three book-acc   John   read   VM
      i. * 'There are more than three books that were read by JOHN.'
      ii. 'It is John who read more than three books.'

The labelling of constituents in the above examples reflects É. Kiss's (2002) proposal for the syntactic structure of the Hungarian sentence. (5) shows a sentence with constituents in the various preverbal operator positions (É. Kiss 2002: 113, ex. (27)), the scope of the operators reflecting their surface positions:

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(5)
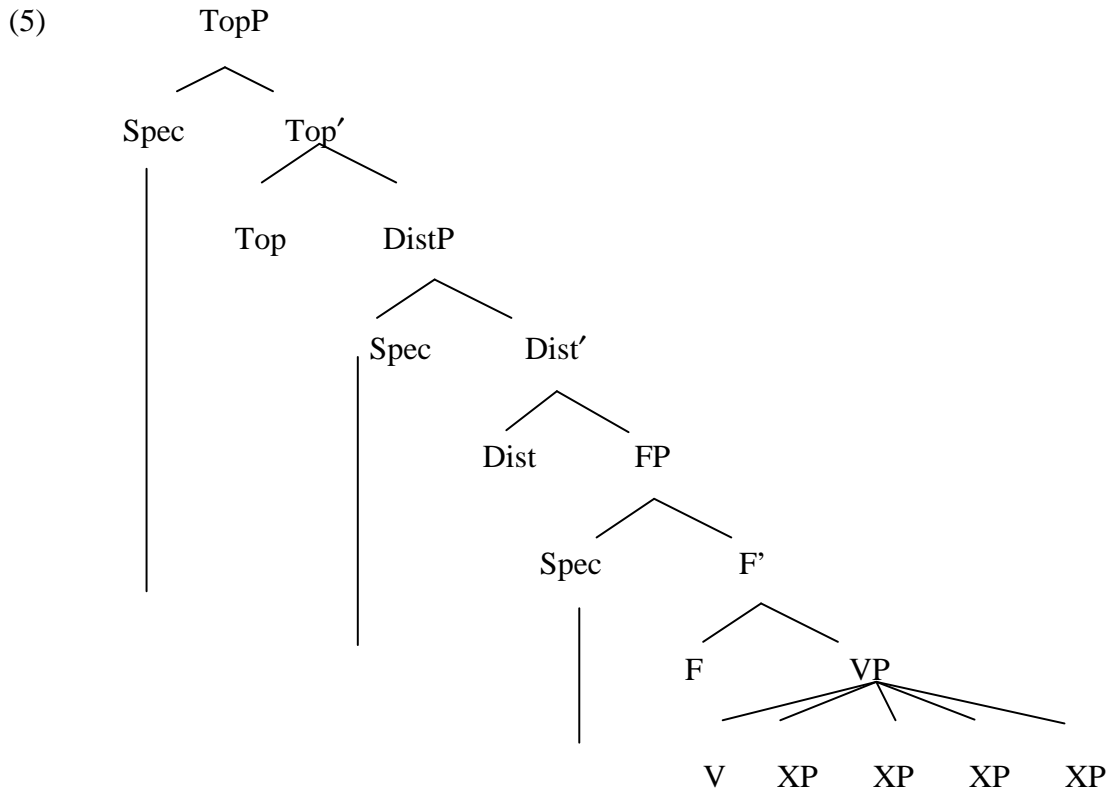
János$_i$	mindegyik gyerekét$_j$	a jogi karra$_k$	íratta be	t$_i$	t$_j$	t$_k$
John	every child-his-acc	the law school	enrolled VM			

'John enrolled each of his children in law school.'

Figure 1   *The scopes of preverbal operators in Hungarian - illustration*

Sentence (1) above is unambiguous: the sentence-initial noun phrase receives a specific reading.[4] Sentence (2), however, is ambiguous between the above reading and one according to which the same noun phrase takes narrow scope with respect to the universal noun phrase. In (3), the sentence-initial noun phrase takes wide scope over the exhaustive operator inherent in the meaning of Spec, FP; however, in (4) the scope order is reversed. In what follows, I will disregard the specific readings of the contrastive topic noun phrases, and concentrate on their narrow scope readings only. I will limit my investigation in another way, too, concentrating only on cases in which the accent in the contrastive topic constituent falls on the determiner.

Quantificational expressions pronounced with a contrastive topic accent can take narrow scope not only with respect to a second quantificational expression, but also

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with respect to negation, as illustrated in (6). In É. Kiss (2002: 132), the negative particle *nem* is situated in the head of a NegP position dominating the VP:

(6) [CT /Minden vendéggel] [NegP \nem találkozott Mari.]
          every guest-with not met Mary
     i. # 'Every guest is such that Mary did not meet him or her.'
     ii. 'It is not true that Mary met every guest.'

Although the above sentence illustrates a construction generally described in terms of the scope reversal of contrastive topics, I consider it to be a derived case, explainable in terms of an extension of the mechanism of scope reversal between a contrastive topic and a constituent in Spec, DistP or Spec, FP position, as will be introduced below. (For a discussion of cases like (6), see Gyuris, forthcoming.)

The rest of the paper is organized as follows. Section 2 reviews some previous accounts of the German counterpart of the Hungarian phenomenon under discussion, investigates the possibility of extending these to Hungarian, and then turns to previous proposals for Hungarian. Section 3 looks more closely at the contribution of contrastive topicalization to the interpretation of sentences, with particular attention to the presuppositions and implicatures that it introduces, and proposes a general way to define these. Section 4 presents a new account of the narrow scope reading of contrastive topic noun phrases. Finally, section 5 presents my conclusions.

2. SOME PREVIOUS ACCOUNTS

In this section I briefly review some previous accounts of the observation that contrastive topicalization of an expression capable of scope-taking results in a reading where the latter expression takes narrow scope with respect to other operator expressions in the sentence (possibly in addition to a reading where it takes wide scope). The phenomenon is not specific to Hungarian and has been discussed extensively with respect to German, among other languages. I will first review some previous accounts

of German, and then turn to previous accounts of Hungarian. My aim here is not to give an extensive critique of existing approaches - this would be unfair to theories worked out for German, which did not seek to cover phenomena in other languages - but to give the reader a taste of the different ways in which the problem can be approached, and to provide a standard against which the theory to be proposed in the following sections can be measured.

2.1. Previous accounts of German

According to Büring (1997), German sentences containing a scope-taking contrastive topic expression and another operator following it are potentially ambiguous with respect to the scope of these operators. The availability of a particular reading is dependent on the availability of 'reasonable implicatures', which are due to the contrastive topic. Whenever these implicatures contradict the intended truth-conditional interpretation of the sentence, the reading in question becomes unavailable.

The implicatures are calculated using the concept of *topic value*, proposed by Büring (1997: 133) for sentences containing a contrastive topic and a constituent with a falling pitch accent, the (semantic) focus. Topic values are 'typed-up' focus semantic values (Büring 1997: 66), and consist of a set of sets of propositions, generated from the proposition expressed by the sentence. Each set contains all of the possible propositions that can be generated by replacing the denotation of the focus in the original proposition by one of its alternatives (see Rooth 1985: 13). The sets differ from each other in that in each of them, the contrastive topic denotation is replaced by a different possible alternative. The procedure can be illustrated with the following example, where the contrastive accent falls on the universal determiner, which introduces determiner denotations as alternatives, and the focus accent falls on the negative particle, which introduces the alternative set consisting of the negative and affirmative operators (Büring 1997: 119, ex. (2)):

(7)   /ALLE   Politiker   sind   NICHT\   korrupt.

       all   politicians   are   not   corrupt

       i. 'It is not the case that all politicians are corrupt.'

       ii. * 'No politician is corrupt.' (= 'All politicians are such that they are not

       corrupt.')

The topic values corresponding to the two potential readings of (7) will then consist of sets of propositions of the following form (Büring 1997: 124-5):

(8)   a. $[[(7i)]]^t = \lambda P.\exists Q_{<et,<et,t>>}[Q \in$ ALT(**all**) &

              $P = \lambda p.\exists \pi_{<tt>}[\pi \in$ ALT(**not**) & $p = \pi Q(\text{politicians})(\text{corrupt})]]$

       b. $[[(7ii)]]^t = \lambda P.\exists Q_{<et,<et,t>>}[Q \in$ ALT(**all**) &

              $P = \lambda p.\exists \pi_{<tt>}[\pi \in$ ALT(**not**) & $p = Q(\text{politicians})(\lambda x.\pi(\text{corrupt}(x)))]]$

(9a-b) show the members of the two sets of sets of propositions above:

(9) a.   {{¬all(politicians)(corrupt(x)), all(politicians)(corrupt(x))},

          {¬most(politicians)(corrupt(x)), most(politicians)(corrupt(x))},

          {¬some(politicians)(corrupt(x)), some(politicians)(corrupt(x))},

          {¬one(politician)(corrupt(x)), one(politician)(corrupt(x))},

          {¬no(politicians)(corrupt(x)), no(politicians)(corrupt(x))}…}

     b.   {{all(politicians)(λx. ¬corrupt(x)), all(politicians)(λx.corrupt(x))},

          {most(politicians)(λx.¬corrupt(x)), most(politicians)(λx.corrupt(x))},

          {some(politicians)(λx. ¬corrupt(x)), some(politicians)(λx.corrupt(x))},

          {one(politician)(λx. ¬corrupt(x)), one(politician)(λx.corrupt(x))},

          {no(politicians)(λx. ¬corrupt(x)), no(politicians)(λx.corrupt(x))}…}

The implicature associated with a sentence A containing a contrastive topic is defined by Büring (1997: 69) as follows (modified slightly to fit current terminology):

(10)   Given a sentence A containing a contrastive topic, there is an element Q in
         $[[A]]^t$ such that Q is still under consideration (disputable) after A is uttered.

Assuming that questions denote sets of propositions, as proposed by Hamblin (1973: 255-7), disputability of a question means that, given a common ground, there should be at least one element in the set of propositions denoted by the question that is informative and non-absurd with respect to the common ground - that is, not included in the common ground and not contradicting it.

Assume that (7) is uttered on its (i) reading. The corresponding proposition is identical to one of the propositions in the first subset of the set in (9a), and contradicts the other one in the same subset. However, it neither entails nor contradicts the propositions in the other subsets; the corresponding reading is thus predicted to be available for (7) according to Büring, which is indeed the case. Assume now that the intended reading of (7) is the one in (7ii). In this case, each proposition in each of the subsets of the set in (9b) is entailed or contradicted by the one expressed by (7ii). Thus, the latter proposition would not leave any question in (8b) (or (9b)) disputable. This means that the implicature associated with the contrastive topic cannot be satisfied, which is in turn responsible for the absence of the relevant reading.

There is a general problem with the above account, related to the last answer, as has been pointed out in the literature; this will be discussed in section 3. As regards the possibility of extending Büring's approach to the Hungarian data at hand, note that this approach hinges on the assumption that the availability of a reading for a sentence with a contrastive topic depends only on the availability of the above implicatures. This analysis would predict, for example, that a reading on which the quantificational expression had wide scope is equally available in (4), which turns out not to be the case. It is necessary to add, however, that as far as the narrow scope readings are concerned, Büring's theory is capable of generating them, provided we accept the assumption that implicatures can have an effect on truth conditions.

In Jacobs (1997), sentences like (7) or (11) are seen as examples of what he calls I-TOPICALIZATION (topicalization by intonation), illustrated in Jacobs (1997: 94, ex. (6A)):

(11) √ALle Grass-Romane   kann man \NICHT   empfehlen.[5]
      all   Grass-novels   can   one not   recommend
      'It's not the case that all of Grass's novels can be recommended.'

Jacobs bases his account of the narrow scope of I-topics on the observation that the narrow scope interpretation of a sentence-initial quantificational expression with respect to a second operator is available only in assertive or directive sentences in German. Accordingly, he claims that their narrow scope is due to an assertive or directive operator introduced by the functional head spelling out the properties of this construction, which transforms the whole comment part of the sentence into a predicate. The latter then takes the topic part (i.e., the constituent pronounced with a root contour) as its argument. The semantic value of the sentence is then calculated as follows (Jacobs 1997: 112):

(12) $[[\text{ASSERT}^{\text{IT}}(\text{TOP})(\text{PRED})]]_{\textbf{prop}} = [[\text{PRED}]]([[\text{TOP}]])$

Jacobs (1997: 100-2) differentiates the above construction from the one he calls *I-specification*, which, however, can have the same prosodic properties. This construction involves a stressed indefinite determiner understood as specific, as in (13) (Jacobs 1997: 109, ex. (50)):

(13) √EIN Werk von Grass hat   Reich-Ranicki \NICHT
      one   work of   Grass have Reich-Ranicki not
      verrissen.
      torn to pieces
      'One work by Grass Reich-Ranicki did not tear to pieces.'

According to Jacobs, (13) is not an instance of I-topicalization, as indicated by a difference in the acceptability of its continuations given in (14a) and (14b) (Jacobs 1997: 109, ex. (50a-b)):

(14) a.   ...   nämlich   die   „BLECHtrommel".

               namely   the   tin drum

          'namely, *The Tin Drum*.'

      b.   ?   ...   aber   MANche   Werke HAT er   verrissen.

                   but   several   works have he   torn to pieces

          'but several works he did tear to pieces.'

The continuation in (14a) further specifies the referent of the whole noun phrase containing the indefinite determiner, which is pronounced with a root contour in German, whereas that in (14b) contrasts the denotation of this determiner with the denotation of another one.

There are, however, sentences similar in structure to (13) which are compatible with continuations both of the type illustrated in (14a) and of the type illustrated in (14b). One example is shown in (15a-b):

(15) √Zwei Werke von   Grass hat   Reich-Ranicki \NICHT   verrissen.

      two   works of   Grass have   Reich-Ranicki not   torn to pieces

      'Two works by Grass Reich-Ranicki did not tear to pieces.'

a.   nämlich   die   „BLECHtrommel"   und   die   „HUNdejahre".

    namely   the   tin drum   and   the   dogs years

    'namely, *The Tin Drum* and *The Dog Years*.'

b.   aber   EIN   Werk HAT er   verrissen.

    but   one   work has   he   torn to pieces

    'but one work he did tear to pieces.'

If the possibility of continuing a sentence as in (14a) shows that it should be analysed as an I-specification construction, and the possibility of continuing it as in

(14b) shows that it should be analysed as an I-topicalization construction, then the fact that (15) can be continued in either way shows that it can have both analyses, and that the scopal ambiguity is due to structural ambiguity. In fact, Jacobs (1997: 92-93) states explicitly that the inverse scope reading found in I-topicalization is a defining characteristic of the construction.

If the narrow scope of quantificational expressions pronounced with contrastive intonation indicates that they are part of a special construction, then Jacobs' proposal does not seem to be transferable to Hungarian. This is because, as pointed out by Molnár and Rosengren (1996: 71-86), quantificational noun phrases pronounced with a rising contour are possible not only in assertive/directive sentences, but also in questions, as illustrated in (16). This means that their narrow scope cannot be connected to the presence of an assertive or directive operator:

(16) [CT   /Minden   könyvet]   [FP   \ki   olvasott   el?]
              every   book-acc   who   read   VM
      'Who read every book?'

Krifka (1998a) offers a different account of the same phenomenon, claiming that (17) below is, in fact, scopally ambiguous. As such, this sentence would contrast with its Hungarian counterpart, which would have the same structure as the sentence in (4), where the contrastive topic is non-specific and thus has only a narrow scope reading (Krifka 1998a: 80, ex. (16b)):

(17)   Mindestens   /EIN   Student   hat   \JEden   Roman gelesen.
       at least   one   student-nom has   every-acc   novel read
       'At least one student has read every novel.' $\forall(\exists), \exists(\forall)$

Krifka's proposal builds on the scope assignment principle proposed by Frey (1993) for German S-structure, which states that '[i]f α, β are operators occurring in a sentence S, then S has a reading in which α has scope over β iff (i) α c-commands β, or (ii) α c-commands a trace of β' (Krifka 1998: 76). In addition, it assumes that a clause-

initial constituent carrying the rise in a rise-fall contour is a 'focus in topic' - that is, a constituent moved from a preverbal position, where focus is assigned to it, into topic position (the idea being that focus can be assigned prior to movement). (17′) below illustrates how the structure in (17) is derived on the basis of the above assumptions (Krifka 1998a: 86, ex. (30f)):

(17′) $[_{CP}$ [mindestens ein Student] $_{F,3}$ $[_{C'}$ hat$_1$ [[jeden Roman]$_{F,2}$ [t$_3$ [t$_2$ [gelesen]]] t$_1$]]]
        'At least one student has read every novel.' $\forall(\exists)$, $\exists(\forall)$

As pointed out in É. Kiss and Gyuris (2003: 374-6), however, none of these assumptions can be transferred to Hungarian. First, as illustrated in (5) above, operators moved to A′-positions dominating the VP originate in VP-internal positions in this language, and thus c-command the traces of their clause-mates. This means that if Frey's principle did hold, the relative scopes of the preverbal operators would be free - which is not the case, as discussed above. Second, if contrastive topics were moved to the topic position from the focus position in Hungarian, sentences that contain both a contrastive topic and a focus would be impossible, since the subsequent filling of the focus position after it has already been emptied would be prohibited by the principle of strict cyclicity. The fact that there are sentences in Hungarian which contain both a contrastive topic and a focus counts as an argument against the application of the above strategy to Hungarian.[6,7] Third, there are certain types of constituents in Hungarian, like non-negative universal quantifiers (*minden gyerek* 'every child'), distributive quantifiers (*két gyerek is* 'two children as well'), and existential quantifiers (*valaki* 'somebody'), that can never occur in focus position, but can function as contrastive topics without any restrictions on their doing so.

    Having illustrated how certain existing accounts of German predict the narrow scope readings of quantificational expressions pronounced with a contrastive intonation, and having shown why these do not extend to Hungarian, I will next review current approaches to the treatment of the relevant phenomena in Hungarian.

2.2   Previous accounts of Hungarian

As mentioned above, É. Kiss (1987, 1994) proposes that constituents pronounced with contrastive accent are generated in left-dislocated position, but are coindexed with an empty argument within the S node and interpreted as if they occurred in the position of this empty argument in surface syntax. The reason why quantificational expressions in left-dislocated position are interpreted as taking narrow scope with respect to an operator that is in fact dominated by the S node is that the position of the empty argument coindexed with the left-dislocated expression follows and is c-commanded by the above operator.

       É. Kiss (2000, 2002), adopting an idea advanced by Alberti and Medve (2000: 110-4), proposes that, instead of applying special mechanisms that ensure that quantificational contrastive topics take scope in a manner different from that of all of the other quantificational expressions in the sentence, we should explain their exceptional scope-taking properties by saying that they have a different type of denotation in contrastive topic position than they have in other positions of the sentence: namely, they denote properties instead of generalized quantifiers, in addition to denoting (sum) individuals, where applicable (as in reading (i) of (2)). É. Kiss (2000: 92-5, 2002: 24-5) argues that the interpretation of sentences containing contrastive topics of any kind (including verbal modifiers, verbs, and adjectives; see Szabolcsi 1980, 1981a) is in general compatible with these constituents denoting properties, and, moreover, that the properties denoted by the contrastive topics can also be regarded as the logical subjects of sentences (denoting 'what the sentence is about'), and thus also as aboutness topics in a semantic sense.

       É. Kiss and Gyuris (2003: 390-402) show how the interpretation of declaratives containing contrastive topics could be derived compositionally on the basis of the above principles, by means of the additional assumption that contrastive topics occupy their surface positions as a result of moving from a postverbal position. One problem with this strategy is that it predicts that quantificational contrastive topics take minimal scope among all operators in the sentence, which is not always the case.[8] Another is that there

are some syntactic elements, such as adverbs of quantification, as shown in (18), that can appear as contrastive topics in a sentence, but still cannot be considered to denote properties on any reasonable understanding of this notion:

(18)   Péter   [_{CT} /mindig] [_{FP} \akkor ment   moziba,   amikor szabadnapos   volt].
         Peter   always   then   went   movies-into   when   has a day off   was
         'Peter /ALways went to the movies when he had a day OFF\.'

        In what follows, I will be proposing a new strategy for deriving the narrow scope readings of quantificational contrastive topics. Since this proposal gives prominence to the role of contrastive topics in discourse organization, the next section will consider what it means to have a contrastive topic in a sentence as this relates to information structuring, sentence interpretation, possible discourse structures, and implicatures.

3   THE FUNCTIONS OF CONTRASTIVE TOPICS

3.1   Some observations about syntactic structure and interpretation

It has been claimed by many authors, including Lambrecht (1994), Vallduví and Engdahl (1996), Lee (1999), von Fintel (1994), Büring (1997), Jacobs (1997), and van Hoof (2003), that in English, German, and Korean, among other languages, constituents pronounced with a contrastive accent always have to be followed in the sentence by a constituent bearing a falling pitch accent, which constitutes the second intonational peak of the sentence, and which is normally interpreted as the (semantic) focus. Similar observations have also been made about Hungarian in Szabolcsi (1981b, 1994), Kenesei (1989), and Molnár (1998).

        As Kálmán et al. (1986: 132-3) observe, contrastive topics can appear only in non-neutral sentences - that is, those that normally do not occur 'out of the blue' (or do so only in the presence of substantial information about the discourse)[9] or as answers to

a 'What happened?' question, but occur in retorts or answers to constituent or 'yes-no' questions (to be discussed below). Non-neutral sentences can be viewed as ways of specifying a value for a variable whose value has been at issue in a question or has been specified differently in a preceding utterance, the rest of the sentence being presupposed. (This is the reason why Kenesei (1989: 116) proposes that sentences containing a preverbal focus are identificational sentences.) As regards the syntactic position of the constituent specifying the value of the variable asked about in a Hungarian declarative, the following generalizations can be made. Whenever this constituent can be part of a maximal projection that licitly appears in Spec, FP, it will move to the latter position, pied-piping the rest of the maximal projection. (Within this maximal projection, though, the subconstituent specifying the value for the variable will be the most prominent prosodically.) A relevant example is given in (4) above. In other cases, the constituent specifying the value asked about can appear inside a maximal projection in Spec, DistP, as in (2), or be identical to a negative particle in Spec, NegP, as in (6), or to the verum focus, as in (19). (In É. Kiss's (2002) framework, a non-negated verb that is not preceded by a constituent in Spec, FP moves to the head of an AspP projection dominating the VP, which is projected only when there is no FP or NegP.)

(19)   [CT   /János] [AspP   \várta   Marit.]
            John   waited Mary-acc
        i. 'John did wait for Mary.'
        ii. 'What John did was wait for Mary.'

        Thus, the accented constituent following the contrastive topic does not have to be identical to the constituent in the focus *position* of the sentence (i.e., in Spec, FP), but it must be identical to the initial constituent of what É. Kiss (2002: 11-26) calls the predicate part of the sentence - that is, the part following the constituents in Spec, TopP.

        Given the above restriction, we can explain the contrast between the (20a) and (20b) examples below, where the latter contains a DP which, though generally able to occupy either Spec, FP or Spec, DistP positions, in this case occupies the latter position

with a contrastive topic in the same sentence, leading to ungrammaticality. -The reason for the contrast, then, is that only the former construction, with the DP in Spec, FP, expresses identification:

(20) a.   [CT   /János] [FP   \több, mint   öt   gyereket   hívott meg.]
                    John   more   than   five   child-acc   invited VM
             'As for John, he invited more than five children.'

      b.*   [CT   /János] [DistP \több   mint   öt   gyereket   meghívott.]
                    John   more   than   five   child-acc   VM-invited

The other well-known semantic properties of constituents in Spec, FP - that they express exhaustive listing (Szabolcsi (1981a: 148-60)) and that numerals have an 'exactly' interpretation there - all follow from the function of the preverbal focus as a means of expressing identification. The exhaustive interpretation means that whenever a sentence with a constituent in Spec, FP is true, it will become false if the constituent in question - or, more precisely, its prosodically prominent subconstituent - is replaced by a constituent having an alternative denotation. (The above qualification about subconstituents is necessary, for the following reason. Although only maximal projections can appear in Spec, FP position, it is only their prosodically prominent constituents that appear to be semantically focused, given the absence of a focus projection in Hungarian, at least as far as constituents with stable stress patterns are concerned; on this, see Kálmán and Nádasdy (1994: 458).)

The Spec, DistP position is not associated with an exhaustive interpretation (see Szabolcsi 1997: 135-7). However, if it is filled by a universal noun phrase, as in (2), with prosodic prominence on the determiner, the exhaustive interpretation follows from the semantic properties of the determiner itself.[10]

It has been observed in the literature about various languages (e.g. Eckardt 2002; van Hoof 2003: 519) that declaratives containing a contrastive topic often appear in a list of sentences having a parallel structure, where the denotations of the contrastive

topic constituents are taken from the same domain, as are the denotations of the constituents with falling intonation, the rest of the sentences remaining the same. Van Hoof (2003: 517) illustrates this observation with the following example from German (her (1)):

(21) Die   /MÄNNER   haben ein   \REZITATIV geprobt
      the   men   have a   recitative   rehearsed
      (und   die   /FRAUEN   eine   \ARIE.)
      and   the   women an   aria
      'The MEN have rehearsed a RECITATIVE (and the WOMEN an ARIA).'

Importantly, in a list of sentences of the above kind, the constituent pronounced with a falling accent can occur several times but the one pronounced with a rising accent cannot, as the following contrast shows (van Hoof 2003: 521, ex. (8a)-(8b)):

(22) a. *   Die   /MÄNNER   haben ein   \REZITATIV geprobt,   und
             the   men   have a   recitative   rehearsed   and
             die   / MÄNNER   (haben)   eine   \ARIE (geprobt).
             the   men   (have)   an   aria   (rehearsed)
             'The MEN have rehearsed a RECITATIVE and the MEN (have
             rehearsed) an ARIA\.'

      b.   Die   /MÄNNER   haben ein   \REZITATIV geprobt,   und
             the   men   have a   recitative   rehearsed   and
             die   /FRAUEN   (haben)   \AUCH   ein   Rezitativ
             the   women   (have)   also   an   recitative
             geprobt.
             rehearsed
             'The MEN have rehearsed a RECITATIVE and the WOMEN have
             rehearsed a recitative, TOO.'

This means that if we consider the set of pairs consisting of the denotations of constituents pronounced with a rising accent and those pronounced with a falling accent appearing together in a list in the same sentence, the relation constituted by these pairs will be a function. In other words, the individual sentences in lists of the above type can be seen as specifying an argument-value assignment for a function whose domain consists of the set of denotations of the contrastive topics (or of the prosodically prominent parts of these topics) in the list and whose range consists of the set of denotations of the semantic foci of the sentences in the list. Consider now the Hungarian equivalent of (21):

(23)   [CT   A   /férfiak] [FP   egy   \recitativót   próbáltak],
           the   men   one   recitative-acc rehearsed

       [CT   a   /nők]   pedig   [FP   egy   \áriát.]
           the   women however   one   aria

       'The men, they rehearsed a recitative, whereas the women, they
       rehearsed an aria.'

Consistent with the well-known claims about the exhaustive reading of constituents in the Hungarian Spec, FP position, discussed above, there seems to be a major difference between the interpretation of (21) and that of (23). Although both sentences appear to indicate that the only relevant type of song that the men rehearsed was a recitative, this interpretation of (21) arises from pragmatic factors associated with the context of utterance, whereas it is part of the truth-conditional meaning of (23). Thus, if it turns out that the men also rehearsed a final chorus, this state of affairs will necessarily make (23) false, but not (21). In more general terms, then, the truth of a Hungarian sentence with a contrastive topic entails, even in isolation, the falsity of all sentences that differ from it in that the prosodically prominent part of the predicate-initial constituent is replaced by an alternative of the same semantic type. Thus, each relevant Hungarian sentence can be seen as a way of indicating that the denotation of the prosodically prominent part of the contrastive topic is associated with one and only one element of the set of alternatives to the denotation of the prosodically prominent part of the predicate-initial constituent.[11]

Having investigated the truth conditions of declaratives with contrastive topics, we now turn to an important characteristic of these sentences across languages: namely, that they appear to evoke alternatives to the contrastive topic denotation, because the information provided by them seems to be 'partial'.

3.2   Partiality and contrast

The idea that the use of a contrastive topic indicates that the speaker is providing only partial information - that she is answering only part of the question under discussion - is already an old one. Szabolcsi (1980: 75-6, 1981a: 144) argues, for example, that the presence of a contrastive topic in a sentence does not change its truth conditions, but only permits an 'interpretational surplus' to arise. This can be characterized in the following way: a sentence with a contrastive topic indicates that there are things in the universe of discourse other than that referred to by the contrastive topic about which the same question (that is, the one that the sentence is answering) could be sensibly raised, and it is possible that the answer to these questions would be different from that provided by the sentence. (For a defence of the claim that reference to alternative propositions is built into the *truth conditions* of Hungarian sentences containing a contrastive topic, see Kenesei 1989.) Consider the following example (Szabolcsi 1981a: 144, ex. (4a), with notation slightly changed):

(24)   [$_{CT}$ A   /padlón] [$_{FP}$ \Péter aludt.]
                    the   floor-on   Peter   slept
        'As for the floor, PETER slept there.'

There are two elements in Szabolcsi's 'interpretational surplus' proposal that need to be distinguished.[12] One is that there are alternatives to the contrastive topic denotation about which the hearer also expects information after hearing the sentence. In the case of (24), this means that the sentence evokes a set of alternative places about which the question 'Who slept there?' could be raised. The other is that the information about the alternatives to the contrastive topic denotation is expected to be different from

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what is provided about the contrastive topic denotation in the sentence. This means that after hearing (24), the listener expects that other relevant people have slept in other places. This 'interpretational surplus' is much more easily cancellable than the former one: Peter could also have slept in other places (assuming that we are discussing, for example, sleeping in unusual places, where one person is allowed to sleep in more than one place). It thus appears that these two facets of the non-truth-conditional meaning of sentences have a different status. The rest of the section is devoted to the issue of how they should be characterized.

As already discussed in Section 2.1, Büring (1997: 69) considers the first type of non-truth-conditional meaning to be an implicature, as formulated in (10), repeated here for convenience as (25):

(25)   Given a sentence A, containing a contrastive topic, there is an element Q in $[[A]]^t$ such that Q is still under consideration (disputable) after uttering A.

In order to appreciate the effects of (25), consider the following question-answer sequence (Büring 1997: 56, with notation slightly changed):

(26)   A: Did your wife kiss other men?
        B: $[MY]_{CT}$ wife $[DIDN'T]_F$ kiss other men.

The focus and topic values of (26B) are shown in (27) and (28) below:

(27) $[[(26B)]]^f$ = {my wife kissed other men, my wife didn't kiss other men}

(28) $[[(26B)]]^t$ =   {{my wife kissed other men, my wife didn't kiss other men},
                          {your wife kissed other men, your wife didn't kiss other men},
                          {Bolle's wife kissed other men, Bolle's wife didn't kiss other
                          men}, {Fritz's wife kissed other men, my wife didn't kiss other
                          men},…}

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The problem with formulating the implicatures of declaratives with contrastive topics as in (25) is that contrastive topics appear felicitously in the last conjunct of a list answer to a question, where this conjunct forms a complete answer together with the preceding conjuncts, as pointed out by Krifka (1998b: 22-3), and Kadmon (2001: 387), among others. Such a case is illustrated in (29A-B), where the second conjunct of (29B) leaves no question disputable:

(29) A: When did John and Mary arrive?
      B: $[_{CT}$/John] arrived on $[_F$\Monday] and $[_{CT}$/Mary] arrived on $[_F$\Tuesday].

Kadmon (2001: 387) proposes a way to overcome the above difficulty by saying that what (29B) implicates is that 'some element in the topic semantic value of B's utterance is still to be considered after that utterance has been made - not necessarily because the answer is still disputable, but quite possibly because B wishes to remind A of that answer.' I believe, however, that given the acceptability of (29), it is difficult to capture what it means for a speaker to want to remind her interlocutor of part of the answer to the question that the interlocutor herself asked.

Büring's (2003: 519) proposal already meets the above challenges. It proposes, essentially, that the use of a contrastive topic in a declarative sentence indicates or presupposes a *strategy* — roughly, that the declarative is used as a partial answer to an explicit or implicit question (either a singular or a multiple *wh*-question). Consider the following question-answer pair, however:

(30) A: $[_{FP}$ Ki   olvasott   el   kevesebb,   mint   öt   könyvet?]
            who   read   VM   less   than   five   book-acc
            'Who read fewer than five books?'

      B: $[_{CT}$/Kevesebb, mint   öt   könyvet] $[_{FP}$ \Mari   olvasott   el.]
            less   than   five   book-acc   Mary   read   VM
            'It is Mary who read fewer than five books.'

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The above discourse is perfectly fine by itself, and does not have to be part of an answer to a broader question, either implicitly or explicitly.[13]

In view of the interpretation of the data in (30) and related patterns (see Gyuris, to appear), we must conclude that Büring's (2003: 519) formulation of the presuppositions of contrastive topics is not general enough to cover all of the relevant examples in Hungarian.

3.3   A proposal for defining the presuppositions and implicatures of contrastive topics

In view of the claim made in Section 3.1 that Hungarian declaratives with a contrastive topic indicate that the denotation of the prosodically prominent part of the contrastive topic constituent is associated with one and only one element in the set of alternatives to the denotation of the predicate-initial constituent, and the intuitions behind the proposals for capturing the fact that contrastive topics evoke a set of alternatives, I offer the following proposal. This is that contrastive topics in Hungarian should be viewed as introducing (at least) the presupposition that there is a set of relevant alternatives to the denotation of the prosodically prominent part of the contrastive topic and a unique way of assigning to each of these alternatives one alternative to denotation of the prosodically prominent part of the predicate-initial constituent. In other words:

(31)   *Presupposition of declaratives containing contrastive topics (first version):*
        There is a set of relevant alternatives to the denotation of the prosodically
        prominent part of the contrastive topic and a unique function mapping this set
        into the set consisting of the denotation of the prosodically prominent part of the
        predicate-initial constituent and its alternatives.[14]

It has been observed by many authors that contrastive topics frequently appear cross-linguistically as parts of complete answers to multiple constituent questions[15] expecting a list answer - referred to as *matching questions* in the literature - or, when used alone,

as partial answers to such questions (see Krifka 1998b: 120; Kadmon 2001: 524-5; Büring 2003: 388-97). (32) illustrates a matching question to which (24) provides a partial answer, which is generated from the latter by replacing the predicate-initial constituent with a corresponding interrogative expression in Spec, FP and placing an interrogative expression corresponding to the contrastive topic into Spec, DistP. (For a discussion of the types and interpretations of multiple constituent questions in Hungarian, see É. Kiss 1987, 1994.)

(32) [DistP Hol [FP ki aludt?]]
            where   who slept
       'Given a relevant set of places, say for each place who slept there!'

There are many constraints on the felicitous use of matching questions, as pointed out by Krifka (2001: 307-9) (based on Wachowicz (1974) and Comorovski (1996)). First, one of the question words, usually the first one, must be linked to a contextually given set - that is, be D-linked, where 'a *wh*-phrase is D-linked if the discourse participants can exhaustively partition the set denoted by the *wh* quantifier in an identical way by a shared selection criterion' (Comorovski 1996:12). (The same property of one of the question words in a matching question is referred to as *specificity* in É. Kiss 1993.) In the case of (32), this means that the interlocutors must agree on what is included in the set of relevant places. Second, the roles of the interrogative constituents are unequal. This asymmetry is also noted by Bolinger (1978: 133), who assumes that a matching question in which one question expression is D-linked is 'about' the antecedent set of this constituent. Third, matching questions usually presuppose that every element in the set denoted by the D-linked constituent is part of one answer in the answer list, but they do not introduce a comparable presupposition regarding the other interrogative expression.

On the basis of the above characteristics, Krifka (2001: 511) claims that what matching questions ask for is a function, a mapping procedure from a given and identifiable domain to values. Krifka argues that the well-known properties of matching questions follow from this account. The D-linking of one of the question words is

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necessary, since the D-linked question word defines the domain of the function. In addition, since a function has to map each element of its domain to an element in its range, each element of the domain of the D-linked question word would be expected to be associated with an element of the domain of the other question word. Finally, the reason why the domain of the D-linked expression must contain more than one element is that functions with one element in their domain are degenerate.

In the light of Krifka's theory, there is another reason for proposing (31) as the presupposition of declaratives with contrastive topics. This is that (31) explains the well-formedness of discourses consisting of multiple constituent questions and declaratives with contrastive topics where the denotation of the contrastive topic is a member of the domain of the D-linked interrogative expression and the denotation of the prosodically prominent part of the predicate-initial constituent is a member of the domain of the other interrogative expression. Such declaratives can be viewed as a way of specifying an argument-value pair determined by the function that the interrogative asks about. In addition, this proposal easily accounts for the parallel between the D-linkedness of one of the question words and the fact that in a felicitous answer the constituent corresponding to this question word must play the role of the contrastive topic.

Note that this proposal for defining the presuppositions of contrastive topics does not require that such declaratives be part of an answer to a global question either implicitly or explicitly (see (30a-b) above, which is felicitous in isolation), but explains why speakers tend to think of alternatives to the contrastive topic denotation when hearing them. It also explains why declaratives expecting a singular answer cannot felicitously be answered by a declarative containing a contrastive topic. For example, multiple constituent questions in Hungarian that contain both preverbal and postverbal interrogative expressions require a single answer. Such questions cannot be answered by a declarative with a contrastive topic, as (33A-B) illustrate:

(33) A: [FP Ki találkozott kivel?]]

who met who-instr

'Who met whom?'

B: # [CT /Mari] [FP \Péterrel találkozott.]

Mari Peter-instr met

'As for Mari, she met Peter.'

Admittedly, the way that the presupposition of declaratives with contrastive topics is formulated in (31) does not yet account for the fact that such declaratives do not appear felicitous if the truth of the proposition that they are intended to express entails the truth or falsity of all the propositions obtained by replacing the contrastive topic and the focus denotation in the above proposition by their respective alternatives. (This is the phenomenon that Büring (1997) wanted to account for by saying that there should be one disputable question left after the utterance of a sentence with a contrastive topic (see (10) above); this, however, leads to the problem of the last answer, as discussed above.) The phenomenon is illustrated in (34), which is not interpretable in Hungarian (note that its English translation is likewise uninterpretable):

(34) #[CT /Minden tanár] [DistP \minden diákot

every teacher every student-acc

levizsgáztatott.]

VM-examined

#'Every teacher, they have examined every student.'

If the intended meaning of (34) is 'Every teacher examined every student', and this proposition is true in a situation, then for all propositions of the form 'x teachers examined y students', it follows that they should be either true or false in that situation. In other words, whenever both x and y stand for denotations of monotone-increasing determiners, the corresponding proposition will be true, and whenever either x or y stands for a non-monotone increasing determiner, the propositition will be false. (If 'Every teacher examined every student' is true, then 'At least three teachers examined at least five students' will also be true, provided that there are at least three teachers and at

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least five students. In addition, 'At most three teachers examined exactly four students' will be false, provided that there are more than three teachers and more than four students.) We can capture this pattern by saying that the value assigned by the function presupposed by (34) to the argument corresponding to the denotation of *every* (whatever it is taken to be) determines the value assigned to the other arguments. I believe that we can account for (34) by making a restriction prohibiting the above kind of relationship between argument-value pairs determined by the function that is presupposed by a declarative containing a contrastive topic. We can do so by modifying (31) as follows:

(35)   *Presupposition of declaratives containing contrastive topics (final version):*
         There is a set of relevant alternatives to the denotation of the prosodically
         prominent part of the contrastive topic and a unique function mapping this set
         into the set consisting of the denotation of the prosodically prominent part of the
         predicate-initial constituent and its alternatives. No argument of this function
         can be assigned a value that entails what values the function assigns to the other
         arguments.

The formulation of the presupposition in (35) does not say anything about why sentence (24) seems to convey the idea that at other places, other people slept. I claim that this part of the meaning of declaratives with contrastive topics should be regarded as an *implicature*. This is supported by the fact that this part of the interpretation of (24) is much easier to cancel. For example, (24) can be continued in a way that assigns Peter to another place as well (in the context described above):

(36)   [CT   A   /heverőn] [F   szintén \Péter aludt.]
                 the   couch-on   also   Peter slept
          'As for the couch, PETER slept there, too.'

In view of the discourse constituted by (24) and (36), I claim that what seems to be an inherent part of the meaning of declaratives with contrastive topics – that different alternatives of the contrastive topic denotation are associated with different alternatives to the denotation of the prosodically prominent part of the predicate-initial constituent -

can be captured by saying that the function presupposed by such a declarative maps different elements of the domain onto different elements of the range - in other words, is injective:[16]

(37)   *Implicature of declaratives containing contrastive topics:*
        The unique function whose existence is presupposed by the sentence is injective.

Sometimes it is possible to continue a declarative containing a contrastive topic with a sentence in which an expression denoting one alternative of the denotation of the predicate-initial constituent plays the role of the contrastive topic and an expression whose denotation can be considered an alternative of the denotation of the contrastive topic is situated in predicate-initial position, as illustrated below:[17]

(38)   [$_{CT}$ /Okosnak] [$_{FP}$ \János okos], [$_{CT}$ /Péter] [$_{FP}$ csak
                clever-dat   John   clever   Peter   only
        \szorgalmas].
        conscientious
        'As for cleverness, it is John who is clever; Peter, he is only
        conscientious.'

I claim that whenever a speaker utters sequences of the above type, she takes the function presupposed by the first conjunct to be bijective - that is, in addition to being injective, this function is also surjective.[18] Surjectivity means in this case that there is a contextually given subset of denotations of the same type as the denotation of the predicate-initial constituent whose elements are all associated with a particular element of the domain of the function. Since bijective functions are invertible, we would expect that sentences asserting that an element of the domain is associated with an element of the range can be followed felicitously in a discourse by sentences asserting that a particular element of the range is associated with an element of the domain. Such sentences might, for example, form the parts of an answer to a multiple constituent question, since both kind of statements can properly specify the value that the function

expected by the matching question as answer assigns to a particular argument of its domain.

Having considered the status of the two types of 'partiality' inherent in the meaning of declaratives with contrastive topics, we turn next to the question of how the narrow scope readings of quantificational contrastive topics can be incorporated into the proposals made above.

4. TOWARDS A FORMAL TREATMENT OF NARROW SCOPE READINGS

In this section we consider how interpretation (ii) of (4) above, repeated here as (39), where the contrastive topic DP takes narrow scope with respect to the identificational focus, can be captured on the basis of the principles outlined above.

(39) [CT   /Több, mint   három könyvet]   [FP   \János olvasott   el.]
          more   than   three   book-acc   John   read   VM
    i. * 'There are more than three books that were read by JOHN.'
    ii. 'It is John who read more than three books.'

Given (35), (39) must presuppose that there is a set containing relevant alternatives to the denotation *of more than three* and that there is a function with the properties specified above that maps this set into the set of individuals - that is, the alternatives of the focus denotation. (39) asserts that this function assigns to the denotation of *more than three* the individual John. (To make things simpler, we can assume throughout that the set of alternatives introduced by the focus consists of atomic individuals only - which, however, will still allow us to observe the scope interaction between the contrastive topic quantifier and exhaustive focus. Treating examples like (2) above would, however, require the introduction of extra machinery, which cannot be handled within the framework of this paper. For a more complete treatment, see Gyuris, to appear.)

There are two questions that need to be answered here: what kind of elements the domain of the function actually consists of; and how values are assigned to arguments by the relevant function. Let us assume for the moment that the domain of the function consists of quantities, and concentrate on the second question. This has two possible answers. One is to say that a quantity is mapped onto the individual that has the property of having read the relevant quantity of books. This would mean that, according to (39), the quantity corresponding to *more than three* is mapped onto John if he is the only individual for whom there are more than three books that he read. The other possibility is to say that the function maps a quantity onto the individual for which the quantity of books that the individual has read is equivalent to that quantity. The issue cannot be determined on the basis of (39), since if there are more than three books that a person has read, then the number of books read by that person is equivalent to more than three. In order to decide the issue, we might consider a sentence having a structure similar to (39), but containing a determiner with different semantic properties, as shown in (40):

(40) [CT   /Páros számú   könyvet] [FP   \Péter olvasott   el.]
              even numbered   book-acc   Peter read   VM
      'As for an even number of books, Peter read that many.'

According to the first strategy discussed above, (40) would have to mean that Peter is the individual for whom there is an even number of books that he read. Let us imagine a situation where there are two relevant individuals, John and Peter, and John has read three books, whereas Peter has read four books. Naturally, if a person has read three books, there is also an even number of books among those that he or she has read; thus, (40) could not be considered true in the relevant situation. However, since (40) is indeed true according to speaker intuitions in this case, it seems that the function presupposed by (39) and (40) should be defined according to the second strategy, as mapping a quantity onto an individual when the number of books read by that individual is equivalent to the quantity.

Having arrived at the principles that determine the assignment of a value to the arguments concerned, we can now address the question of how exactly the domain of the function should be conceived. I propose that the domain of the function presupposed by (39) should consist of contextually given subsets of the set of natural numbers. The subset to which (39) assigns a value would be the set of natural numbers greater than 3 - that is, {4, 5, …}, while the subset to which (40) assigns a value would be the set of even numbers, {2, 4, 6…}. This proposal is supported by a number of facts. One is that the function presupposed by (39) and (40) has to be similar to those functions that are expected as answers to multiple constituent questions with D-linked *how many* phrases, according to claims in the literature about the interpretation of D-linked interrogative expressions.

Szabolcsi and Zwarts (1997: 237), for example, claim that the following sentence (their (65b)) is acceptable in a situation where people receive various scores and we are looking at scores that people could have received and asking which has no person's name associated with it:

(41)   How many scores did no one receive? (Answer: 22 and 27.)
        'Which of the figures on the blackboard has no name next to it?'

Szabolcsi and Zwarts claim that (41) is interpretable if the *how many* expression is D-linked - that is, if its domain is taken to be a subset of the set of natural numbers, determined by some contextually given criteria. The reason why D-linking is crucial for making (41) interpretable is that if the domain of the *how many* expression were taken to be the set of natural numbers, it would be an ordered set, but selecting only certain members of the above set turns the result into an unordered one.

As noted above, one typical use of declaratives with contrastive topics is as partial answers to matching questions where the contrastive topic 'answers' the D-linked interrogative expression and the semantic focus the other interrogative. As discussed above, in Hungarian matching questions, the interrogative expression that can be answered by the contrastive topic in a follow-up declarative is the one situated in

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Spec, DistP (cf. the contrast between (32) and (33) in Section 3.3). Thus, the matching question to which (39) and (40) provide partial answers would be the one in (42), which is interpretable only if the domain of the *how many* expression is D-linked - that is, if there is a set of relevant quantities in the context:

(42) [$_{DistP}$ A   könyvek   közül hányat   [$_{FP}$ ki   olvasott   el?]]
               the   books   among how many-acc who   read   VM
        'Given a set of relevant quantities, say for each of them who the person is for
        whom the quantity of books he/she read is identical to that quantity!'

Given that (39) and (40) are appropriate answers to (42), I propose that the latter shouldnot be viewed as asking for a function mapping a subset of the set of natural numbers into the set of individuals in the manner proposed by Szabolcsi and Zwarts (1997), but for a function mapping a set of subsets of the set of natural numbers into the set of individuals. In this way, the function asked for by (42) and the one presupposed by (39) and (40) would have similar properties.

Note that if the subsets constituting the domain of the function presupposed by (39) and (40) are chosen on the basis of contextual salience, they will, by default, not be ordered. Thus, one part of the presupposition in (35) – namely, that one argument--value assignment that is determined by the function presupposed by those declaratives that contain contrastive topics should not determine all of the other assignments - would more or less automatically follow.

With the above considerations, let us return to the interpretation of (39). I claim that this sentence introduces the presupposition that there is a unique function of the following kind, where '$\mathbf{C} \cap 2^{\mathbf{N}}$' refers to a contextually restricted subset of the set of all subsets of the set of natural numbers, $\mathbf{N}$, and given a set A, '$|A|$' stands for the number of elements in A:

(43)   f: $\mathbf{C} \cap 2^{\mathbf{N} \cup 0} \rightarrow$ PERSON
       $\forall M[M \in \mathrm{DOM}(f) \rightarrow \forall x((|\{y \,|\, \mathrm{BOOK}(y) \wedge \mathrm{READ}(y)(x)\}| \in M) \rightarrow x = f(M))]$

$\{4, 5, 6...\} \in \text{DOM}(f)$

Thus, the function presupposed by (39) maps a contextually restricted subset of the set of subsets of **N** that includes $\{4, 5, 6, …\}$ onto the set of persons, assigning to each set the person that read as many books as one of the elements of the set. Given these presuppositions, the sentence asserts that the function assigns to the argument constituted by the set $\{4, 5, 6...\}$ the individual John. This is identical to saying that John is the only individual for whom the number of books that he has read is more than three. Such an analysis correctly predicts that the truth conditions of (39) are identical to those that characterize readings where the contrastive topic expression receives narrow scope with respect to the exhaustive operator inherent in the meaning of the preverbal focus.

In this section I have presented an approach to the interpretation of declaratives with quantificational expressions as contrastive topics that is based on the way that the presuppositions of these constructions were defined in the previous section. Although the approach assigns non-traditional interpretations to the prosodically prominent determiners of the contrastive topic noun phrases, it reflects their intuitive interpretations and predicts their narrow scope with respect to exhaustive focus.

5. CONCLUSION

In this paper, I have outlined a new approach to the narrow scope readings of quantificational contrastive topics in Hungarian. More specifically, I have proposed a new way of accounting for the two kinds of 'partiality' inherent in the meaning of these expressions, by saying that one of them has the properties of a presupposition and the other one that of an implicature. On this analysis, declaratives containing contrastive topics introduce the presupposition that there is a unique function whose domain is determined by the prosodically prominent part of the contrastive topic and whose range is determined by the predicate-initial constituent, and assert that this function assigns the value corresponding to the denotation of the latter constituent to the denotation of

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the former one. In addition, sentences with quantificational noun phrases as contrastive topics (with prosodically prominent determiners) presuppose a function whose domain consists of sets of quantities- an analysis which correctly predicts the truth conditions of these sentences, which are traditionally described in terms of the contrastive topic taking narrow scope with respect to the predicate-initial constituent.

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[1]Note that in Hungarian, the accent always falls on the initial syllable of a word.

[2]According to Kálmán et al. (1986), only non-neutral (corrective) sentences have a maximum of one main stress in Hungarian. In 'neutral sentences' (i.e. those that can answer a *What happened?* question), every constituent bears an equally strong stress. Since, as Kálmán et al. (1986) also remark, contrastive topics occur only in non-neutral sentences in Hungarian, I will ignore the other sentence type in what follows.

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[3] I thank an anonymous reviewer for reminding me of this issue.

[4] The above noun phrase is also licensed in the Spec, DistP position (see Szabolcsi 1997: 121), where it would simply receive a wide scope reading without being interpreted as specific.

[5] The '√' sign is used by Jacobs to indicate that the intonation of quantificational expressions that can induce narrow scope is in fact a fall-rise (a 'root contour') and not simply a rise.

[6] As pointed out by Huba Bartos (personal communication), this reasoning is correct only if the focus position is assumed to be unique, but see Alberti and Medve (2000: 97-105) and É. Kiss (1998: 10-28) for another view.

[7] Naturally, the focus positions in German and Hungarian cannot be considered identical, either from a syntactic or from a semantic perspective.

[8] One example is the following sentence (suggested by A. Szabolcsi, personal communication), where the contrastive topic does not necessarily have minimal scope, as the possible scope orders of the operators shown in (i)-(iii) indicate:

[$_{CT}$ /Legalább két könyvet] [$_{FP}$ \Péter mutatott meg mindenkinek.]
    at least two book-acc Peter showed VM everybody-dat
'At least /TWO books were shown by \PEter to everyone.'

   i. Exhaustive operator (focus) > $\exists_{\geq 2}$ book > $\forall$ person

   ii. Exhaustive operator (focus) > $\forall$ person > $\exists_{\geq 2}$ book

   iii. $\exists_{\geq 2}$ book > Exhaustive operator (focus) > $\forall$ person

[9] I thank an anonymous reviewer for pointing this out to me.

[10] If the stress falls on the noun *tanár* 'teacher' in (2) instead of on the numeral (because this is the part of the noun phrase that is intended to be contrasted), the noun phrase must occupy the Spec, FP position.

[11] There seems to be one exception to the generalization in the text. These are *is* 'also' phrases, like the one in the following example, which are allowed to appear only in Spec, DistP position and can immediately follow contrastive topics, but do not have an exhaustive reading:

[$_{CT}$ /János] [$_{DistP}$ \öt gyereket is meghívott.]
    John five child-acc also pfx-invited

'As for John, he invited more than five children.'

The above sentence will remain true if the numeral is replaced by one referring to a smaller number, and will not necessarily become false if it is replaced by one referring to a larger number. note, however, that this sentence is slightly different from the other sentences with contrastive topics being investigated here, since it is not a felicitous answer to a multiple constituent question and, when used as a correction, does not entail the falsity of the statement to be corrected, but only strengthens it. (It can be used as a correction of the following statement: *There were two children János invited.*)

[12] One of the anonymous reviewers refers to these as 'two kinds of partiality'. I thank this reviewer for reminding me of the discussion of these issues in the framework of this paper as well. For a more detailed discussion, see Gyuris (to appear).

[13] It is possible, however, to form a global question the answer to which indicates, for a set of familiar quantities, who read the given quantity of books, as will be discussed in the text to follow.

[14] The first version of this proposal was presented in Gyuris (2005). For a related account, see Sauerland (2005).

[15] For a discussion of the various subtypes of multiple constituent questions, see Wachowicz (1974) and Comorovski (1996). A good summary of the most important claims is provided in Krifka (2001).

[16] Formally, a function $f: A \rightarrow B$ is injective iff for any $a, a' \in A$: $a \neq a'$, then $f(a) \neq f(a')$.

[17] As pointed out by one anonymous reviewer and by Márta Maleczki (personal communication).

[18] Formally, a function $f: A \rightarrow B$ is surjective iff for any $b \in B$ there is an $a \in A$ such that $f(a) = b$.