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Two Types of Contrastive Topics?[1]

1 Introduction

The aim of this paper is to present some new data concerning the structure of discourses where contrastive topic DPs are licensed in Hungarian, and to propose an account of these data in the spirit of Büring's (1997) proposals on the presuppositions and implicatures introduced by contrastive topics and Kadmon's (2001) account of the congruence of questions and answers containing such constituents.

It has been proposed by several authors (including von Fintel 1994, Büring 1997, Kadmon 2001, etc.) that sentences containing contrastive topics cannot be uttered 'out of the blue,' but have to be preceded by an appropriate discourse licensing them. In this paper we show some Hungarian data which appear to suggest that contrastive topic DPs differ according to their monotonicity properties as to whether they can be licensed by other DPs in the discourse, or only by an instance of the same one, and as to whether they can occur in certain types of declaratives at all. We will propose that instead of dividing contrastive topic DPs into two categories depending on how freely they are licensed in discourse, the basis for judging whether they are used felicitously is whether they can be seen as contributing at least a partial answer to some general (possibly implicit) question in the discourse.

The next section will list the data under discussion. In section 3, Büring's (1997) approach to the licensing of contrastive topics is summarized and evaluated from the point of view of the data. Section 4 provides an overview of the requirements that congruent question-answer sequences have to satisfy according to Kadmon (2001), and proposes an account of the interpretability and the licensing of sentences with contrastive topics in discourse. In section 5 the results of the study are summarized.

2 The data

The discourse-conditions licensing the use of contrastive topic DPs will be illustrated in two types of contexts. In the first one, the declarative containing a contrastive topic is preceded by a *yes-no* question, and in the second one by a *wh*-question. The first set of exchanges is shown in (1)-(6) below. In the examples, the contrastive topic constituents are enclosed within square brackets, and the place of the *eradicating stress* within this constituent (cf. Kálmán and Nádasdy 1994[2]), which also marks the beginning of the rising intonation characteristic of the contrastive topic, is marked by ' '. Since here we concentrate on the issue of how the semantic properties of determiners influence the felicitous occurrences of DPs in the contrastive topic role, it will be assumed that the eradicating stress within the contrastive topic falls on the determiner.

It has been pointed out in several studies on various other languages that contrastive topics have to be followed in the same sentence by a constituent with a falling pitch accent (cf. Lambrecht 1994, Vallduví & Engdahl 1996, Lee 1999, von Fintel 1994, Büring 1997, Kadmon 2001 etc.), which are usually referred to as a/the *focus*. Similar observations have been made with respect to Hungarian in Kenesei 1989 and Molnár 1998, for example. In view of the fact, however, that in contemporary Hungarian linguistics (following the work of Katalin É. Kiss, e.g., É. Kiss 2002), focused constituents are assumed to occupy a specific syntactic position, which is not always satisfied by constituents of the type which necessarily follow the contrastive topic (and which bear the second eradicating stress in the sentence and a falling tone according to Kálmán and Nádasdy 1994), we will refer to the latter as the *associates of the contrastive topic*. The place of the eradicating stress within the associate is marked by ' ` ' in what follows. Among the declaratives, those which are considered inappropriate answers to the preceding question will be marked by '#,' and those which cannot be uttered felicitously in any context (i.e., which speakers perceive as ungrammatical) will be marked by '*':

(1)   Q: Beszéltél   öt   tanárral?
          talked-2SG   five   teacher-INSTR
          'Have you talked to five teachers?'

      A$_1$:   [$_{CT}$ ´Öt   tanárral]   `beszéltem / `nem beszéltem.
              five   teacher-INSTR   talked-1SG /   not   talked-1SG
              'As for five teachers, I did/didn't talk to that many.'

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[2] Kálmán and Nádasdy (1994) define *eradicating stress* as a main stress which cannot be followed by another main stress in the sentence, unless the latter is an eradicating stress, too.

      A$_2$:   [$_{CT}$ ´Két   tanárral]   `beszéltem / #`nem   beszéltem.
              two   teacher-INSTR   talked-1SG /   not   talked-1SG
              'As for two teachers, I did / #didn't talk to that many.'

(2)   Q: Beszéltél   sok   tanárral?
          talked-2SG   many   teacher-INSTR
          'Have you talked to many teachers?'

      A$_1$:   [$_{CT}$ ´Sok   tanárral]   `nem   beszéltem.
              many   teacher-INSTR   not   talked-1SG
              'Many teachers, I didn't talk to.'

      A$_2$:   [$_{CT}$ ´Néhány   tanárral]   `beszéltem.
              a few   teacher- INSTR talked-1SG
              'A few teachers, I did talk to.'

      A$_3$:   #[$_{CT}$ ´Legalább   két   tanárral]   beszéltem / `nem beszéltem.
              at least   two   teacher-INSTR   talked-1SG / not   talked-1SG
              'As for at least two teachers, I did / didn't talk to that many.'

      A$_4$:   *[$_{CT}$ ´Kevés   tanárral]   `beszéltem / `nem   beszéltem.
              few   teacher-INSTR   talked-1SG/   not   talked-1SG
              *'Few teachers, I did/didn't talk to.'

(3)   Q: Beszéltél   tanárokkal? /   a   tanárokkal?
          talked-2SG   teachers-INSTR   the   teachers-INSTR
          'Have you talked to teachers / the teachers?'

      A$_1$:   [$_{CT}$ ´Két /   ´néhány   tanárral]   `beszéltem.
              two   a few   teacher-INSTR   talked-1SG
              'Two / a few teachers, I did talk to.'

      A$_2$:   [$_{CT}$ ´Sok tanárral]   `nem   beszéltem.
              many   teacher- INSTR   not   talked-1SG
              'Many teachers, I didn't talk to.'

      A$_3$:   #[$_{CT}$ ´Legalább   két   tanárral]   `beszéltem /     `nem beszéltem.
              at least   two   teacher- INSTR   talked-1SG /   not talked-1SG
              'At least two teachers, I did/didn't talk to.'

      A$_4$:   *[$_{CT}$ ´Pontosan   két   tanárral] `beszéltem / `nem   beszéltem.
              exactly   two   teacher-INSTR   talked-1SG / not talked-1SG
              'Exactly two teachers, I did/didn't talk to.'

      A$_5$:   *[$_{CT}$ ´Kevesebb, mint öt   tanárral]   `beszéltem / nem beszéltem.
              fewer than   five teacher-INSTR   talked-1SG nem talked-1SG
              *'Fewer than five teachers, I did talk to.'

(4) Q: Beszéltél   legalább   öt   tanárral?[3]
     talked-2SG   at least   five   teacher-INSTR
     'Have you talked to at least five teachers?'

    A: [$_{CT}$ ´Legalább   öt   tanárral]   `beszéltem /   `nem beszéltem.
        at least   five   teacher-INSTR   talked-1SG /   not talked-1SG
     'At least five teachers, I did/didn't talk to.'

(5) Q: Kevesebb,   mint   öt tanárral   beszéltél?[4]
     fewer than   five teacher-INSTR   talked-2SG
     'Did you talk to fewer than five teachers?'

    A$_1$: *[$_{CT}$ ´Kevesebb,   mint öt   tanárral]   `beszéltem.
         fewer   than five   teacher-INSTR talked-1SG
     *'Fewer than five teachers, I did talk to.'

    A$_2$: *[$_{CT}$ ´Kevesebb,   mint öt   tanárral]   `nem   beszéltem.
         fewer   than five   teacher- INSTR not   talked-1SG
     *'Fewer than five teachers, I didn't talk to.'

(6) Q: Pontosan   öt   tanárral   beszéltél?
     Exactly   five   teacher- INSTR   talked-2SG
     'Did you talk to exactly five teachers?'

    A$_1$: *[$_{CT}$ ´Pontosan   öt   tanárral]   `beszéltem.
         exactly   five   teacher- INSTR   talked-1SG
     *' Exactly five teachers, I did talk to.'

    A$_2$: *[$_{CT}$ ´Pontosan öt   tanárral]   `nem   beszéltem.
         exactly   five   teacher-INSTR   not   talked-1SG
     'Exactly five teachers, I didn't talk to.'

The data in (1)-(6) thus illustrate that with respect to the possibility of their felicitous occurrence in declaratives which can be used to answer *yes-no* questions (i.e, which have a *verum focus*, and where the associate of the contrastive topic is a negative particle or the verb itself), contrastive topic DPs appear to fall into two classes. The first one is constituted by DPs with monotone in-

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creasing determiners, which, even in their non-referential uses, can appear in declaratives which can answer *yes-no* questions containing the same DP, as in (1Q-A$_1$), and (2Q-A$_1$), a variant of the DP with a different monotone increasing determiner, as in (1Q-A$_2$), and (2Q-A$_2$), or only the nominal part of the DP, as in (3Q-A$_1$), and (3Q-A$_2$). Contrastive topic DPs with determiners of the *at least n* type are more restricted in their distribution, however, since they are judged felicitous only if they follow a question where the same DP appears, as the contrast between the discourses in (4Q-A) versus (2Q-A$_3$) and (3Q-A$_3$) shows. I propose that the reason why the contrastive topic DP does not appear to be licensed in the latter two discourses is that the truth-conditional meanings of sentences with DPs containing the determiner *at least n* and those containing the determiner *n* are identical, and thus there appears to be no reason to use the more complex form. In the case of (4), the use of the *at least n* form is justified, since it is the one which appears in the preceding question as well.

The second group of DPs is constituted by those with monotone decreasing or non-monotonic determiners. As the data in (2Q-A$_4$), (3Q-A$_4$), as well as those in (5) and (6) show, members of this group cannot appear as contrastive topics in declaratives intended as answers to *yes-no* questions at all.

The next set of data consists of declaratives with contrastive topic DPs which can answer to *wh*-questions. In these declaratives, the contrastive topics are followed by associates occupying the focus position of the sentence:

(7) Q: Hová   utaztak   a   tanárok?
     where   travelled the   teachers
     'Where did the teachers travel?'

    A$_1$: [$_{CT}$ ´Két   tanár / ´néhány   tanár] [$_F$ a `hegyekbe]   utazott.
         two   teacher a few   teacher the mountains-ILLATIVE travelled
     'As for two/a few teachers, that many went to the mountains.'

    A$_2$: #[$_{CT}$ ´Legalább   két   tanár] [$_F$ a `tengerhez]   utazott.
         at least   two   teacher the sea-ALLATIVE travelled
     'As for at least two teachers, that many went to the sea.'

    A$_3$: #[$_{CT}$ ´Pontosan   két   tanár] [$_F$ a   `tengerhez]   utazott.
         exactly   two   teachers   the   sea-ALLATIVE   travelled
     'As for exactly two teachers, they went to the sea.'

    A$_4$: #[$_{CT}$ ´Négynél   kevesebb tanár] [$_F$ a   `hegyekbe]   utazott.
         four-THAN   fewer   teacher   the mountains-ILLATIVE travelled
     'As for fewer than four teachers, that many went to the mountains.'

(8) Q: Hová   utazott   sok   tanár?
     Where   travelled   many   teacher
     'Where did many teachers travel?'

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[3] Note that in all the examples considered in this paper, the questions and answers are assumed to describe the situation at a particular reference time, and not intended to express implicit quantification over events occurring within a longer time-span.

[4] Note that this is the only possible way to ask the question 'Did you talk to fewer than five teachers?' in Hungarian, which is probably due to the fact that the DP, as all other DPs with monotone decreasing or non-monotone determiners, has to occupy the immediately preverbal position, cff example (6) below. (Szabolcsi (1997) claims that such DPs occupy the Predicate Operator position, which is not identical to the Focus position, although these two positions cannot be filled simultaneously. É. Kiss (2002) assumes, however, that these DPs occupy the focus position.)

A₁: [$_{CT}$ 'Sok   tanár] [$_F$ a   'tengerhez]   utazott.
      many teacher   the sea-ALLATIVE   travelled
      'As for many teachers, they went to the sea.'

A₂: [$_{CT}$ 'Néhány tanár] [$_F$ a   'hegyekbe]   utazott.
      a few teacher   the mountains-ILLATIVE   travelled
      'As for a few teachers, they went into the mountains.'

A₃: [$_{CT}$ 'Két   tanár] [$_F$ a   'tengerhez]   utazott.
      two   teacher   the sea-ALLATIVE   travelled
      'As for two teachers, that many went to the sea.'

A₄: #[$_{CT}$'Pontosan   két tanár] [$_F$ a   'tengerhez]   utazott.
      exactly   two teachers the   sea-ALLATIVE   travelled
      'As for exactly two teachers, that many went to the sea.'

A₅: #[$_{CT}$ 'Négynél kevesebb   tanár] [$_F$ a   'hegyekbe]   utazott.
      four-THAN fewer   teacher the   mountains-ILLATIVE travelled
      'As for fewer than four teachers, that many went to the mountains.'

(9) Q: Hová   utazott   legalább   két   tanár?
         Where travelled   at least   two   teachers
         'Where did at least two teachers travel?'

     A₁: [$_{CT}$ 'Legalább   két tanár] [$_F$ a   'tengerhez]   utazott.
          at least   two teachers   the   sea-ALLATIVE   travelled
          'As for at least two teachers, that many went to the sea.'

     A₂: #[$_{CT}$'Pontosan   két   tanár] [$_F$ a   'tengerhez]   utazott.
          exactly   two   teachers   the   sea-ALLATIVE   travelled
          'As for exactly two teachers, that many went to the sea.'

(10) Q: Hová   utazott   pontosan   két   tanár?
         where travelled   exactly   two   teachers
         'Where did exactly two teachers travel?'

     A: [$_{CT}$ 'Pontosan   két tanár] [$_F$ a   'tengerhez]   utazott.
         exactly   two teachers the   sea-ALLATIVE travelled
         'As for exactly two teachers, that many went to the sea.'

(11) Q: Hová   utazott   négynél   kevesebb   tanár?
         where travelled   four-THAN fewer   teacher
         'Where did fewer than four teachers travel?'

     A: [$_{CT}$ 'Négynél kevesebb   tanár] [$_F$ a   'hegyekbe]   utazott.
         four-THAN   fewer   teacher the   mountains-ILLATIVE travelled
         'As for fewer than four teachers, that many went to the mountains.'

The data in (7) show that DPs with monotone decreasing determiners, with the
exception of the *at least n* type, can be licensed in the contrastive topic posi-
tion of a declarative by the nominal part of the DP itself, but DPs with mono-

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tone decreasing and non-monotonic determiners cannot be licensed in the
same way. (8) shows that DPs with monotone increasing determiners, exclud-
ing those of the type *at least n,* can be licensed if the same DP or a variant of
it, which differs from the original one in that its determiner is replaced by a
different monotone increasing one, appears in the preceding *wh*-question.

(9)-(11) show that contrastive topic DPs with monotone decreasing and
non-monotonic determiners as well as those of the form *at least n* are only
felicitous if they are preceded by a question which contains the same DP. Re-
garding (9A₁), similar considerations apply as in the previous set of examples:
since the truth-conditions of this sentence are identical to the truth-conditions
of the one where the determiner *at least two* is replaced by *two*, its appearance
in discourse is only justified if preceded by a question with the same deter-
miner (cf. (8A₃)).

In the rest of the paper we will try to find an explanation for the data pre-
sented above, concentrating on two phenomena. On the one hand, we will
investigate the reasons why the contrastive topic DPs with monotone decreas-
ing and non-monotonic determiners cannot appear in sentences like (5A₁-A₂)
and (6A₁-A₂), and what makes them acceptable in (10A)-(11A). Note that
since (5A₁-A₂) and (6A₁-A₂) cannot be differentiated from a syntactic point of
view from the well-formed example in (12) below, the reason for the impossi-
bility of the former must be based on semantic and not syntactic principles.

(12) [$_{CT}$ 'Pontosan   öt   tanárral]   'nem   beszélhettem.
       exactly   five   teacher- INSTR not   talked-POSS-1SG
       'Exactly five teachers, I couldn't talk to.'

On the other hand, we will offer an explanation why DPs with monotone de-
creasing versus non-monotonic and monotone decreasing determiners differ in
their ability to be licensed as contrastive topics by DPs with different deter-
miners in discourse, as shown in (7)-(11).

3 Büring's (1997, 1999) theory on interpretability and
question-answer congruence, and its applications

3.1 Topic values and implicatures

Büring (1997, 1999) proposes a condition which can help to account for the
congruence of questions and answers containing a contrastive topic, and puts
forward an explanation why grammatically well-formed sentences with con-
trastive topics can in certain cases be left without a "coherent" interpretation.

Büring (1997, 1999) argues that sentences which contain a contrastive topic
are associated with a specific semantic value, which he refers to as their *topic*

value, abbreviated as $\|S\|'$. The topic value is constituted by a set of sets of propositions which differ from the one expressed by the sentence in that the denotations of the contrastive topic and/or the focus constituents are substituted in them for their type-identical alternatives. Depending on the set of alternatives associated with the denotation of the contrastive topic and the focus constituents in (13A) (in the sense of Rooth 1985), the topic value of the latter sentence would be as shown in (14):

(13) Q: Which book would Fritz buy?

A: Well, [CT I] would buy [F The Hotel New HAMPshire].

(14) {{I would buy *War and Peace*, I would buy *The Hotel New Hampshire*, I would buy *The World According to Garp*, ...}, {Rufus would buy *War and Peace*, Rufus would buy *The Hotel New Hampshire*, Rufus would buy *The World According to Garp*, ...}, {Fritz would buy *War and Peace*, Fritz would buy *The Hotel New Hampshire*, Fritz would buy *The World According to Garp*, ...}, {Fritz's brother would buy *War and Peace*, Fritz's brother would buy *The Hotel New Hampshire*, Fritz's brother would buy *The World According to Garp*, ...}, ... }

In the spirit of Hamblin (1973), the above set of propositions corresponds to the following set of questions:

(15) {which book would you/I buy, which book would Rufus buy, which book would Fritz buy, which book would Fritz's brother buy, ... }

Büring (1997, 1999) argues that questions and answers containing a contrastive topic are congruent if they satisfy the following condition:

(16) The meaning of the question Q must match one element in the topic value of the answer A. (Formally: $\|Q\|^o \in \|A\|'$).

Note that the exchange in (13Q-A), which is felt to be congruent by speakers, does meet the above condition, since the denotation of (13Q) is a member of the topic value of (13A).

Büring (1997, 1999) proposes in addition that the contrastive topic introduces the implicature that there is an element Q in the topic value associated with the sentence where the contrastive topic appears which is still under consideration after uttering the sentence. The notion that a question is under consideration means for Büring that the set of propositions corresponding to the question has at least one element which is neither included in the common ground nor is in contradiction with it. This means, practically, that in any of the sets constituting the topic value of a sentence A, there is at least one proposition which is neither entailed nor contradicted by the truth of A.

Büring (1997) shows that the reason why certain grammatically well-formed sentences with a contrastive topic lack one or all[5] of their possible interpretations is that these do not give rise to the above implicature, i.e., there is no element in the topic value associated with the particular reading of the sentence whose truth or falsity does not follow from the intended truth-conditional meaning of the sentence uttered.

For example, although the following sentence is potentially ambiguous in German, it can only have a reading according to which the negation takes wide scope over the universal quantifier, as paraphrased in (17a).

(17)   [CT ALLE] Politiker   sind [F NICHT] korrupt.
           all   politicians   are   not   corrupt

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

b.   #'All politicians are such that they are not corrupt.'

The reason why reading (17b) is missing is that all propositions in the topic value associated with the sentence on this reading are such that they are either entailed by or contradict the proposition intended to be expressed by the sentence. The formula in (18a) (Büring 1997) is an abstract characterization of the elements of the topic value set, where ALT(**x**) denotes the set of alternatives to **x**, while (18b) lists a set of propositions satisfying the formal requirements in (18a):

(18) a. $\lambda P. \exists Q_{<et, <et, t>>}[Q \in ALT(\mathbf{all}) \& P = \lambda p. \exists \pi_{<tt>} [\pi \in ALT(\mathbf{not}) \& p = $
            $= Q(\text{politicians})(\lambda x. \pi(\text{corrupt}(x)))]]$

b.   {{all(politicians)($\lambda x. \neg$corrupt(x)), all(politicians)($\lambda x.$corrupt(x))},
      {most(politicians)($\lambda x. \neg$corrupt(x)), most(politicians)($\lambda x.$corrupt(x))},
      {some(politicians)($\lambda x. \neg$corrupt(x)), {some(politicians)($\lambda x.$corrupt(x))},
      {one(politicians)($\lambda x. \neg$corrupt(x)), {one(politicians)($\lambda x.$corrupt(x))},
      {no(politicians)($\lambda x. \neg$corrupt(x)), {no(politicians)($\lambda x.$corrupt(x))}, ...

According to (18), the propositions in the set of sets constituting the topic value of (17) on reading (b) state that there is a subset of the set of politicians with the specified number of elements such that its members are corrupt or not corrupt. If the sentence in (17) is assumed to express the proposition that the whole set of politicians is such that it is not corrupt, then, due to the distributivity of the property of being not corrupt, it would have to follow that the same property holds for any subset of the set of politicians, and thus the truth

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[5] For example, in case the sentence contains at least two scope-bearing elements (quantifiers, modals or negation), the relative scopes of which can vary across readings.

or falsity of all propositions constituting the topic value associated with this reading would follow.

Having discussed Büring's proposals on the interpretability of sentences with contrastive topics and on question-answer congruence, in the next section we will investigate how they can explain the Hungarian data at hand.

3.2 Investigating interpretability

It was observed above with respect to $(5A_1-A_2)$ and $(6A_1-A_2)$ that DPs with monotone decreasing and non-monotonic quantifiers cannot serve as contrastive topics in declaratives which are uttered as answers to *yes-no* questions. The relevant data are repeated below:

(5) A_1: *[$_{CT}$ 'Kevesebb,   mint öt   tanárral] 'beszéltem.
            fewer   than five   teacher-INSTR talked-1SG
            *' Fewer than five teachers, I did talk to.'

    A_2: *[$_{CT}$ 'Kevesebb,   mint öt   tanárral] 'nem beszéltem.
            fewer   than five teacher-INSTR not talked-1SG
            *'Fewer than five teachers, I didn't talk to.'

(6) A_1: * [$_{CT}$ 'Pontosan öt   tanárral] 'beszéltem.
            exactly   five   teacher- INSTR   talked-1SG
            *'Exactly five teachers, I did talk to.'

    A_2: *[$_{CT}$ 'Pontosan öt   tanárral]   'nem   beszéltem.
            exactly   five   teacher- INSTR   not   talked-1SG
            *'Exactly five teachers, I didn't talk to.'

Note that in the light of Büring's proposal, the lack of interpretations for $(5A_1)$ and $(6A_1)$ can be explained. If it is assumed that the proposition which was intended to be expressed by $(5A_1)$ is that 'I talked to fewer than five, but not more, teachers,'[6] for any alternative to the determiner which is not fewer than five, the corresponding proposition would be false (and its negation true). The sets constituting the topic value associated with this sentence can be formally characterized as in (19a). If the relevant alternatives to *fewer than five* in the

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[6] This proposition is identical to the one expressed by the interpretable sentence where the DP occupies an immediately preverbal position, as shown below:

   [$_F$ Kevesebb, mint   öt tanárral]   beszéltem.
   fewer   than   five teacher-INSTR   talked-1SG
   'I talked to fewer than five teachers.'

context are, among others, *exactly five* and *more than five,* the topic value set associated with the sentence is as shown in (19b):

(19) a. $\lambda P. \exists Q_{<et, <et, t>>}[Q \in ALT(\text{fewer than five}) \ \& \ P = \lambda p. \exists \pi_{<t>} [\pi \in ALT(\text{not}) \ \& \ p =$
        $= \pi (\text{I talked to } Q(\text{teachers}))]]$

     b. {{(I talked to *fewer than five* teachers),
        ¬(I talked to *fewer than five* teachers)},
        {(I talked to *exactly five* teachers),
        ¬(I talked to *exactly five* teachers)},
        {(I talked to *more than five* teachers),
        ¬(I talked to *more than five* teachers)}, ...}

Note that the truth of $(5A_2)$ (the second member of the first set in (19b)), does not entail the truth or falsity of all the alternative propositions in the topic value set. (If it is not true that I talked to fewer than five teachers, it does not follow that I talked to exactly five or more than five teachers.) Thus, in the spirit of Büring (1997), the latter sentence would give rise to the implicature normally introduced by contrastive topics and, thus, there would be no reason to consider it uninterpretable.

Similar considerations apply to $(6A_1-A_2)$ as well. If the relevant alternatives to *exactly five* are, for example, *fewer than five* or *more than five,* among others[7], then the topic value set associated with these sentences is identical to (19b). It is easy to see that the truth of $(6A_1)$, i.e., the truth of the proposition that the number of teachers I talked to is exactly five (the first member of the second set in (19b)) entails the truth or falsity of the rest of the propositions. On the basis of the same principles, the uninterpretability of $(6A_2)$ cannot be proved, however, since from the fact that it is not true that I talked to exactly five teachers it does not follow whether I talked to fewer than five or more than five teachers.

Note that German counterparts of $(5A_2)$ and $(6A_2)$, illustrated in (20a-b), are also uninterpretable (thus felt to be ill-formed by speakers), which shows that the explanation for the above data must be based on some cross-linguistic semantic principles:

(2) a. *Höchstens /FÜNF Politiker   sind   NICHT\ korrupt.
        at most   five   politicians   are   not   corrupt

     b. *Genau   /FÜNF Politiker   sind   NICHT\ korrupt.
        exactly   five   politicians   are   not   corrupt

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[7] This is, naturally, not the only option though.

On the basis of the preceding discussion, it can be established that the mechanism proposed by Büring (1997, 1999) to account for the lack of theoretically possible readings of sentences with contrastive topics does not account for all syntactically possible but uninterpretable sentences. In the next section we investigate whether the condition assumed by him to account for question-answer congruence can be used to predict the licensing data listed above.

3.3 The licensing of contrastive topics in discourse

The second issue we focus on here is why particular DPs, i.e., the majority of those containing monotone increasing determiners, appear to be licensed more freely in the discourse than others, i.e., those containing monotone decreasing and non-monotone determiners, which, as illustrated above, normally appear in a discourse only if they are preceded by a question containing the same DP.

The licensing of contrastive topic DPs with monotone increasing determiners by DPs which differ from the former in that they contain a different, monotone increasing determiner, as illustrated in (1Q-A$_2$), (2Q-A$_2$) and (8), is predicted by Büring's (1997) question-answer condition, shown in (16) above, provided that the denotation of the determiner of the DP in the question is considered an alternative of the determiner of the contrastive topic.[8] On the basis of the above assumptions, the topic value associated with (both the positive and the negative versions of) (1A$_2$) would be the set shown in (21):

(21)   {{(I talked to one teacher), ¬(I talked to one teacher))},
        {(I talked to two teachers)), ¬(I talked to two teachers)}, ...
        {(I talked to five teachers)), ¬(I talked to five teachers))}, ...}

The congruence of (1Q) and the positive version of (1A$_2$) is then predicted, since the denotation of the question (1Q) is a member of the topic value in (23), but so is the congruence of the same question and the negative version of (1A$_2$), which contradicts the relevant data, however.

The reason why (8Q-A$_2$) do form a felicitous exchange is, however, predicted on Büring's theory, provided that the alternatives to the stressed constituent of the contrastive topic in (8A$_2$) are constituted by denotations of other monotone increasing determiners, as in (22), which illustrates some members of the topic value set associated with (8Q-A$_2$):

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[8] It is assumed implicitly by Büring, although never stated explicitly, that the alternatives introduced by monotone increasing determiners constitute the set of all other monotone increasing determiners and the determiner *no*.

(22)   {{(One teacher went to the sea), (One teacher went to the mountains), (One teacher went to the lakes), ...},
        {(A few teachers went to the sea), (A few teachers went to the mountains), (A few teachers went to the lakes), ...},
        {(More than three teachers went to the sea), (More than three teachers went to the mountains), (More than three teachers went to the lakes), ...}, ...}

It does not follow from Büring's theory why (8A$_4$-A$_5$) are not licensed by (8Q) unless it is assumed that the denotations of monotone decreasing or non-monotonic determiners cannot be considered alternatives to monotone decreasing determiners. In view of the fact, however, that Büring himself lists the monotone decreasing determiner *no* among the alternatives of *all*, as (18b) shows, the above assumption does not seem justified. In fact, Büring (1997, 1999) does not discuss contrastive topics with monotone decreasing and non-monotonic determiners at all.

The data in (3Q-A$_1$, A$_2$) and (7Q-A$_1$) can be accounted for by adopting Büring's assumption (1997:68) that the topic value associated with a sentence can also contain questions where the contrastive topic denotation is replaced by the union of its possible alternatives. Accordingly, the topic value set associated with (3A$_1$) could contain, in addition to the members listed in (21) above, the following member, which in fact corresponds to the question in (3Q):

(23)   {(I talked to all teachers), ¬(I talked to all teachers)}

Similarly, the topic value of (7A$_1$) could contain the following member as well, which corresponds to the question in (7Q)

(24)   {(All teachers went to the sea), (All teachers went to the mountains), (All teachers went to the lakes), ...}

The above approach does not account for the fact, however, that (3A$_4$), (3A$_5$) and (7A$_3$), (7A$_4$) are not licensed in the same manner by the questions in (3Q) and (7Q), respectively.

Having found that the principles proposed by Büring to account for the conditions determining the interpretability of sentences with contrastive topics and the congruence of questions and answers with such constituents do not account for the Hungarian data, we turn to Kadmon's (2001) proposals on the same issues.

4 Contrastive topics in an efficient information exchange

4.1 Kadmon's (2001) theory on discourse congruence

Kadmon (2001) proposes a theory which can predict for particular discourses with contrastive topics whether they count as congruent or incongruent. Kadmon (2001) follows Roberts (1996) in claiming that information is organized in the discourse in relation to questions being addressed (originally due to Carlson (1983)).

Roberts (1996) assumes that the goal of discourse is to discover and share with other interlocutors information about our world. These goals are achieved as a result of asking and answering questions. Naturally, efficient information exchange requires that questions are answered as soon after they are asked as possible. Roberts assumes that Relevance (in the sense of Sperber and Wilson 1986) is an organizing principle of discourses which ensures the achievement of the above goals, i.e., guarantees coherence and facilitates the processing and storage of information.

The principle of Relevance requires that each move (i.e., a question or an answer) be relevant to the preceding discourse, i.e., contribute to the aim of answering the questions under discussion. A declarative is relevant to a question if it constitutes a complete or partial answer to it. (A partial answer constitution if it constitutes the evaluation of, i.e., the assignment of the values *true* or *false,* to at least one element in the set of propositions corresponding to the question, whereas a complete answer contextually entails the evaluation of all of them.) A question, however, is relevant to another question if it is part of a strategy to answer it, i.e., constitutes a subquestion of it. Questions which have already been asked but have not yet been answered at a particular point in the discourse constitute the ordered set of Questions Under Discussion (*QUD*). When a question is accepted by the interlocutors, it is placed on top of the *QUD stack*. The strategy for answering the questions under discussion always involves answering the one on the top of the stack. For any move m, last($QUD(m)$) represents the last question under discussion at the time m is made.

Kadmon (2001) offers a theory on the discourse structure associated with contrastive topics, which is based on the above insights of Roberts' (1996) theory, and her own constraint on the felicitous use of contrastive topics. She assumes that not only declaratives but also questions can have a focus semantic value, which is generated by replacing the focused constituent in the question denotation with a variable, and interpreting the resulting formula with respect to all assignment functions which differ only in the value they assign to this variable. She then proposes that a contrastive topic creates a presupposition regarding the focal structure of the last question under discussion in the following way: an utterance with a contrastive topic presupposes that its topic

semantic value is identical to the focus semantic value of its last *QUD*. For an illustration, consider the sentence in (25a), its topic semantic value shown in (25b), which is identical to a set of sets of propositions, some members of which are listed in (25c), which in turn corresponds to a set of questions, listed in (25d) (Kadmon 2001: 391):

(25) a.   [$_{CT}$ Larry] kissed [$_F$ Nina].

   b.   {{ $\|$ kiss(x,y) $\|$ $^{g'}$: g' is identical to g except that it may assign a different value to y}: g assignment}

   c.   {{'Larry kissed Sue,' 'Larry kissed Mary', 'Larry kissed Lisa,' ... },
         {'Bill kissed Sue,' 'Bill kissed Mary', 'Bill kissed Lisa,' ... },
         {'John kissed Sue,' 'John kissed Mary,' 'John kissed Lisa,' ... }, ... }

   d.   {'Who did Larry kiss?', 'Who did Bill kiss?', 'Who did John kiss?', .. }

The above constraint predicts that (25a) presupposes that the focus semantic value of the last *QUD* for it is identical to (25d), i.e., that the above declarative is preceded in the discourse by a question in the set (25d). Naturally, among the questions in the above set, (25a) appears to be capable of answering the first one only. Kadmon predicts this by adopting the proposal by Roberts (1996) on the presuppositions of focus, which says that utterances (i.e., both questions and declaratives) containing prosodic focus in English presuppose that their *focus alternative set* is identical to the set of propositions corresponding to their last *QUD*. The focus alternative set, as conceived of by Roberts, differs from the focus semantic value of sentences as defined by Rooth (1985, 1992) in that in the former not only the focused expressions but also the *wh*-constituents are replaced by variables, and the result is then interpreted relative to each member of the set of all assigment functions which vary at most in the values they assign to those variables. Thus, the last *QUD* for (25a) is predicted to be the following: 'Who did Larry kiss?'. Due to the fact that the questions under discussion can remain implicit, it does not contradict the theory that (25a) is in fact overtly following the question 'Who did Bill kiss?'. According to Kadmon (2001: 396), the reason why a move from the latter question to the former one is allowed is that their ordinary denotations are both members of the set constituting the topic value of the answer.

In the next section we consider whether the constraints proposed by Kadmon (2001) on the felicitous occurrence of contrastive topics in English can be used to explain the facts concerning the requirements declaratives with contrastive topics impose on the preceding discourse in Hungarian.

4.2 Interpretability and relevant questions

In section 3 we found that although the impossibility of sentences ($5A_1$) and ($6A_1$) can be explained by means of Büring's (1997) proposal on the implicatures associated with contrastive topics, a similar procedure cannot be applied to ($5A_2$) or ($6A_2$), since the truth of these sentences on the intended interpretation does not entail the truth or falsity of all the alternative propositions. I believe, however, that by following Kadmon's (2001) approach to the relation between contrastive topics and the preceding discourse the apparent ill-formedness of these sentences can be handled successfully. Consider again ($6A_2$), repeated below:

(6) A_2:   *[CT 'Pontosan   öt   tanárral]   'nem beszéltem.
                    exactly   five   teacher- INSTR   not talked-1SG
                'Exactly five teachers, I didn't talk to.'

Let us assume for a moment that ($6A_2$) is an acceptable sentence in Hungarian, it expresses the proposition that I talked to exactly five teachers (only) in the relevant situation, and that the verum focus and its negation share the semantic properties of 'ordinary' foci, and they introduce a set of alternatives which consist of the denotations of these constituents. Following Kadmon (2001), ($6A_2$) would then presuppose that its topic value, shown in (26), is identical to the focus semantic value of the last *QUD* for it, i.e., that the set of questions which ($6A_2$) can be uttered as an answer to consists of those exemplified in (27).

(26) $\{\{\| \pi(\text{talk-to}(j, y \text{ teachers}))\|^g : g'$ is identical to g except that it may assign a different value to $\pi\}: g$ assignment$\}$

(27)   a.   [F Pontosan   öt   tanárral]   beszéltél?[9, 10]
                    exactly   five   teacher- INSTR talked-2SG
               'Did you talk to exactly five teachers?'
        b.   [F Kevesebb,   mint   öt   tanárral]   beszéltél?
                    fewer   than   five teacher- INSTR talked-2SG
               'Did you talk to fewer than five teachers?'

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        c.   [F Több,   mint   öt   tanárral]   beszéltél?
                    more   than   five teacher- INSTR talked-2SG
               'Did you talk to more than five teachers?'

Note that the constraint proposed by Kadmon on the presuppositions of focus would predict that only the first question in (27) could serve as an appropriate last QUD for ($6A_2$). The problem, however, is that a negative answer to (27a) has to have the DP in focus position, as shown in (28):

(28)   Nem [F pontosan   öt   tanárral]   beszéltem.
        not   exactly   five teacher- INSTR talked-1SG
       'It wasn't exactly five teachers that I talked to.'

The above data thus show that there is no question in the language which ($6A_2$) could be uttered as an answer to, which explains, on the basis of Kadmon's (2001) proposal on the presuppositions of sentences with contrastive topics and foci, why it is an impossible sentence.

4.3 A new look at licensing conditions

The next question to be considered here is why contrastive topic DPs with monotone increasing determiners appear to be licensed in a much wider range of contexts than the monotone decreasing or non-monotonic determiners, as illustrated in (7)-(11) above. In section 3.3 we saw that Büring's theory can account for the act why ($8A_2$) is licensed by a question like (8Q), repeated below:

(8)   Q: Hová   utazott   sok   tanár?
               where   travelled many   teacher
              'Where did many teachers travel?'

        A_2:   [CT 'Néhány tanár] [F a   'hegyekbe]   utazott.
                    A few   teacher   the mountains- ILLATIVE   travelled
               'As for a few teachers, they went into the mountains.'

According to Kadmon (2001), ($8A_2$) presupposes that its topic value, shown in (29), and the focus semantic value of its last *QUD* are identical. This means that the last *QUD* for ($8A_2$) has to be a member of the set in (30).

(29) $\{\{\| n \text{ teachers travelled to } x\|^g : g'$ is identical to g except that it may assign a different value to $x\}: g$ assignment$\}$

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[9] These are the only possible *yes-no* questions in the language which can be used to ask whether the interlocutor talked to exactly five, fewer than five or more than five teachers, respectively.
[10] Following É. Kiss (2002), I assume that the DP occupies the focus position.

(30)   {'Where did no teacher travel?,' 'Where did one teacher travel?,' 'Where did two teachers travel?,' 'Where did a few teachers travel?,'   'Where did many teachers travel?', ...}

In addition, (8A₂) presupposes, due to the focus, that its focus semantic value and the ordinary semantic value of its last *QUD* are identical, which means that the only possible last *QUD* for (8A₂) is the one in (31):

(31)   Hová   utazott   néhány   tanár?
       where   travelled   a few   teacher
       'Where did a few teachers travel?'

Although (8Q) is not identical to (31), it could be assumed, following Kadmon's suggestion with respect to (25a) above, that (31) is an implicit question following (8Q), and this implicit move is licensed due to the fact that the ordinary semantic values of these questions are both members of the topic value of (8A₂).

It seems to be a problem for the above proposal, however, that (8A₅)(=(11Q)), repeated here, cannot follow (8Q) in discourse, although there appears to be no reason why the former could not be preceded by an implicit question like (11Q) as well, since at first sight, (11Q) seems to be as similar to (8Q) as (31).

(8)   A₅: [_CT 'Négynél   kevesebb   tanár] [_F a 'hegyekbe]   utazott.
              four-THAN   fewer   teacher the mountains-ILLATIVE travelled
              'As for fewer than four teachers, that many went to the mountains.'

(11)   Q: Hová   utazott   négynél   kevesebb   tanár?
             where   travelled   four-THAN   fewer   teacher
             'Where did fewer than four teachers travel?'

I would propose that there is one important respect in which (11Q) differs from both (8Q) and (31): (8Q) and (31) are subquestions of the same general question, expressed by (7Q), which asks about the set of all (relevant) teachers where they went.

(7)   Q: Hová   utaztak   a   tanárok?
             where   travelled   the   teachers
             'Where did the teachers travel?'

(11Q), however, cannot be conceived of as a subquestion of (7Q), since it can be answered in such a way which does not tell about any of the teachers where she/he went. For example, (9A₅) can be true even if there is no teacher who

went to the mountains. I believe that the general question which (11Q) constitutes a subquestion of is something like the following:

(32)   'For each possible/relevant cardinality, where did the subset of teachers
        with this cardinality go?'

presupposes that for each possible/relevant cardinality, there is one subset of the set of teachers whose members share the property of going to the same place. This presupposition is shared by the corresponding declaratives as well, since (8A₅), for example, presupposes that there is only one place where less than four teachers travelled. (This presupposition is due to the semantics of focus in Hungarian.) A complete answer to (32) would specify for each possible cardinality where sets of teachers with that cardinality travelled. Note that since a particular cardinality can be referred to in many ways (a set of teachers with two members can be referred to as *two teachers, at least one teacher, a few teachers, few teachers, less than five teachers,* etc.) it cannot be expected in reality that a complete answer be given to the above question. Instead, an answer which is considered complete in a particular situation would list for each relevant cardinality where subsets with that cardinality went. In determining what count as relevant cardinalities (or, rather, relevant ways of referring to cardinalities), context and discourse have a major role. As regards the examples discussed in (9)-(11) above, which all involve subquestions of the above general question, it could be assumed that subsets of teachers which are considered relevant are identified in the extralinguistic context, i.e., if the interlocutors study a table which shows a set of places and the numbers of teachers who travelled to the particular places, or due to the similarity of the linguistic expressions which are used to characterize one of the subsets. For example, the question in (11Q) could be answered by (33) or (34), which contain contrastive topic DPs characterizing types of sets which differ minimally from the expression characterizing another set type in the question:

(11)   Q: Hová   utazott   négynél   kevesebb   tanár?
             where   travelled   four-THAN   fewer   teacher
             'Where did fewer than four teachers travel?'

(33)   [_CT Négynél   'több   tanár] [_F a 'hegyekbe]   utazott.
            four-THAN   more   teacher the mountains-ILLATIVE travelled
            'As for more than four teachers, that many went to the mountains.'

(34)   [_CT 'Ötnél   kevesebb   tanár] [_F   a   'hegyekbe]   utazott.
            five-THAN   fewer   teacher   the mountains-ILLATIVE travelled
            'As for fewer than five teachers, that many went to the mountains.'

The superquestions in (7Q) and (32) thus differ from each other in that (7Q) intends to find out some information about a set, the set of teachers, whereas (32) intends to find out some information about a set of sets. A possible strategy for answering (7Q) would be to divide the set asked about into subsets in such a way that the union of these subsets be identical to the original set. So that it can easily be seen that the union of the subsets constitutes the set asked about the subsets have to be identified by specifying the minimal possible number of their elements. Specifying a subset by means of an expression which determines the maximum number of its elements, i.e., by expressions like *fewer than four teachers* (cf. (7A$_4$)), does not enable the listener to find out how many elements he/she still needs to find information about, since expressions like the one below can also identify the empty set, as mentioned already. It was also mentioned that determiners of the type *at least n* make the same contribution to the truth-conditions of a sentence as determiners of the type *n*, and thus to identify a subset of teachers with at least n members the use of the longer form *at least n teachers* does not appear to be justified. The impossibility to answer (7) by (7A$_2$) illustrates this. Similarly, I don't believe it provides additional information about the members of the superset if one of its subsets is said to have exactly *n* members instead of saying that it has *n* members. This is the reason, I believe, that (7A$_3$) is not an appropriate way to give a partial answer to (7Q). Compare (7A$_1$-A$_4$) also to (35), which cannot be uttered as a legitimate answer to (7Q), either:

(35) [$_{CT}$ 'Ötnél több tanár] [$_F$ a 'tengerhez]   utazott.
        five-THAN more teacher the sea-ALLATIVE travelled
        'As for more than five teachers, that many went to the sea.'

I propose that the reason why the above sentence does not sound as a felicitous answer to (7Q) is that although it specifies the minimal cardinality of the relevant set, it gives the same information as the sentence with a contrastive topic DP of the form *six teachers* would do, but in a less economical way. Having said that, we have now accounted for all the examples in (7) and (8) above.

It was argued in the preceding discussion that the licensing of a declarative with a contrastive topic in discourse by a question has at least two requirements: the first one, due to Kadmon (2001) is that the last question under discussion for the declarative and the overt question preceding it must be both members of the topic value associated with the declarative, whereas the second one is that this topic value has to correspond to a 'superquestion' which is relevant in the discourse.

I wish to propose here, however, that there is a third requirement as well. Consider (1Q) and the negative version of (1A$_2$) again:

(1) Q: Beszéltél   öt   tanárral?
         talked-2SG   five   teacher-INSTR
         'Have you talked to five teachers?'

     A$_2$': #[$_{CT}$ 'Két   tanárral] 'nem beszéltem.
             two   teacher-INSTR not   talked-1SG
            '#As for two teachers, I didn't talk to that many.'

Note the following relation between the truth-conditions of (1A$_2$') and the possible answers to (1Q): the truth of the declarative entails a negative answer to (1Q). (36) illustrates a similar example, where the truth of the declarative entails a positive (i.e., complete) answer to the question:

(36) Q: Beszéltél   három tanárral?
         talked-2SG   three   teacher-INSTR
         'Have you talked to three teachers?'

     A: #[$_{CT}$ 'Öt tanárral]   'beszéltem.
           five teacher-INSTR   talked-1SG
         '#As for five teachers, I did talk to that many.'

Based on the fact that the answers to (1Q) and (36Q) above do not appear to be licensed by the preceding question, in spite of the fact that the last *QUD*'s for the declaratives and the overt questions are both members of the topic value associated with the declarative and that the two questions can easily be conceived of as being subquestions of the same superquestion, I propose that a third condition for the licensing of a declarative by a question which is not identical to its last *QUD* is that the declarative should not entail a complete answer to the overt question. The three conditions on the relation between declarative sentences with contrastive topics and the questions which can precede them in discourse listed above enable us to account for all the Hungarian examples listed above, and refute the preliminary hypothesis, resulting from superficial observation of the data, according to which monotonicity properties have a central role in determining whether particular occurrences of contrastive topic DPs are felicitous.

5 Conclusions

In this paper it was claimed that there is no evidence to support the binary division within DPs into those which can be licensed by the appearance of the same DP in the preceding discourse only and those which can be licensed by other DPs as well. It was shown that a declarative with a contrastive topic DP has to satisfy three conditions in order to be licensed by a question in a discourse: i) the last question under discussion for the declarative and the ques-

tion preceding it overtly must be members of the topic value associated with the declarative, ii) the two questions must be capable of acting as subquestions of the same superquestion in the discourse (determined by the topic value of the declarative), and iii) if the overt question is not identical to the last *QUD* for the declarative, the declarative must not entail a complete answer to the overt question.

It was also shown that the idea according to which the aim of discourses is to answer explicit and implicit questions can account for the fact why certain, grammatically well-formed sentences with contrastive topics have no interpretation in Hungarian.

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Information Structure –
Two-dimensionally Explicated[1]

1 Introduction

In the literature at least four different versions of characterizing the internal information structure IS of sentences S can be found:

1. the **thetic-categorical distinction,**
2. the **focus-background structure (FBS),**
3. the **topic-comment structure (TCS),** and
4. the **theme-rheme structure (TRS).**[2]

All these distinctions can be made on the basis of linguistic and extra-linguistic context. Another tendency consists in using the highly controversial notion *presupposition* to clarify the interaction between the mentioned levels (dimensions) of information structure. Presuppositions are often connected with *background* (old/given information part of a sentence) and *topic* (what the sentence is about).

This paper tries to shed some light on these informational categories and their complex interaction. In what follows a formal explication of these notions within a two-dimensional framework is given and the new model is used to explain some prominent cases: congruence of questions and answers regarding their background; scope inversion with respect to hat contour; correction by contrastive focus and by German *nicht–sondern*-constructions. Finally we

[2] We shall not deal with this distinction in this paper. Regarding focus see e.g. Bosch & van der Sandt (1999).