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GYURIS BEÁTA

THE SEMANTICS OF CONTRASTIVE
TOPICS IN HUNGARIAN

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TÉMAVEZETŐ: DR. KÁLMÁN LÁSZLÓ KANDIDÁTUS

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	5
INTRODUCTION.....	7
CHAPTER 1: WHAT IS A CONTRASTIVE TOPIC?.....	9
1 INTRODUCTION	9
2 THEORETICAL BACKGROUND ON TOPICS	10
2.1 <i>The first theory on information structuring: Brassai</i>	11
2.2 <i>Traditional concepts of information structuring</i>	11
2.3 <i>Recent theories of topics</i>	14
3 THE NOTION OF TOPIC IN CONTEMPORARY HUNGARIAN LINGUISTICS	16
4 SOME GENERAL PROPERTIES OF CONTRASTIVE TOPICS IN HUNGARIAN	21
4.1 <i>Identifying contrastive topics</i>	21
4.2 <i>Non-topic expressions pronounced with a contrastive topic intonation</i>	23
4.3 <i>Some tests for contrastive topichood</i>	28
5 CONTRASTIVE TOPICS IN HUNGARIAN — TOPICS OR FOCI?	30
5.1 <i>Contrastive topic — a subtype of topic?</i>	30
5.2 <i>Contrastive topic — a subtype of focus?</i>	34
6 THE CONCEPT OF THE ASSOCIATE OF THE CONTRASTIVE TOPIC	40
7 SUMMARY	43
CHAPTER 2: PRESUPPOSITION, IMPLICATURE, AND DISCOURSE STRUCTURE	45
1 INTRODUCTION	45
2 ALTERNATIVE PROPOSITIONS: IMPLICATURE OR ENTAILMENT?	45
3 PREVIOUS THEORETICAL APPROACHES TO IMPLICATURE AND DISCOURSE CONGRUENCE	49
3.1 <i>Von Stechow's (1994) theory about the discourse conditions licensing contrastive topics</i>	49
3.2 <i>Büring (1997, 1999) on the presuppositions and implicatures of contrastive topics</i>	51
3.3 <i>Contrastive topic alternatives and compositionality</i>	61
3.4 <i>Kadmon's (2001) theory on discourse congruence</i>	64
4 DISCOURSE CONGRUENCE WITH HUNGARIAN CONTRASTIVE TOPICS.....	67
4.1 <i>Some relevant data</i>	67
4.2 <i>Steps towards a theoretical explanation</i>	72
5 SUMMARY	77
CHAPTER 3: THE SCOPE OF CONTRASTIVE TOPICS	79
1 INTRODUCTION	79
2 PREVIOUS ACCOUNTS OF THE POSSIBILITIES OF SCOPE REVERSAL BETWEEN QUANTIFICATIONAL EXPRESSIONS AND NEGATION	80
2.1 <i>Ladd 1980</i>	80
2.2 <i>Horn 1989</i>	81
2.3 <i>De Swart 1998</i>	82
3 PREVIOUS PROPOSALS FOR CAPTURING THE NARROW SCOPE READINGS OF CONTRASTIVE TOPICS IN HUNGARIAN.....	84
3.1 <i>Alberti & Medve 2000</i>	84
3.2 <i>É. Kiss 2000</i>	85
4 PROPERTY-DENOTING CONTRASTIVE TOPICS VS. SENTENCE INTERPRETATION	86
4.1 <i>Properties as noun phrase denotations</i>	86
4.2 <i>The property-reading of contrastive topics</i>	89
4.3 <i>The lexical representation of verbs with contrastive topic arguments</i>	90
5 DERIVING THE NARROW SCOPE READINGS OF CONTRASTIVE TOPICS COMPOSITIONALLY	91
6 WEAK POINTS OF THE 'CONTRASTIVE TOPIC AS PROPERTY' APPROACH	98

7	SUMMARY	99
CHAPTER 4: CONTRASTIVE TOPICS IN FACTUAL STATEMENTS.....		101
1	INFORMAL CHARACTERIZATION OF THE DATA	101
2	DISTRIBUTIVE VERSUS COLLECTIVE INTERPRETATIONS	107
2.1	<i>Some data</i>	107
2.2	<i>Collective and distributive readings: the essence of the distinction</i>	108
2.3	<i>Previous approaches to the collective/distributive distinction</i>	110
3	A UNIFIED APPROACH TO SCOPE AND COLLECTIVITY/DISTRIBUTIVITY: LANDMAN (1996)	113
3.1	<i>Overview</i>	113
3.2	<i>Comments on Landman (1996)</i>	117
3.3	<i>Interpretation of Hungarian sentences in terms of Landman's (1996) event semantics</i>	124
3.3.1	Sentences without contrastive topics	124
3.3.2	Sentences with contrastive topics	127
4	KRIFKA'S (1989) EVENT SEMANTICS AND ITS APPLICABILITY TO HUNGARIAN	130
4.1	<i>General overview</i>	130
5	AN EVENT SEMANTICS OF HUNGARIAN SENTENCES WITH CONTRASTIVE TOPICS.....	135
5.1	<i>Logical structure of sentences with contrastive topics</i>	135
5.2	<i>The interpretation procedure associated with sentences containing a contrastive topic</i>	139
5.3	<i>Contrastive topics denoting the logical subject of predication</i>	143
5.4	<i>Contrastive topics contributing to the expression of a property</i>	147
6	PREDICTING WELL-FORMEDNESS IN AN EVENT-BASED FRAMEWORK	153
6.1	<i>Sentences describing maximal events</i>	154
6.2	<i>Sentences describing atomic events</i>	156
6.3	<i>Contrastive topics with at least n</i>	158
6.4	<i>Collective versus distributive interpretations</i>	160
7	CONTRASTIVE TOPICS AND TRIPARTITE STRUCTURES – ADVERBIAL QUANTIFIERS AS CONTRASTIVE TOPICS	163
7.1	<i>Adverbs of quantification in non-contrastive readings</i>	164
7.1.1	<i>Data</i>	164
7.1.2	<i>Rooth's (1985) theory on the meaning of adverbs of quantification</i>	165
7.1.3	<i>A formal account of the meaning of Hungarian adverbs of quantification</i>	168
7.2	<i>On the interpretation of adverbs of quantification in the role of contrastive topic</i>	169
7.2.1	<i>Developing the formal apparatus 1 — simple sentences</i>	171
7.2.2	<i>Developing the formal apparatus 2 — complex sentences with focused when clauses and 'strong' adverbs of quantification</i>	174
7.2.3	<i>Weak adverbs of quantification as contrastive topics</i>	176
8	SUMMARY	179
CHAPTER 5: CONTRASTIVE TOPICS IN MODAL AND INTENSIONAL STATEMENTS		181
1	DATA.....	181
2	THE SEMANTICS OF MODALS.....	184
3	INTEGRATING THE SEMANTICS OF MODALS WITH THAT OF THE CONTRASTIVE TOPIC	186
3.1	<i>Truth-conditional meaning and alternative propositions</i>	186
3.2	<i>Calculating the implicature</i>	188
3.3	<i>Distributive versus group readings of contrastive topic DPs</i>	194
4	FORMAL REPRESENTATION OF THE TRUTH-CONDITIONAL MEANING OF MODAL ASSERTIONS	195
5	SOME EXCEPTIONS	197
6	SUMMARY	203
REFERENCES.....		209

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INTRODUCTION

This dissertation is about contrastive topics in Hungarian, and will propose answers to the following questions:

- What is the essence of ‘contrastive topichood’? In what respects are contrastive topics similar to ordinary topics? In what respects are contrastive topics similar to foci?
- What are the presuppositions and implicatures associated with contrastive topics?
- In what way can contrastive topicalization change the truth conditions of sentences?
- Why can quantificational expressions in contrastive topic take narrow scope with respect to other preverbal quantifiers?
- How can it be explained that certain, syntactically well-formed sentences with contrastive topics have no interpretation?

In Chapter 1, some characteristic features of contrastive topics are discussed. We give an overview of some of the most important concepts of information structuring, including topic and focus, as they are used in general linguistics, as well as in contemporary Hungarian syntax. We will investigate the prosodic, syntactic and semantic properties of constituents which have been referred to as contrastive topics and of the sentences containing them, and propose an answer to the question whether contrastive topics constitute a subtype of topics, or they are more similar to foci, as claimed in some theoretical accounts.

Chapter 2 investigates the presuppositions of contrastive topics, their implicatures and the properties of discourses they can be part of. It will be argued that since the propositions expressed by sentences containing contrastive topics could also be expressed by other constructions, the whole point of using a sentence with the contrastive topic is to convey the particular implicature which is due to the contrastive topic, namely, that there are alternative propositions which are neither entailed nor contradicted by the one expressed by the sentence in which the contrastive topic appears. It will also be shown that the impossibility of certain potential sentences with contrastive topics can be attributed to the fact that there is no question which they could be uttered as answers to.

In Chapter 3, some previous accounts of the possible narrow scope of quantificational expressions in contrastive topic proposed for Hungarian as well as other languages are reviewed and compared against a wide range of data. On the basis of the suggestion by Alberti and Medve (2000), according to which (non-referential) contrastive topics denote properties, a formal system of representing the meaning of sentences with contrastive topics is built up, which can correctly derive the readings of sentences with contrastive topic DPs where they take narrow scope with respect to their associate.

In Chapter 4, a new formal system of representing the meanings of factual sentences with contrastive topics is developed within the framework of event semantics, by which it becomes possible to derive alternative propositions systematically. A new definition of what counts as an alternative proposition is provided. It is argued that the unacceptability of sentences with quantificational expressions in contrastive topic is to be attributed to a clash between the intended truth-conditional meaning of the sentence and its implicatures, introduced by the contrastive topic itself. It will be shown that by considering sentences with contrastive topics to be event descriptions, several puzzling semantic properties of contrastive

topic DPs can be accounted for, like the availability of collective versus distributive readings, or their scopal behaviour.

In Chapter 5, the interpretation of modal/intensional statements containing contrastive topics is discussed. It is proposed that by assuming that these sentences introduce other modal/intensional propositions as alternatives, and assuming that their denotation could be represented in terms of Kratzer's (1991) theory using possible worlds, the range of their possible interpretations can be accounted for.

Although this dissertation does not intend to make any specific claims about the semantics of contrastive topics in languages other than Hungarian, it will be indicated that many of its proposals could be adopted to handle similar phenomena in other languages, particularly in German. The investigation of the exact correspondences between the contrastive topics of Hungarian and German, and possibly other languages will, however, be left for further research.

CHAPTER 1

WHAT IS A CONTRASTIVE TOPIC?

1 Introduction

As was outlined in the Introduction above, the aim of this work is to describe and explain the characteristic semantic properties of contrastive topics in Hungarian. The sentence-initial constituents of the following sentences, which bear a rising intonation, (indicated by the accent mark ´ below, immediately preceding the constituent) are prototypical instances of what is usually referred to as contrastive topic in Hungarian:

- (1) a. ´János] [´Pécsre utazott.¹
John Pécs-SUBLATIVE travelled
‘~John went to Pécs.’²
- b. ´Minden diák] [´nem bukott meg a vizsgán.
every student not fail pfx the exam-SUPERESS
‘It is not the case that ALL the students failed the exam.’

To provide an empirically and theoretically correct definition of contrastive topics in Hungarian is a difficult undertaking, as will be seen below, for the following reasons. On the one hand, the two features which have traditionally been assumed to identify contrastive topics in Hungarian characterize only prototypical instances of contrastive topics. One of these features is prosodic, namely, that contrastive topics are pronounced with a rising intonation, bear an eradicating stress³ (Kálmán & Nádasy 1994), and are followed by a constituent which also bears an eradicating stress and is pronounced with a falling intonation. The other feature concerns the interpretation of contrastive topics, namely, that they implicate a contrast between the semantic object denoted by the contrastive topic expression and some other object of the same semantic type, denoted by a constituent of the same syntactic category.

On the other hand, although the name *contrastive topic* indicates that such constituents should be viewed as showing features generally characterising topics, or, perhaps, should be considered as a subtype of topic, the question has not been resolved in the literature as to what extent the above conjecture is correct, for the following reasons. First, the defining

¹ The labeled brackets identify the contrastive topic constituents themselves, which, following É. Kiss and Gyuris 2002, will be assumed to be situated in the specifier position of a TopP projection. The sign ´ marks the place of the eradicating stress within the contrastive topic constituent, the sign ` marks the place of the next eradicating stress following the contrastive topic. The above signs are also meant to indicate the basic intonational features of the relevant constituents (fall-rise and fall, respectively). Here we will not provide any more detailed description of the intonation of contrastive topics.

² In the English glosses, the sign ~ indicates a fall-rise, which have been claimed in Büring (1997) to be associated with English contrastive topics, while small capitals signal emphasis.

³ Kálmán and Nádasy (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.

characteristics of topics in general (e.g., their phonological, syntactic, semantic and pragmatic features) proposed in the literature show great variation, thus, it is not clear what the essence of topicality is, and, therefore, in what aspects contrastive topics have to be similar to topics to deserve being called by the same name. Second, the definition of topicality as a concept of information structuring has often been confused with other concepts like *theme* or *givenness*, for example, due to the fact that prototypical topics in various languages are associated with a cluster of properties of information structuring, such as definiteness, givenness, or syntactic properties, e.g., the property of occupying a particular syntactic position.

This leads to a controversy about the exact status of the constituents which have traditionally been referred to as contrastive topics. Some authors (including Szabolcsi 1980, 1981a, É. Kiss 1998a, Büring 1997, Alberti & Medve 2000) believe that the constituents pronounced with a rising pitch accent followed by a constituent with a falling pitch accent share enough (semantic, syntactic) features with ordinary topics to be considered topics, and referred to as *contrastive topics*, while others (e.g., Jackendoff 1972, Kenesei 1989, van Hoof 2000, Kadmon 2001) are on the opinion that they share more features with foci, and thus they should be considered a special type of focus (Kenesei 1989, for example, uses the term *kontrafókus* to refer to these constituents). Some theorists (including Krifka 1998, Molnár 1998, and von Stechow 1994), although they use the term *contrastive topic* to refer to the above constituents, emphasize that the latter constituents manifest both topical and focal properties.

The aim of the chapter is to review the most significant contributions to defining the concept of topic and contrastive topic cross-linguistically, and to provide a definition of contrastive topic in Hungarian, which will be used in the rest of this dissertation.

In section 2 we will review some of the most important concepts of information structuring, and the theories of topics cross-linguistically. Section 3 will concentrate on the defining characteristics of topics in Hungarian, and section 4 enumerates the general prosodic, syntactic, semantic and pragmatic properties of Hungarian contrastive topics. Section 5 investigates whether the data argues for considering Hungarian contrastive topics as topical rather than as focal, and section 6 concentrates on the syntactic and prosodic structure of sentences containing contrastive topics.

2 Theoretical background on topics

The notions of *topic* and *focus* have traditionally been assumed to be related to information structuring, roughly, the division of information within a sentence as old and new (de Swart and de Hoop 1995). In order for communication to be successful, every sentence is expected to contain some new information, but to ease processing, there are elements within the sentence which are responsible for connecting it to the context established in the preceding text. In particular languages, the strategies for presenting information as given (old) or new have been grammaticalized to varying degrees, but it is usually the case that two sentences which are truth-conditionally equivalent cannot easily be substituted for each other in context.

In this section we give a short review on the development of research on the information structuring of sentences, starting from the work of Brassai in the 1850s, through various theoretical approaches which appeared from the beginning of the 20th century, up to contemporary theories.

2.1 The first theory on information structuring: Brassai

The person credited with proposing the first theory on the information structure of sentences from a cross-linguistic perspective is Sámuel Brassai (É. Kiss 1981b⁴). In his works, produced from the 1850s onwards, he claims that languages with both fixed and free word orders have a common structure. In this structure, one or more sentence-initial constituents, which refer to things already known, and whose function is to constitute a base for the oncoming information, called *inchoativum*, are followed by a second structural unit, called the *zöm* ‘main part’, which informs about an occurrence or a circumstance of an occurrence which is not known to the hearer. This latter part can also include constituents which carry information known to the hearer but are not considered necessary to be preposed. Each sentence has to have a main part (*zöm*) but does not necessarily have to have an *inchoativum*. For example, when the speaker does not consider it necessary to prepare the reader for the incoming information, preparatory information is explicitly or implicitly included in the previous text, or when the speaker is in a haste, the *inchoativum* can be missing. This means that the *inchoativum* is not a necessary part of the sentence, and, thus, that not all sentence-initial constituents are assumed to constitute the *inchoativum*, for example, sentence-initial position can also signal emphasis. According to Brassai, languages differ as to what constituents can play the role of the *inchoativum*. In Romance languages, this role can only be played by an argument in the nominative case, while in Hungarian, for example, several arguments can play the role of *inchoativum* at the same time. Brassai argues that in different languages the dividing line between *inchoativum* and main part manifests itself in different forms, in German and French the distinction is signalled with the help of word order, while in Hungarian with the heavy stress at the front of the main part.

Unfortunately, Brassai’s ideas remained unrecognized among his contemporaries, and thus the ensuing international research on the informational structuring of sentences, to be reviewed below, does not recognize him as the ultimate source of the basic ideas (except for the work of Katalin É. Kiss), but goes back to the much less developed and more easily falsifiable claims made in the papers by Georg von der Gabelentz in 1875 and 1879 for inspiration.

2.2 Traditional concepts of information structuring

The fact that in all languages there is a split between given and new or less informative and more informative parts has been discussed by various linguists working on various languages from the early 1900s, whose theories mainly differ in where they consider the split to be, and whether they assume that a dividing line can be drawn between the less informative or more informative elements, or rather, that they are situated on a continuum. Accordingly, the following dichotomies have been suggested to capture the structuring of information within a sentence: *theme–rheme*, *topic–comment*, *topic–focus*, *focus–presupposition* or *focus–open proposition*. A detailed overview of the above approaches is found in Vallduví 1990 and de Swart and de Hoop 1995. Here we will only delineate the basic claims of the various theories in order to illustrate where the concept *topic* comes from, and how it relates to the other concepts referred to above.

⁴ This review on Brassai’s work is based on É. Kiss 1981b.

The *theme–rheme* distinction appears both in Firbas 1964 and Halliday 1967, but with different interpretations. For Firbas, the parts of the sentence identified as theme or rheme are not complements, the theme is defined as ‘the sentence element (or elements) carrying the lowest degree(s) of communicative dynamism within the sentence’ (1964: 272), that is, the least informative part of the sentence, while the rheme is the most informative part of the sentence. According to Vallduví, the above definition makes Firbas’s theme more or less analogous to the topic in the topic–focus framework, discussed below.

As opposed to this, Halliday (1976) defines theme as ‘what is being talked about, the point of departure for the clause as a message’ and as ‘what comes first in the clause’ (1967: 212). According to Vallduví, Halliday’s approach has the advantage that themes become easily identifiable within it, but it also implies that all sentences have themes, including wh-questions (where the wh-word will have to be identified with the theme), and sentences which correspond to Kuroda’s (1972)thetic-judgment sentences, like that in (2), which describe a state-of-affairs without predicating properties about any particular entity.

(2) It is raining.

The essence of the *topic–comment* framework, according to Vallduví, is that the topic is defined as what the sentence is about, and the comment is what is said about it. The dichotomy originates from Mathesius (1915), who divides the sentence into what the speaker wants to speak about, called the topic, and what is to be said about this topic. A further representative of the approach is Gundel 1988, according to which any constituent in the sentence-initial slot must be interpreted as the topic of the sentence, but the topic does not always have to be encoded in this position, since any referential phrase is allowed to be the topic of the sentence, which, according to Vallduví (1990), makes the identification of topics problematic. A further and most often cited example of a theory articulating the topic–comment division, Reinhart 1982, will be discussed in section 2.3.

The *topic–focus* dichotomy is characteristic of the work of the Prague school (Sgall, Hajičová & Panevová 1986), according to which it is possible to construct for each sentence a scale of communicative dynamism, which orders its elements from the less dynamic ones (constituting old information), corresponding to the topic, to the more dynamic ones (constituting new information), which correspond to the focus. This ordered list of elements constitutes the tectogrammatical representation of the sentence, the underlying representation of its meaning. In languages with relatively free word order like Czech, surface word order more or less corresponds to the scale of communicative dynamism.

The term *focus*, as used in theoretical accounts proposing a dichotomy of *focus–presupposition* or *focus–open proposition* was first proposed by Halliday (1967), for whom it refers to a subset of the rheme, the ‘informative part’ of the sentence. In these frameworks, the complement of the focus is the information already established in the discourse, shared by speaker and hearer, which can either be referred to as *presupposition* or as *background*. The meaning of this latter part of the sentence, which connects the new information provided by the focus to the information structure built up by the preceding discourse, can be represented as an open proposition, that is, a proposition with a free variable, for which the focus provides a particular value. Von Stechow’s (1991) structured meaning approach to focus and Rooth’s (1985) alternative semantics both assume the above relation between the focus and its complement (de Swart and de Hoop 1995).

It is reflected in the proposals aiming to capture the structuring of information within the sentence that there are two special roles from the point of view of information structuring. One of them is the role of the most informative part, the focus, expressed by means of intonational prominence. The other is the role of the part expressing old information or denoting what the sentence is about. Constituents assumed to fulfill one or both of these latter roles (depending on the theory) are usually referred to as topics, and are (prototypically) situated in sentence-initial position.

Having observed that the expressions having the special roles of topic and focus used in the above sense do not normally make up a whole sentence, Vallduví (1990) proposes a trinomial hierarchical informational structure. According to his theory, from the point of view of information structuring, the sentence is first divided into the *focus* (obligatorily present in any sentence) and a *ground*, and the latter is further subdivided into parts referred to as the *link* and the *tail*. The link is “an address pointer that directs the hearer to a given address in the hearer’s knowledge-store, under which the information carried by the sentence is entered” (Vallduví 1990:61), which more or less contributes to the notion of ‘what the sentence is about’. Links appear only in sentence-initial positions although not all sentence-initial elements have to be links. It is also possible for a sentence to have more than one link. The tail is the complement of the link within the ground. It “may be viewed as an element that acts as a signalling flag to indicate how the information carried by the sentence must be entered under a given address” (ibid.).

As opposed to the above approaches, which (with the exception of Vallduví 1990) aim to capture the structuring of information within sentences with the help of one dichotomy, Östman and Virtanen (1999) argue that the distinctions between theme and rheme, topic and comment, givenness and newness are all necessary, since they describe different aspects of information structuring. The *theme-rheme* distinction is seen by Östman and Virtanen as related to the syntactic structure of the sentence, and thus they define theme the way it is done by Halliday, as the first element of the clause. As opposed to this, they consider the *topic-comment* distinction as interaction-oriented, and they define the topic as what the sentence is about. The distinction between *given* and *new* is seen by them as cognition-oriented, reflecting the level of activation of particular items in memory. Östman and Virtanen claim that languages differ as to which two of the above dichotomies they can collapse into one. In English, for example, the distinction between topic and comment coincides with the distinction between given and new, while Hungarian, as claimed by Maleczki (to appear), collapses the distinction between theme-rheme and topic-comment.

In particular languages, the expression of the information structural notions like topic or focus have become grammaticalized to a certain extent, and thus these notions have acquired particular, language-specific meanings. For example, in Hungarian linguistics, following the work of Katalin É. Kiss (e.g., É. Kiss 1981a, 1992, 1998a, etc.) the concept of topic has acquired a specific meaning. According to this, it refers to constituents which are situated in a particular syntactic position, and which possess some of the most important topical properties like referentiality and aboutness, discussed in section 3. Other languages where the expression of topics has been grammaticalized are Chinese and Japanese, where topics are followed by specific topic morphemes.

In the next section we will consider two important theoretical approaches to the concept of topicality dominant in present-day thinking, one of which is characterised as the topic-as-entity approach, and the other one as the topic-as-question approach.

2.3 Recent theories of topics

The most recent theories of topics fall into two categories, according to McNally (1998). One of them, which she calls the *topic-as-entity* approach, and which is illustrated by Reinhart 1982, Portner and Yabushita 1998 and works by Katalin É. Kiss, discussed below, assumes that topics are entities which the sentences are about. The other approach, called the *topic-as-question* approach, manifests in von Stechow 1994 and Büring 1997 and assumes that topic is a question, “modeled as a presupposed salient set of alternatives” (McNally 1998:148).

The *topic-as-question approach* is based on the observation that topics, particularly those pronounced with the rise-fall intonation, do not normally appear as part of the first sentence in a discourse, they presuppose that the preceding discourse contained questions with a particular structure which they are uttered as answers to.

Von Stechow 1994 argues that sentence topics introduce anaphoric elements which have to find a licenser/antecedent in the preceding discourse. This approach is modelled after Rooth’s (1992) analysis of focus. According to von Stechow, sentence topics are anaphoric to discourse topics, where the latter are defined as sets of propositions in the discourse context. These sets of propositions can correspond to explicit or implicit questions, since, following Hamblin’s (1973) semantics for questions, a question denotes a set of those propositions which can function as their possible (true or false) answers. Accordingly, a discourse topic which can function as licenser to the topic of sentence (3A) below can be given in the form of the set of propositions in (4). This set in fact corresponds to the semantic value of the question (3Q) in Hamblin’s theory.

- (3) Q: What did John do?
A: [He]_T [went home]_F.

- (4) {p: $\exists P(p=P(\text{John}))$ }

The formula in (4) shows that the topicality of the pronoun in (3A) signals that the properties of its referent are under consideration, which corresponds to speakers’ intuitions about sentence (3A).

In Büring 1997, where the term *topic* is used only for constituents which are pronounced with the rise-fall intonation, which we will refer to as *contrastive topics* in what follows⁵, we find traces of both the topic-as-question view and the topic-as-entity view.⁶ On the one hand, he proposes that the range of (possibly implicit) questions which sentences with a contrastive topic can be uttered as answers to can be determined formally if a third semantic value (in addition to ordinary semantic values and focus semantic values), referred to as a topic semantic value, is also associated with sentences containing (contrastive) topics. On the other hand, in places where he discusses the semantic properties of the constituents playing the role of the topic, he seems to subscribe to the topic-as-entity view, since he claims that

⁵ András Komlósy (p.c.) points out that in the literature about English, contrastive topics are most often mistaken for ‘topics’.

⁶ These claims contrast somewhat with the practice in Büring 1997 to mark words like determiners or negative particles, or non-referential quantificational DPs as topics, to be discussed below.

topic is “understood as ‘what the sentence is about’, or ‘the entity anchoring the sentence to the previous discourse’” (p. 55)

Reinhart’s (1982) theory is one of the *prima facie* examples of the *topic-as-entity* approach. According to this framework, the topics of sentences are entities, and not parts of sentences. The topic of a sentence is what the sentence is about, which is not necessarily identical to being old information. Reinhart distinguishes between sentence topics and discourse topics. The former of these always corresponds to an expression in the sentence, but the latter does not have to. Consider the following example:

- (5) Mr. Morgan is a careful researcher and a knowledgeable Semiticist, but his originality leaves something to be desired.

According to Reinhart, the sentence topic of (5) above is Mr. Morgan, since the sentence predicates something about him, while the discourse topic associated with it is Mr. Morgan’s scholarly ability, which the sentence does not explicitly predicate anything about, but provides some information about.

Reinhart also claims that topicality is not connected to a particular syntactic position, and that each sentence has at most one (possibly conjoined) topic. She also argues that those NPs which do not have a referential interpretation cannot give rise to topics. For example, the subject NP *more people* cannot constitute the topic of the following of her examples:

- (6) More people are familiar with the book’s catchy title than are acquainted with its turgid text.

Furthermore, she argues that universally quantified NPs can also give rise to topics, but only if they are assumed to denote sets, as in the following sentence:

- (7) Parents don’t understand. But all grownups, they do it to kids, whether they’re your own or not.

Also, indefinites can only give rise to topics if they are specific, as shown in the following example by Reinhart:

- (8) Because they wanted to know more about the ocean’s current, *students in the science club at Mark Twain Junior High School of Coney Island* gave ten bottles with return address cards indixed to crewmen of one of New York City’s sludge barges.

On the whole, Reinhart claims that for an NP to be interpreted as a topic, the proposition should be taken to express a property of the individual or set denoted by the NP, and this individual also has to be specific. As we will see below, in É. Kiss’s 1998a system the above characteristics are associated with the sentence-initial topic position in Hungarian.

According to McNally (1998), the motivation for the topic-as-entity approach comes from two sources. First, it has been claimed for languages with explicit topic marking that all

topic-marked constituents are entity-denoting.⁷ For example, it has been shown in works by Katalin É. Kiss (e.g., É. Kiss 1998a) that in Hungarian only entity-denoting NPs can appear in the topic position of the sentence, quantificational ones cannot. Second, the idea that topics are entities is derivable from the practice of identifying topics with what the sentence is about, where the notion of aboutness can be understood in two ways. On the one hand, aboutness can mean that the rest of the sentence denotes a property which is predicated of the topic denotation (É. Kiss 1993). If properties are imagined to be first-order, topics necessarily have to denote entities. On the other hand, the topic of a sentence can be understood as a file card on which the information in the sentence is entered or associated with, as in Reinhart (1982) and Portner and Yabushita (1998), and file cards are traditionally imagined to belong to entities.

McNally, scrutinizing the above motivations, arrives at the conclusion that none of them is strong enough to motivate a topic-as-entity approach properly. The first motivation is weakened considerably by data on *wa*-marked constituents in Japanese. The sentences containing such morphological markers have been assumed to express so-called categorical judgments (based on Brentano and Marty's theory ofthetic/categorical judgment, as in Marty 1918), which involve the identification of an individual and asserting or denying that this individual possesses some property (Kuroda 1972, 1992), as opposed to describing a state of affairs, as in athetic judgment. McNally notes, however, that there are sentences in Japanese where the *wa* marker attaches to expressions which do not denote individuals⁸. A similar phenomenon surfaces in Chinese, as pointed out by Huba Bartos (p.c.), where predicative NPs can also be topicalized.

As far as the second source of motivation for regarding topics as entities is concerned, McNally claims that it is not necessary to assume that all properties expressed by natural languages are first order, and, also, that it does not seem to be formally necessary to assume that all discourse referents or file cards correspond to entities, either.

In view of the evidence reviewed above and some additional data, McNally concludes that there are serious counterarguments to the view that topics correspond to entities. In section 5.1 below, however, we will give an overview of a theoretical approach to topics, proposed in works by Katalin É. Kiss, which shows that the idea that topics denote entities can peacefully co-exist with the apparent counterexamples, if the latter are all regarded as instances of contrastive topic, with semantic properties sometimes different from those of topics. In the next two sections we prepare the ground for the discussion of the above approach by reviewing the most important syntactic, semantic and phonological properties of contrastive topics.

3 The notion of topic in contemporary Hungarian linguistics

⁷ Under the topic-as-entity approach, generic expressions playing the role of topic would be left unaccounted for, as pointed out by Huba Bartos (p.c.). As argued by Cohen (1999a), however, generic statements are not about classes of objects but they should rather be considered probability judgments.

⁸ In cases where the *wa* marker attaches to non-individual-denoting constituents, it carries a contrastive meaning (Kuno 1972). This fact is generalized by É. Kiss (2000) who claims that the identical marking of topicality and contrastiveness indicates a close relation between these two notions, and is thus a justification for regarding contrastive topics as instances of topics.

In contemporary Hungarian syntax, topics are defined, following É. Kiss (1981a, 1987, 1992, 1995, 1998a, 2000, etc.) as constituents sitting in a particular syntactic position, which share a set of syntactic, semantic and prosodic characteristics. This notion of topicality goes back to Sámuel Brassai's work, discussed above, and corresponds to the features of what Brassai referred to as the *inchoativum* (i.e., that is, a sentence-initial element identifying some familiar individuals, which is separated from the rest of the sentence by prosodic means). Among the contemporary theories reviewed above, the above notion of topicality reminds one most of the notion of link as defined in Vallduví 1990.

Those sentence-initial constituents which are flexibly ordered, pronounced with a falling intonation pattern, and which can be followed by sentence adverbials are argued by É. Kiss (1992, 1993, 1995) to be associated with particular semantic features which characterize topics in other frameworks, which supports the idea of referring to them as topics. For example, she argues that these constituents refer to an entity or a set of entities which the sentence predicates something about, i.e., 'the logical subjects of predication' (É. Kiss 1993).⁹ The idea that topics denote what sentences are about seems to entail two further properties of topics for É. Kiss (1992, 1995). The first of these is that topics should denote individuals, which is based on the assumption that aboutness is expressed in terms of first-order properties. This property corresponds to what is called referentiality in É. Kiss 1998a or 2000. The second property is that the entity which the sentence predicates a property about should be identifiable independently from the statement itself. In other words, this individual should be familiar from the discourse in some sense (this condition, I believe, is identical to the specificity requirement in É. Kiss 1998a), thus, its identification should not be dependent on any other expression in the sentence.¹⁰ Thus, in É. Kiss's framework, Hungarian topics are associated with a cluster of semantic properties. Note however, that in this theory, the term *topic* refers to a particular syntactic constituent as opposed to referring to a semantic object, characteristic of the classical variants of the topic-as-entity approach, described above.

(9) below illustrates two topicless sentences in Hungarian, which correspond to Brentano and Marty's *thetic judgments* (cf., Kuroda 1972), since they state a particular fact about the world. (10) contains examples of Hungarian sentences with topics, which are assumed by É. Kiss (1992) to predicate a particular property about an entity (person, thing, or a set of these, etc.), and thus would correspond to *categorical judgments*:

- (9) a. Esik az eső.
 falls the rain
 'It's raining.'

⁹ Maleczki (2002) proposes that argues convincingly that topics should not be equated with the logical subjects of predication. In view of the fact that I learned about her proposal only immediately before finishing this dissertation to incorporate her findings into my work, and that, as the following discussion will show, contrastive topics must not be equated with the logical subjects of predication anyway, I will continue to assume that topics do denote the logical subjects of predication.

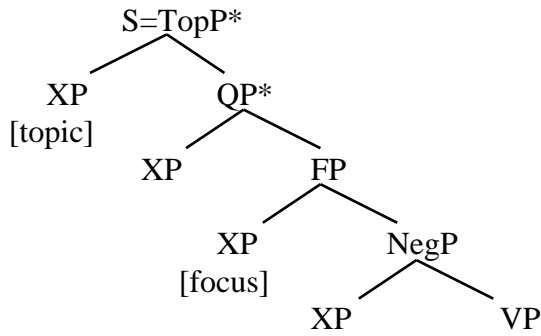
¹⁰ Li and Thompson (1976) also argue that one of the most important characteristics of topics is that they must be definite. They consider proper and generic NPs to be definite as well.

- b. Érkezett egy vendég.
arrived one guest
'A guest arrived.'
- (10) a. [_T Mari] [_T a könyvet] [_F a polcra] tette.
Mary the book-ACC the shelf-SUBL put-PAST
'Mary put the book on the SHELF.'
- b. [_T A polcra] [_T Imre] [_F a könyvet] tette.
the shelf-SUBL Imre the book-ACC put-PAST
'It was the book that Imre put on the shelf.'
- c. [_T A szomszédom] találkozott a miniszterrel.
the neighbor-1SGPOSS met the minister-INSTR
'My neighbor met the minister.'
- d. [_T Az egyik tanítványom] elfeledkezett a vizsgájáról.
the one student-1SGPOSS pfx-forgot the exam-DELATIVE
'One of my students forgot about his exam.'
- e. [_T Sokan] már tegnap leadták az dolgozatukat.
many already yesterday pfx-gave the essay-ACC
'Many submitted their essays as early as yesterday.'
- f. [_T A legtöbb gyerek] utálja a spenótot.
the most child hate the spinach-ACC
'Most children hate spinach.'

In the examples shown in (10) above, one or more NPs or PPs which denote an individual or a set of individuals are followed by a constituent which denotes a property. The sentence-initial NPs and PPs can be taken to denote entities which the rest of the sentence makes a statement about, or expresses a property of. Topics in Hungarian do not obligatorily bear stress, but in any case, their stress cannot be stronger than the obligatory stress on the predicate, and they also constitute an intonational phrase independent of that of the predicate (É. Kiss 1998a).

Since the topics in Hungarian sentences cannot be preceded by non-topic expressions other than sentence adverbs, they have been proposed to be situated in the highest of the operator positions in the hierarchical organization of the preverbal field of the Hungarian sentence, in the specifier position of the TopP. In this dissertation we will assume, following É. Kiss (1998a) that (11) corresponds to the surface structure of the Hungarian sentence:

(11)



In (11) above, those projections are marked by asterisks of which more than one can appear on top of the other. The constituent which is referred to as the topic by É. Kiss occupies the specifier position of the TopP projection, while the focus occupies the specifier of FP. (12) illustrates some sentences in Hungarian where several of the operator positions in (11) are filled. In (12) below, the labeled brackets indicate the subtrees dominated by the nodes in the subscript. This notation differs from that applied in (10) and in the rest of this dissertation (unless otherwise noted), according to which the subscripts F, T (and CT) refer to the constituents in the specifier positions of the FP or TopP projections above, loosely referred to as focus and topic (and contrastive topic).

- (12) a. [_{TopP} János [_{QP} minden délután [_{QP} többször is [_{FP} a folyosón [_{VP} várakozott.]]]]]
 John every afternoon-SUP several times too the corridor-SUP waited
 ‘John was waiting several times every afternoon on the CORRIDOR.’
- b. [_{TopP} Jánost [_{QP} sokan [_{NegP} nem [_{VP} szeretik.]]]]
 John-ACC many not like-3PL
 ‘Many people don’t like John.’

In the structure shown in (11) above, the specifier of the QP projection is reserved for constituents denoting distributive quantifiers. Constituents interpreted as monotone decreasing or non-monotone quantifiers like *kevés ember* ‘few men’, and *pontosan háromszor* ‘exactly three times’, etc., can only be situated in an immediately preverbal position (among the preverbal positions). É. Kiss (1998a) assumes that these constituents are situated in the specifier of the focus projection, but Szabolcsi (1997b), in view of the fact that these constituents lack some of the semantic properties associated with foci in Hungarian, proposes that they are situated in the specifier of a Predicate Operator projection (in short, in the Predicate Operator position), which cannot be filled if the specifier of the FP projection is also filled. Brody and Szabolcsi (2000), however, argue that these two positions are in fact identical, and constituents which have been claimed to be focused differ only in phonological respects from the other constituents which can occupy the same, immediately preverbal position. Although I am not in a position right now to argue for or against the view that the focus and the Predicate Operator positions are identical, I will assume in the rest of this work that they indeed are.

The often cited claim (originally due to Edwin Williams¹¹) that Hungarian is a language that “wears its LF on its sleeve” (Szabolcsi 1997b:118), is reflected particularly clearly in the rules governing the assignment of scope to quantificational expressions. All

¹¹ István Kenesei, p.c.

quantifiers situated in the operator positions in (11) above satisfy the requirement that they precede and c-command their scope at S-structure, and thus the surface order of quantified expressions unambiguously determines their scope, as the English translations for the sentences in (12) indicate.

According to É. Kiss (1998a), the topic position can usually be filled by arguments of the verb, like in (10) above, as well as by place and time adverbials, like in (13a, b). Sentence adverbials occupy positions situated before, between or immediately after the topic constituents (their rightmost position indicating the boundary between the topic and the predicate), while predicate adverbials must be situated after topics (cf., (13c, d) and (13e, f)), and thus can be used to test where the boundary between the topic and the predicate lies¹²:

- (13) a. [_T Húsvét után] melege fordult az idő.
Easter after warm-SUBL turned the weather
'After Easter, the weather became warm.'
- b. [_T A hegyekben] [_T János] [_F szívesen] sétál.
the mountains-INESS John with pleasure walk
'In the mountains, John enjoys walking.'
- c. Szerencsére [_T Péter] [_T a legtöbb kérdésre] tudta a választ.
fortunately Peter the most question-SUBL knew the answer-ACC
'Fortunately, Peter knew the answer to most questions.'
- d. [_T Péter] szerencsére [_T a legtöbb kérdésre] tudta a választ.
Peter fortunately the most question-SUBL knew the answer-ACC
'Fortunately, Peter knew the answer to most questions.'
- e. *Ügyesen [_T János] [_T a legtöbb embert] félrevezette.
cleverly John the most person-ACC pfx-misled
- f. [_T János] [_T a legtöbb embert] ügyesen félrevezette.
John the most person-ACC cleverly pfx-misled
'John mislead most people in a clever way.'

Although there are many more important syntactic and semantic properties of topics which would deserve consideration at this point, we will not discuss them here, but will return to them when we compare corresponding properties of topics and contrastive topics in later sections.

Having reviewed some of the most important features of constituents situated in the preverbal operator position called topic position in Hungarian, in the next section we will

¹² The fact that time and place adverbials can also fulfill the topic role confirms the applicability of the definition of topics provided by Chafe (1976), according to which topics do not identify what the sentence is about, rather they set "a spatial, temporal, or individual framework within which the main predication holds" (p. 50). I believe, however, that the above two possible definitions of topichood do not stand in opposition to each other, since restricting the validity of the main predication to one individual consists in predicating a property about that individual.

outline the most important prosodic, syntactic, semantic and pragmatic properties of the constituents traditionally referred to as contrastive topics in Hungarian.

4 Some general properties of contrastive topics in Hungarian

4.1 Identifying contrastive topics

In the literature about Hungarian¹³ the term ‘contrastive topic’ has been used to refer to constituents situated on the left periphery of the sentence which receive a rising intonation, bear an eradicating stress (Kálmán & Nádasy 1994) and/or are followed by a marked pause (Szabolcsi 1980, 1981a), and introduce a contrast between the denotation of the contrastive topic and semantic objects of the same type. Upon closer examination of the data, however, it turns out that the above cluster of syntactic, prosodic and semantic features is only available in prototypical instances, illustrated in (14a–b). The rest of the examples in (14) illustrate that one of the above criteria can also be missing:

- (14) a. [CT János] `nem jött meg.
 John notcame pfx
 ‘As for John, he did not arrive.’
- b. [CT A `sátorban] [F`Péter] aludt.
 the tent-INESS Peter slept
 ‘As for the tent, it was Peter who slept in it.’
- c. [CT János], az `nem jött meg.¹⁴
 John that not arrived pfx
 ‘As for John, he did not arrive.’
- d. [CT Máriát], azt `meglátogattam.
 Mary-ACC that pfx-visited
 ‘As for Mary, I have visited her.’
- e. [CT Két fiú] [F`kedden] jött meg.
 two boy Tuesday-SUPERESS came pfx
 ‘As for TWO boys, that many arrived on TUESDAY.’

¹³ Szabolcsi 1980, 1981a, É. Kiss 1998a, Molnár 1998, Kálmán & Nádasy 1994, Alberti & Medve 2000, among others.

¹⁴ According to András Komlósy (p.c.), the sentence-initial constituent in this example can only be pronounced with a falling intonation, and it can only be interpreted as a contrastive topic. Concerning this issue, I have followed Komlósy’s suggestion. (This is opposed to Huba Bartos’s claim (p.c.), according to which the former constituent can be pronounced with a falling and a rising intonation as well, in which cases it functions as an ‘ordinary’ topic or a contrastive one, respectively.)

- f. [CT Két 'fiú] [F `kedden] jött meg.
 two boy Tuesday- SUPERESS came pfx
 'As for two BOYS, that many arrived on TUESDAY.'

(14a) states about John that he did not come, and contrasts him to other individuals (conveying implicitly that some of them did not come, or that it is not known whether they came). Sentence (14b) is about the tent, it states about this object that Peter slept in it, and contrasts it to other places where different people could have slept. (14c) is a variant of (14a), where a demonstrative pronoun follows the contrastive topic expression, which is coreferential with it. The interpretation of (14c) is the same as that of (14a), including the contrast feature, in spite of the fact that the sentence-initial constituent in the former has to be pronounced with a falling intonation (cf. footnote 13). (14d) illustrates a similar type of sentence, which states about Mary that I visited her, and contrasts her to alternative individuals. Due to the fact that the interpretation of (14c–d) relies on the contrast characteristic of contrastive topics, I believe that the sentence-initial constituents in the above examples have to be considered contrastive topics, in spite of the fact that they do not show the characteristic prosodic pattern prototypically associated with contrastive topics. (14e) is ambiguous. It can predicate a property of two particular persons, e.g., Bill and John, stating about them that they came on Tuesday, and contrast them to other individuals, to whom the same property does not apply or is not known to apply. It can also express the proposition that there is a set of boys with two members which came on Tuesday, as opposed to sets of boys of different cardinality.¹⁵ In this sentence the determiner of the contrastive topic DP bears the eradicating stress, and thus the contrastive topic is contrasted with properties of specific or non-specific sets of boys with different cardinality. In sentence (14f), where the eradicating stress falls on the noun, properties of sets with two members consisting of different kinds of individuals (e.g., girls) are contrasted with the one predicated of a set of two boys in (14f).

The constituents which are pronounced with the contrastive intonation in (14) could also function as ordinary topics in É. Kiss's sense, since they are situated in sentence-initial position, denote a specific referent, and the sentence itself predicates a property of this referent. Pronouncing the sentence-initial constituents with the rising intonation, however, results in an 'interpretational surplus', as Szabolcsi (1981a) puts it, since, as she claims, it suggests that in the universe of discourse there are things other than the one named by the contrastive topic about which the same question might sensibly be raised, and it is possible that the answer to that question might have the opposite truth value. Thus, according to Szabolcsi, contrastive topics are regular topics which are associated with an additional, non-truth-conditional shade of meaning, due to their special intonation, although they do not constitute a category independent of ordinary topics at all.

The sentences in (15) show that the order of contrastive topics and ordinary topics is not fixed in the sentence:

- (15)a. [T János] [CT a 'levest] `megette (, de [CT a 'húst] `nem).
 John the soup-ACC pfx-ate but the meat-ACC not
 'As for the soup, John did eat it (, but he did not eat the MEAT).'

- b. [CT A 'levest] [T János] `megette (, de [CT a 'húst] `nem).

¹⁵ According to András Komlósy (p.c.), the sentence can only have the second reading.

the soup-ACC John pfx-ate but the meat-ACC not
'As for the soup, John did eat it (, but he did not eat the MEAT).'

Sentences like these and some further data made Alberti & Medve (2000) conclude that contrastive topics are situated in the specifier position of a CTopP projection, which they occupy as a result of movement, and not base-generated in a left-dislocated position as É. Kiss 1992 proposed. In É. Kiss's (1992) framework, contrastive topics are generated external to the proposition but coindexed with a V'-internal (postverbal) gap, which makes it possible to account for their narrow scope, to be discussed in Chapter 3, but which fails short of explaining the data in (15). In addition, an underlying structure containing a left-dislocated topic but no other preverbal operator would itself be considered ungrammatical, since it would lack the emphatic constituent which necessarily has to follow the contrastive topic. The movement analysis is not without its problems, either, since it has difficulties with sentences containing a pronoun coreferential with the contrastive topic, like (14c–d), as pointed out by Huba Bartos (p.c.). For example, the pronoun in (14d) cannot be considered a resumptive pronoun, since these are normally situated in the lowest position in the chain and not in an intermediate position. Naturally, the contrastive topic and the pronoun could not be allowed to move independently, since then we would have to assume that the verb has two objects.

Due to the fact that I am not in a position to provide an adequate syntactic analysis of contrastive topics (which is in fact not the topic of the dissertation, either), I will assume in what follows, as done in É. Kiss and Gyuris 2002 that contrastive topics are situated in the specifier position of a TopP projection and occupy this position as a result of movement, bearing in mind that this analysis might not work for all relevant examples.

4.2 Non-topic expressions pronounced with a contrastive topic intonation

The phenomenon which raises most doubts as to whether we are justified enough to refer to the sentence-initial constituents pronounced with the rising intonation as topics is that there are constituents which cannot appear in the topic position of the Hungarian sentence, due to the fact that they are not referential expressions, which can still be pronounced with the contrastive topic intonation, invoking a contrast between similar semantic objects. Among these are non-referential DPs excluded from the topic position, like those denoting universal quantifiers in the framework of Generalized Quantifier Theory (e.g., Barwise and Cooper 1981), as in (16a), monotone decreasing quantifiers, as in (16b), distributive quantifiers, as in (16c), and those containing the word *csak* ‘only’, in (16d, e):

- (16) a. [CT 'Mindenki]` nem jött meg.
 everybody not came pfx
 'It is not the case that EVERYBODY arrived.'
- b. [CT 'Kevés fiú] [F` kedden] jött meg.
 few boy Tuesday-SUPERESS came pfx
 'As for few boys, that many arrived on TUESDAY.'

- c. [CT 'Legalább egy könyvet] `minden diák elolvasott.
 at least one book-ACC every student pfx-read
 'Every student has read at least ONE book.'
- d. [CT 'Csak rizst] [F ` János] eszik.
 only rice-ACC John eats
 'It's John who eats only rice.'
- e. [CT Csak 'rizsen] `nem tudnék élni.
 only rice-SUPERESS not could-1SG live-INF
 'I couldn't live on RICE only.'

It was noticed by Szabolcsi (1980, 1981a) that sentences with quantificational expressions in contrastive topic, like those in (16a–c), do have readings in which the contrastive topic denotation takes narrow scope with respect to other preverbal operators. For example, in (16a) negation takes wide scope over the universal quantifier, which is reflected in the English translation. The above data thus contradict the principle discussed above, according to which the surface order of operators in preverbal position in Hungarian is a reflection of their scope. Previous theories to explain the phenomenon will be discussed in Chapter 3, which will be followed by my proposed solution in later chapters.

In addition to DPs, constituents belonging to non-DP categories can also appear as contrastive topics in the Hungarian sentence, like the infinitivals in (17) below.

- (17)a. Péter [CT 'enni] `evett.
 Peter eat-INF ate-3SG
 'As for eating, Peter did eat.'
- b. [CT 'Látni] `láttam Pétert, de 'beszélni `nem beszéltem vele.
 see-INFsaw-1SG Peter-ACC but talk-INF not talked-1SG he-INSTR
 'As for seeing Peter, I did see him, but I haven't talked to him.'
- c. [CT 'Látni] [F ` Pétert] láttam, nem Jánost.
 see-INF Peter-ACC saw-1SG not John-ACC
 'As for seeing somebody, I saw Peter, and not John.'

As Szabolcsi (1981a) claims, the sentences illustrated in (17) come about by copying the finite verb into the topic position, which acquires the infinitival suffix there. The only function of this procedure is to generate the special semantic effect of contrast. The copying mechanism is necessary since the finite verb of the sentence is immobile, and could not itself be placed into the topic position when the particular semantic effect associated with the contrastive topic (i.e., the contrast) is needed. This argument is supported by the fact that the occurrence of the infinitival form in any other position, for example, in the focus position or after the verb in the same sentence is ungrammatical, as relevant counterparts of (17a) in (18) (from Szabolcsi 1981a) indicate:

(18)a. *[_F Enni] evett Péter.
eat-INF ate-3SG Peter

b. *Péter evett enni.
Peter ate eat-INF

Whenever the finite verb is an auxiliary, as in (19a), its infinitive complement can be placed into the contrastive topic position without the need for, in fact, without the option of (H. Bartos, p.c.) copying, as (19b) shows:

(19)a. [_{CT} 'Enni] `nem szabad a buszon.
eat-INF not allowed the bus-SUPERESS
'As for eating, it is not allowed on the bus.'

b. *[_{CT} 'Enni] `nem szabad enni a buszon.
eat-INF not allowed eat-INF the bus-SUPERESS

Adjectives constituting the nominal predicate of the sentence can also carry the special meaning effect of contrast and appear in the contrastive topic position. When they appear in the sentence without an overt copula, they become immobile like the finite verbs above, and they need to be copied into the topic position and assume the dative suffix to be able to function as contrastive topics, as in (20):

(20)a. A film [_{CT} 'jónak] `jó.
the movie good-DAT good
'As for being good, the movie is good.'

b. [_{CT} 'Szépnek] `nem szép Sári.
beautiful-DAT not beautiful Sarah
'As for beauty, Sarah is not beautiful.'

c. *[_{CT} 'Szép] `nem Sári.
beautiful not Sarah

If the copula is present in the sentence, however, as in (21), the predicative adjective can move into the contrastive topic position without taking the dative suffix:

(21)a. [_{CT} 'Szép] `nem vagyok.
beautiful not be-1SG
'As for beauty, I am not beautiful.'

b. [_{CT} 'Szép] `nem volt Sári.
beautiful not was Sarah
'As for beauty, Sarah was not beautiful.'

Note, however, that in an affirmative sentence where the eradicating stress following the contrastive topic falls on the copula, the sentence becomes ill-formed, and it can only be turned grammatical by copying the adjective into the contrastive topic position, as the contrast between the two sentences in (22) shows:

(22)a. *[_{CT} 'Szép] `volt Sári.

beautiful was Sarah

- b. [CT 'Szépnek] `szép volt Sári.
 beautiful-DAT beautiful was Sarah
 'As for beauty, Sarah `was beautiful.'

Bare nominals can also appear in contrastive topic position. According to É. Kiss 2000, sentences like (23) below make a predication about a property, and thus indirectly about individual realizations of a property.

- (23) a. [CT 'Autót] `sok gyerek látott.
 car-ACC many child saw
 'As for cars, many children saw one.'
- b. [CT 'Magas fiúval] csak `Mari beszélgetett.
 tall boy-INSTR only Mary talked
 'As for tall boys, only Mary talked to one.'

Thus, (23a) states about the property of being a car that many students saw individual realizations of it (not necessarily the same one), while (23b) states about the property of being a tall boy that only Mary talked to a realization of this property.

Verbal prefixes can also occupy the contrastive topic position, as shown in (24):

- (24) [CT 'Föl] `liften megyek.
 up lift-SUPERESS go-1SG
 'Upwards I will go by elevator.'

É. Kiss (1998a) claims that in such a case the upward direction denoted by the verbal prefix *föl* constitutes the logical subject of predication, and the predicate part of the sentence states something about this direction. The contrast the sentence gives rise to is thus between directions expressible with the help of verbal prefixes. Examples like (25a) below, however, indicate that this explanation cannot be extended to all prefixes, since the prefix *meg* does not have a lexical meaning outside its perfectivizing function, thus, it cannot be contrasted with any other verbal prefix. The sentence, however, is still well-formed.¹⁶ The contrast therefore is more probably between the writing of the article and some other activities, which the second clause of the sentence makes explicit, or between aspectual components of meaning (H. Bartos, p.c.), as in (25b):

- (25) a. [CT 'Meg] `nem írtam még a cikket, de már gondolkodtam rajta.
 pfx not wrote-1SG yet the paper-ACC but already thought it-SUPERESS
 'As for writing the paper, I have not written it yet, but I have already been thinking about it.'

¹⁶ In fact, not all uses of *föl* are directional, either (Ferenc Kiefer, p.c.)

- b. [CT´Meg]`nem írtam még a cikket, de már belekezdtem.
 pfx not wrote-1SG yet the paper-ACC but already pfx-started
 ‘As for writing the paper, I haven’t written it yet, but I have already started it.’

I believe, therefore, that the data support Szabolcsi’s (1980) view, according to which the topicalization of the verbal prefix serves the function of topicalizing the verb, which cannot be moved out of its original position. Copying the verb into the topic position, as seen in (17) above is another means of achieving the same effect. A comparison between the synonymous sentences in (25a) and (26), the second of which involves copying, shows that this suggestion is on the right track:

- (26) [CT´Megírní] nem írtam még meg a cikket, de már gondolkodtam rajta.
 pfx-write-INF not wrote-1SG yet pfx the paper-ACC but already thought it-SUPERESS
 ‘As for writing the paper, I have not written it yet, but I have already thought about it.’

(27) shows that adverbials can also function as contrastive topics:

- (27) a. [CT´Jól] [F`Kati] oldotta meg a feladatot.
 well Kate solved pfx the task-ACC
 ‘Kate was the one who solved the task WELL.’
 b. [CT´Kétszer] [F csak`Pistát] hívtam fel.
 twice only Steve-ACC called pfx
 ‘It was only Steve whom I called TWICE.’

The examples discussed so far in this section have shared the property that the denotation of the constituent which was pronounced with the rising intonation on the left periphery of the sentence was used for evoking some kind of contrast between denotations of the same type. The following example, originally from É. Kiss 1987, discussed in Molnár 1998, indicates that the contrastive interpretation is not always characteristic of the sentence-initial constituents which are pronounced with the rising intonation:

- (28) [CT´Valakit]`mindenki szeret.
 somebody-ACC everybody loves
 ‘Everybody likes ~someone.’

As Molnár claims, the contrast effect cannot be achieved on the non-specific reading of the indefinite pronominal *valakit* ‘somebody’, since it is not possible to establish a contrast with something which cannot be specified. The idea that the sentence-initial constituent should still be regarded as a contrastive topic and not a prosodic variant of an ‘ordinary’ topic is supported by the fact that it manifests an important further property of quantificational expressions in the contrastive topic positions, mentioned briefly above, and discussed in Chapter 3 below, namely, that they take narrow scope with respect to the quantificational expression which follows it in the sentence.

É. Kiss (p.c.) claims that in the following sentence the sentence-initial constituent is situated in the contrastive topic position, but here the rising intonation does not necessarily serve the purpose of contrasting the denotation of the constituent to another denotation, but to individuate the property denoted by this constituent and thus make it available for playing the role of the logical subject of predication. As the English glosses show, the contrastive topic in

this example is also assumed to take narrow scope with respect to the quantificational expression following it.

- (29) [CT *Legalább öt könyvet*] *`mindenki elolvasott.*¹⁷
 at least five book-ACC everybody pfx-read
 ‘Everybody read at least FIVE books.’

On the basis of the data discussed in this section it can be concluded that there is no set of necessary and sufficient conditions characterising contrastive topics in Hungarian. It seems that the minimal requirement for being considered a contrastive topic is that the constituent has to be situated in a position where ordinary topics can also be situated, and at least one of the following requirements has to be satisfied by it. It should either be pronounced with a rising intonation and bear an eradicating stress, or the utterance of this constituent has to give rise to a contrast between denotations of the same type. In most of the cases, both of the above conditions are equally present. The fact, however, that all instances of what is traditionally referred to as contrastive topic can be characterized by the syntactic requirement (of occupying a particular position) argues that the identification criteria for contrastive topics should be based on syntax, rather than prosody or semantics. The practice according to which not only the accented constituent with the rising intonation, the ‘locus of contrastive topicness’, was considered the contrastive topic of the sentence in the preceding discussion but the smallest maximal projection containing this constituent is the result of the application of the above syntactic identification criterion, the only one, I believe, by which contrastive topics can be identified without doubt. As will be shown below, the above choice will not have any impact on the semantic interpretation of contrastive topics.

Having illustrated some characteristic examples for contrastive topic in Hungarian, the next section discusses some tests which can help to identify particular instances of contrastive topic.

4.3 Some tests for contrastive topicness

Besides their characteristic intonation pattern, contrastive topics can be recognized from allowing the insertion of a coreferential pronoun or certain particles after the contrastive topic expression, without a change in meaning. The insertion of the above types of constituents, as already mentioned above, results in the optional or necessary loss of their characteristic intonation.

If the contrastive topic is a referential expression, then a demonstrative pronoun like *azt* ‘that-ACC’, or *ott* ‘there’, etc., can be inserted into the sentence as in (30) (cf. (14c–d):

- (30) a. [CT *János*] *az `nem jött meg.*
 John that not came pfx
 ‘John has not arrived.’
 b. [CT *Máriát*] *azt `meglátogattam.*
 Mary-ACC that-ACC pfx-visited

¹⁷ There are some speakers, including László Kálmán, for example, who find contrastive topic DPs with determiners of the form *legalább n* ‘at least n’ ungrammatical. Since there are speakers, including myself, who find sentences like (29) perfectly natural, I will continue to include them in my investigations.

‘Mary, I HAVE visited.’

- c. [CT A sátorban], ott [F `Péter] aludt.
 the tent-INESS there Peter slept
 ‘As for the tent, it was Peter who slept in it.’

The demonstrative pronoun *azt* ‘that-ACC’ can only be inserted after an infinitive if the infinitive in contrastive topic position is not a copy of the finite main verb of the sentence:

- (31) a. *Péter [CT enni] azt `evett.
 Peter eat-INF that-ACC ate-3SG
 b. *[CT Látni] azt `láttam Pétert, de beszélni nem beszéltem vele.
 saw- INF that saw-1SG Peter-ACC but talk-INF not talked-1SG he-INSTR
 c. [CT Enni] azt `nem szabad a buszon.
 eat-INF that not allowed the bus-SUPERESS
 ‘It is not allowed to EAT on the bus.’

Similarly, if the adjective in contrastive topic does not bear a dative suffix, the pronoun *az* ‘that’ can be inserted after it:

- (32) a. [CT Szép] az `nem vagyok.
 beautiful that not be-1SG
 ‘As for beauty, I am not beautiful.’
 b. [CT Szép] az `nem volt Sári.
 beautiful that not was Sarah
 ‘As for beauty, Sarah was not beautiful.’
 c. * [CT Szépnek] az/azt `nem volt szép.
 beautiful-DAT that/that-ACC not was beautiful

Referential as well as non-referential contrastive topics can in most cases be followed by some of the connectives *bezzeg* ‘as opposed to others’ and *azért, pedig, bizony, aztán, ugyan* ‘however’, as the following examples illustrate:

- (33) a. [CT `János] bezzeg [F a `sátorban] aludt!
 John as opposed to others the tent-INESS slept
 ‘John, as opposed to the others, did sleep in the tent!’
 b. [CT `Grúzul] bezzeg [F `tud] az András!
 Georgian-ESS as opposed to others know the Andrew
 ‘Andrew does speak GEORGIAN, as opposed to other languages.’

- c. [CT 'Legalább egy könyvet] bezzeg `minden diák elolvasott!
 at least one book-ACC as opposed to others every student pfx-read
 'Every student has read at least ONE book.'
- d. ?[CT 'Mindkét fiú] bezzeg `nem jött meg!
 both boy as opposed to others not came pfx
 'Both boys have NOT arrived!'
- e. [CT 'Kétszer] bezzeg csak `Pistát hívtad fel!
 twice however only Pete-acc called pfx
 'It was only Steve whom you called TWICE, however!'
- (34) a. [CT 'Legalább egy könyvet] azért `minden diák elolvasott.
 at least one book-ACC however every student pfx-read
 'Every student has read at least ONE book, however.'
- b. [CT 'Csak rizsen] azért `nem tudnék élni.
 only rice-SUPERESS however not can-POSS-1SG live-INF
 'I could not live on rice only, however.'
- c. [CT 'Buta] azért `nem vagyok.
 stupid however not be-1SG
 'As for stupidity, I am not stupid, however.'

Having reviewed the most important prosodic, syntactic, semantic and information structural properties of the constituents which are situated in one of the initial positions of the Hungarian sentence, pronounced with a rising intonation and which give rise to some contrast, traditionally referred to as contrastive topics, the question arises to what extent the constituents satisfying the above requirements satisfy traditional requirements of topicality, or, as suggested by a number of researchers, they should be regarded as a special type of focus. This is the question to which we now turn.

5 Contrastive topics in Hungarian — topics or foci?

5.1 Contrastive topic — a subtype of topic?

It was mentioned in the introduction to this chapter that opinions regarding the status of constituents we have been referring to as contrastive topics differ along two dimensions. There is no agreement in the literature neither as to what the defining characteristics of topicality (and focusing) are, nor as to which the most central (most prototypical) among these features are. As far as the first source of variation is concerned, section 3 provided an overview of what is more or less generally assumed to be denoted by the term 'topic' in contemporary Hungarian linguistics. In this section we will review some of the arguments based both on Hungarian and on cross-linguistic investigations for and against considering contrastive topics essentially topical, while in the next section we will discuss arguments related to considering them a type of focus.

The strongest reason for considering contrastive topics topical rather than focal is that in the Hungarian sentence, topics and contrastive topics are situated within one ‘field’, where their order can easily be altered, as illustrated in (17) above.

Additional support for considering topics and contrastive topics alike comes from cross-linguistic data on the identical marking of ‘true’ topics and constituents expressing some kind of contrast. Lee (1999), for example, lists some grammatical categories for Korean the representatives of which cannot appear as topics but can be interpreted as contrastive topics. These include (nominalized) verbs and adjectives, and NPs with an instrumental case marking. Furthermore, as discussed in É. Kiss 2000, support for the relatedness of the features of referentiality, characteristic of topics, and of contrastiveness, characteristic of contrastive topics, comes from Japanese, where the topic morpheme *wa* can mark sentence-initial constituents which are either referential or are contrasted with some other element (Kuroda 1972, 1992).

As the following discussion will show, however, the semantic properties of contrastive topics differ significantly from those assumed to characterize topics. In what follows, I will consider to what extent the aboutness criterion for topics above and its assumed consequences hold for contrastive topics.

Maleczki (to appear) claims that whenever there is a constituent in the topic position of a Hungarian sentence, this sentence expresses a proposition which predicates a property of an individual. Such propositions have been taken in the literature (Sasse 1991, Ladusaw 1994, Lambrecht 1994, etc.) to represent categorical judgments. According to Maleczki (to appear), whenever a sentence expresses a categorical judgment, the referent of the logical subject of predication has to be identifiable independently of the statement itself. Note, however, the referential dependence of the contrastive topics in the following examples:

- (35) [CT *‘Kettőnél több alma’*] *‘nem volt az asztalon.’*¹⁸
 two-ADESS more apple not was the table- SUPERESS
‘It is not the case that there were more than two apples on the table.’
 # *‘There are two apples which weren’t on the table.’*

- (36) [CT *‘Minden könyvet’*] [_F *‘két diák’*] *olvasott el.*
 every book-ACC two student read pfx
‘Two students are such that they read all books.’
 # *‘Every book is such that it was read by two students.’*

(35) above, for example, does not identify any set of apples about which it would make a predication, and it is in fact felicitously used even if there are no apples at all in the context. Similarly, (36) can have an interpretation according to which *minden könyvet* ‘every book-ACC’ does not refer to the totality of books in the context, but to the totality of books assigned to a given individual, in a context where the books assigned to individuals differ from each other. Note that a similar interpretation cannot be given for the same DP in the following sentence where it is pronounced with a neutral (not contrastive) intonation (which indicates that the constituent is situated in one of the preverbal quantifier positions):

¹⁸ I believe that the contrastive topic in this sentence can also have a stress pattern reflected in the notation [CT *Kettőnél ’több alma*], where the main stress and the rising tone is on the second word.

- (37) [Q `Minden könyvet] [F `két diák] olvasott el.
 every book-ACC two student read pfx
 ‘All books are such that they were read by two students each.’

Thus, the contrastive topics in examples (35) and (36) do not satisfy the requirement that their referent should be independently identifiable. However, if this means that what we have been calling contrastive topics so far are in fact not topics, and thus cannot identify the logical subject of the predication, then a sentence like (35), where the only argument DP present is the one in contrastive topic position, should express the other judgment type, proposed by Brentano and Marty (1918), athetic judgment. Thetic judgments are non-analyzable descriptions, which predicate about the situation itself (Maleczki, to appear). As Maleczki (to appear) claims, however, in Hungarian sentences expressing thetic judgments, all arguments have to appear after the verb. This is not satisfied in (35), either.

One possible way to make contrastive topics express some identifiable semantic object which the rest of the sentence could predicate something about is to say, as it is done in É. Kiss (2000) and Alberti & Medve (2000), that properties or sets of individuals can also serve as logical subjects of sentences. É. Kiss (2000) argues that in cases like the ones illustrated in (35) and (36), the contrastive topic DPs denote properties of sets, and thus the sentences make a predication about this property, but the truth or falsity of this predication cannot be evaluated without taking into consideration the individual manifestations of this property. She also observes that there are many languages where constituents which could not function as topics, due to the fact that they are not referential in the traditional sense, can be pronounced with the contrastive topic intonation. In such cases the sentence under consideration is interpreted as being about the set, property, etc., denoted by the particular expression. This entails that whenever we want to predicate a property about something other than an individual, the corresponding expression has to be pronounced with a contrastive topic intonation. É. Kiss thus sees the contrastive topic intonation pattern as the way to individuate the set, property, etc. denoted by the contrastive topic due to the implicit contrast it implies with other semantic objects of the same type. Thus, for example, sentence (34c), repeated here as (38), is about the property of being stupid:

- (38) [CT `Buta] azért `nem vagyok.
 stupid however not be-1SG
 ‘As for stupidity, I am not stupid, however.’

Sentence (39) is about the property of being a bicycle, but its truth-conditions must make reference to instantiations of the property, that is, actual bicycles. This sentence can only be true if there is at least one bicycle associated with each member of a group of many girls in such a way that the girl saw the bicycle(s).

- (39) [CT `Biciklit] `sok lány látott.
 bicycle-ACC many girl saw
 ‘As for bicycles, many girls have seen one.’

In order to emphasize the proposed similarities between topics and contrastive topics, É. Kiss (2000) argues that the contrast inherent in the meaning of contrastive topics (signalled with the help of the intonation) results in the individuation of the property denoted by the contrastive topic. Thus, it becomes available for being referred to, which means that contrastive topics can generally be taken as referential expressions. The individuation of the

property in contrastive topic would thus be similar in its effect to the individuation procedure associated with the placement of non-referential expressions, like bare nouns, into focus position, discussed in Szabolcsi (1983). I do not believe, however, that as a result of being used as contrastive topics, expressions which are non-individual-denoting normally, can acquire an *e*-type interpretation, which would correspond to the notion of referentiality in the traditional sense (i.e., picking out an entity, where ‘entity’ can denote both individuals and events), since then we would not be able to account for the observable referential dependence of the contrastive topic in (36) above, for example.

Contrastive topics thus can at best denote first-order properties, which then entails that the predicate part of the sentence must denote a second-order property¹⁹. Such an approach is discussed in Chapter 3 below, and elaborated further in É. Kiss and Gyuris 2002.

Although the denotation of contrastive topics of the category DP, infinitival verb form or adjective can be regarded as ‘what the sentence predicates a property about’, I do not think that this definition of the semantic contribution of the contrastive topic can apply to adverbs of quantification, as in sentences like (40):

- (40) Péter [_{CT} ‘mindig’] [_F ‘akkor’] ment moziba, [_F amikor szabadnapos volt].
 Peter always then went movies-ILL when has a day off was
 ‘It was when he had a day off that Peter ALWAYS went to the movies.’

The above sentence cannot be interpreted as stating a property of the relation denoted by *mindig* ‘always’. It could be interpreted, however, as stating a property of the contrastive topic plus the rest of the main clause. I do not think that the above approach could properly be formalized, which shows that the aboutness criterion of contrastive topics is not fulfilled by adverbs of quantification.

As mentioned above, É. Kiss (1998a, 2000) argues that, besides referentiality, the feature of specificity is also satisfied by topics in Hungarian. Contrastive topics, however, do not seem to fulfill the requirement of specificity, at least in the sense proposed by Enç (1990), with the exception of DPs which are entity-denoting expressions. Enç’s definition of specificity is based on the notion of reference to individuals. According to this, an expression can only be specific if it refers to an individual or a group of individuals which have already been referred to in the preceding text, or if it refers to a subset of a set of such individuals, i.e., this requirement corresponds to the notion of givenness in some sense.²⁰ Since non-referential expressions can also appear in contrastive topic, the specificity requirement cannot be satisfied by contrastive topics in general. It will be shown in Chapter 2, however, that the legitimate appearance of an expression in contrastive topic depends to a great extent on whether the same expression or a related one has already appeared in the text before. Such conditions on the preceding text are analogous to the effect of the specificity condition, and can thus be considered the counterpart of that condition for contrastive topics.

What we can conclude from the above investigations is that the claim according to which topics denote what sentences are about can be extended to include most categories of

¹⁹ McNally (1998) notes that this choice does not have any empirical disadvantages at all.

²⁰ Maleczki (to appear), however, proves that givenness is not necessarily a defining characteristic of topics in all languages.

contrastive topics as well, except for adverbs of quantification. One assumed consequence of this property, namely, that topics be referential, however, does not hold of non-entity-denoting contrastive topics, although they do satisfy the requirement that their denotation, a property,²¹ be identifiable independently of the sentence denotation. The other assumed consequence, that topics should be specific, is not satisfied by contrastive topics in a strict sense, either. However, contrastive topics tend to have denotations which are in some sense familiar in the discourse. They appear to satisfy some criteria analogous to specificity as well.

In this section we have considered some arguments for and against assimilating contrastive topics to ordinary topics. It was established that the range of expressions which appear in the above two roles in the sentence, as well as the types of their denotations are different, they occupy the same syntactic positions and they can be said to contribute in a similar way to the predication. These findings suggest that if syntactic position and semantic role in the predication are considered the most central (prototypical) features of topicality, then contrastive topics could be considered a subtype of topics. If, however, referentiality and specificity in the classical sense are the defining criteria of topics, then contrastive topics cannot be subsumed under the latter category. Before trying to resolve the above dilemma, it would be interesting to look at the rival approach, according to which contrastive topics should rather be considered a type of focus.

5.2 Contrastive topic — a subtype of focus?

Contrastive topics have some properties which remind one of the realization features of focus. These include their phonetic prominence (also, the short fall in their intonation pattern in languages where it is a fall-rise has been taken to indicate their focal character), the fact that they introduce or activate alternatives, a property first discussed with respect to focus, and that they can be uttered as part of an answer to a (multiple) wh-question, where they correspond to one of the wh-words. In this section we will give an overview of some of the proposals which have argued for considering contrastive topics a type of focus on the basis of one or more of the features listed above, with the aim of trying to determine how convincing their arguments are.

The idea that constituents pronounced with the (fall-)rise or *contrastive* intonation should be considered a special type of focus originated from Jackendoff (1972), who claims (p. 260) that sentence (41) has two foci, one on *Fred* and one on *beans*:

(41) FRED ate the BEANS.

In the two contexts illustrated in (42) and (43) below (Jackendoff 1972:260), sentence (41) is pronounced with two different intonational contours, since its two foci receive different accents, indicated below the relevant words, which are referred to by Bolinger (1965) as the A accent and the B accent. According to Bolinger (Jackendoff 1972:258), an A accent consists of an emphatically stressed syllable having high pitch, which is followed by an abrupt drop to low pitch (by the onset of the next vowel), and a fall in pitch. A B accent differs from an A accent in that the abrupt drop to low pitch is followed by a rise in pitch.

²¹ Except for adverbs of quantification, which denote a relation, to be discussed in Chapter 4.

- (42) A: Well, what about FRED? What did he EAT?
 B: FRED ate the BEANS.
 B A
- (43) A: Well, what about the BEANS? Who ate THEM?
 B: FRED ate the BEANS.
 A B

The fact that both accented constituents in (41) are considered foci in Jackendoff's framework means that the sentence's presupposition contains two variables, which could be represented in the following way:

- (44) x ate y

The two foci are not of the same status, however: their different accents signal the order in which values for the variables in (44) are chosen in the course of the interpretation. The B accent on a constituent signals that the value of the variable corresponding to it is chosen first, thus, this accent defines an independent variable. The A accent, however, picks out the variable whose value is chosen second, in order to make the sentence true for the other variable. Thus, the variable corresponding to the constituent with the A accent is a dependent variable. (Jackendoff 1972:262)

In his discussion of foci pronounced with the A and B accents, reproduced above, however, Jackendoff uses the term 'focus' in a prosodic sense, to denote an expression with prosodic prominence, and not in an information-structural sense. He himself acknowledges that expressions pronounced with the B accent correspond to traditional topics, while those pronounced with the A accent are part of the comment, i.e., what is said about the topic. This indicates that the term focus has two completely different uses which must clearly be differentiated from each other. Other authors who use the expression 'focus' to refer to an intonationally prominent constituent include Selkirk (1984) and Steedman (2000).

As opposed to Jackendoff (1972), Kadmon (2001) feels justified in considering contrastive topics a type of focus in an informational sense, since she observes certain common features in their semantic-pragmatic behaviour. These are that foci (referred to as FOCUS-focus in her theory) and contrastive topics (referred to as TOPIC-focus) introduce certain related but different presuppositions regarding the structure of the discourse preceding such constituents, which can be handled analogously, to be discussed more thoroughly in Chapter 2. (The fact, however, that Kadmon uses the compound expression TOPIC-focus to refer to contrastive topics, indicates to me that she also believes that some of their properties are characteristic of those of topics, thus, they are not par excellence foci, but variants of these.)

Krifka (1998) argues for the partly focal character of contrastive topics on the basis of the fact that the constituents which occupy the contrastive topic position in German can only move to this position from the Focus position, so he feels justified in calling them "focus in topic". He argues that the mixed (both topical and focal) character of contrastive topics is reflected in their intonation pattern: "it is tempting to see the slight fall in the contour of Contrastive Topics as evidence of focus, which is marked by a fall, which then is combined with a topic accent" (p. 99). The problem with this last observation, however, is that ordinary topics do not seem to have a rising intonation pattern, but rather a falling one.

É. Kiss (2000) shows that Krifka's arguments for assigning focal properties to contrastive topics based on movement facts cannot hold cross-linguistically, since they, for example, cannot be generalized to Hungarian. First, if contrastive topics were moved to the topic position from the focus position, then sentences which contain both a contrastive topic and a focus would be impossible in Hungarian, since the subsequent filling of the focus position after it was emptied once would be prohibited by the principle of strict cyclicity. Since there are sentences in Hungarian which contain both a contrastive topic and a focus²², this counts as an argument against Krifka's proposal²³. Second, there are certain types of constituents, like non-negative universal quantifiers (*minden gyerek* 'every child'), distributive quantifiers (*legalább két gyerek* 'at least two child') and existential quantifiers (*valaki* 'somebody'), which can never get into focus position, but can function as contrastive topics without any restriction.

Kenesei (1989) denies that the constituents we have been referring to as contrastive topics show any similarity with topics, and he considers them a special type of focus, which he gives the name "kontrafókusz" ('counter focus'). Probably the reason why he comes to this conclusion is that he considers intonational properties a central defining characteristic of topics, adopting É. Kiss's (1983:24) definition, according to which topics are constituents characterised by a lack of strong stress, and a more or less even intonation pattern. He also claims that the contribution of contrastive topics to the meaning of the sentence is to a certain extent analogous to the contribution of focus, since they both entail (and not just implicate) the truth or falsity of propositions predicated about alternatives to the denotation of the contrastive topic and those of the focus, respectively.

Kenesei (1989) claims that the function of focusing is "exclusion by identification", that is, the truth-conditional meaning of (45) (originally from Szabolcsi 1981a) entails that for all individuals which could be considered alternatives to Peter, the negation of the predicate holds, that is, the meaning of (45) is to be paraphrased as (46):

(45) [F Péter] aludt a padlón.
'PETER slept on the floor.'

(46) The x which x sleeps on the floor is identical to Peter.

Kenesei's paraphrase in (46) presupposes that there is exactly one individual who slept on the floor. Thus, (45) would not be assigned a truth value in this theory in a situation where no person slept on the floor, which seems intuitively correct. In a situation where more than one person slept on the floor, including Peter, it would only be assigned a truth value if the model is assumed to contain plural individuals.²⁴

²² In fact, Hungarian contrastive topics *have* to be followed by either a focused constituent or some other constituent bearing an eradicating stress.

²³ As pointed out by Huba Bartos (p.c.), this reasoning is only correct if the focus position is assumed to be unique, but cf. Alberti and Medve (2000) for an opposite view.

²⁴ On Szabolcsi's (1981a) account of (45), such an assumption is not necessary, since she claims that foci contribute the meaning component of exhaustive listing to the meaning of sentences, and thus (45) should be paraphrased as in (i):

(i) For every x, x slept on the floor if and only if x is Peter.

Kenesei (1989) also argues that reference to alternatives should be built into the truth conditions associated with sentences containing a contrastive topic ('counter focus'). Consider the following sentence (originally from Szabolcsi 1981a):

- (47) [TC A padlón] [F Péter] aludt.
 the floor-on Peter slept
 'As for the floor, *PETER* slept there'

According to Kenesei, (47) would be true if and only if the unique individual who slept on the floor is Peter and there is another object which is not the floor and the unique individual who slept on this object is not Peter. This means that (47) entails the existence of other alternative entities about which alternative predications are made, as reflected in the formal representation of its meaning in (48) (Kenesei's (24a)):

- (48) $\text{tx slept}(x, \text{floor}) = \text{Peter} \wedge \exists y (y \neq \text{floor} \wedge \neg \text{tx slept}(x, y) = \text{Peter})$

Kenesei argues that the truth conditions of (47), formalized in (48) reflect a common feature of the semantics of foci and that of contrastive topics, namely, that sentences containing them entail the truth or falsity of related propositions predicated about alternatives to the denotations of these constituents. A statement with a focus entails that the same predication cannot be made about any alternative to the focus, while a statement with a contrastive topic entails that there is at least one alternative to the contrastive topic about which the same predication cannot be made. Kenesei argues that if (47) merely implicated that there are alternative statements, it could be coordinated with a clause which contradicts this implicature. Such a co-ordinated structure, illustrated in (49), however, is ill-formed, according to him:

- (49) *[CT A 'padlón] [F`Péter] aludt, de (lehet, hogy) sehol máshol nem aludt
 the floor-SUP Peter slept but perhaps that nowhere other place not slept
 senki/ valaki más.
 nobody/ somebody different
 'It was Peter who slept on the floor, but (it is possible that) nobody slept anywhere else.' (intended meaning)

As opposed to Kenesei, I do not find (49) completely unacceptable, and I definitely do not find it ungrammatical, as indicated by him with the asterisk. I believe that the following variant of (49) in (50b), for example, as an answer to (50a), is grammatical, although perhaps somewhat odd pragmatically:

- (50)a. Ki aludt a padlón?
 who slept the floor-SUPERESS
 'Who slept on the floor?'
 b. [CT A 'padlón] [F`Péter] aludt, és (lehet, hogy) sehol máshol nem
 the floor-SUP Peter slept and perhaps that nowhere other place not
 is aludt senki más.
 too slept nobody different

‘It was Peter who slept on the floor, but (it is possible that) nobody slept anywhere else.’

Moreover, in Kenesei’s theory, the following sentence would entail that there is an individual in the universe of discourse who did not sleep:

- (51) [CT *‘János]* *’alszik.*
John sleep-3SG
‘John IS asleep.’

The above sentence, however, is perfectly natural in a situation where there are only two individuals to be considered, e.g., John and Peter. I do not think that we would want to say that in such a situation the utterance of (51) entails that Peter is not asleep, since the following co-ordination is also fine:

- (52) [CT *‘János]* *’alszik,* de [CT *‘Péterről]* *’nem tudok ’semmit.*
John sleep-3 SG but Peter-DEL not know-1SG nothing-ACC
‘John IS asleep but I don’t know anything about Peter.’

The above data thus indicate that Kenesei’s claim, according to which the truth of a statement with a contrastive topic entails that there is one alternative to the contrastive topic denotation about which a corresponding predication cannot be made, is too strong, and that contrastive topics make reference to alternative statements only on the level of implicatures. (In Chapter 2 a definition of the implicature induced by contrastive topics will be proposed, which can explain the data in (50)–(52).) These findings also entail, however, that Kenesei’s original motivation for considering contrastive topics a type of focus loses its support.

Molnár 1998 claims that contrastive topics are constituents with both topical and focal characteristics. In view of the explanation she provides for (53) (her (102)), however, it is not clear whether she accepts Kenesei’s (1989) view according to which the contrast induced by the contrastive topic is part of the truth conditions of the sentence or not:

- (53) [CT *‘Péter]* [_F *’Lundban]* *jár egyetemre.*
Peter Lund-INESS is going university-SUBL
‘Peter is studying in Lund (but somebody else is not).’

On the one hand, she notes with respect to (53) that “the contrastive topic would entail that at least one member of the set [i.e., in the relevant set of alternatives] is excluded (i.e. there is someone other than John who is not studying in Lund)” (p. 132), which suggests, together with her English translation of the sentence, which is cited in an unchanged form in (53), that reference to particular alternatives is considered part of the truth conditions of the sentence. On the other hand, she claims a few pages later that “[w]hile focus is assumed to have a truth-conditional content ..., contrastive topic adds a component to the meaning without changing the truth conditions.” (p. 135)

At a third place, however, she claims that the contrast effect can be totally absent in cases like the following (her (81)):

- (54) √Egy kis pihenésre \ MINdenkinek szüksége van.²⁵
 one little rest-SUBL everybody need is
 ‘Everybody needs a little rest.’

As the above citations indicate, Molnár (1998) does not give a coherent view about the nature of contrast induced by the contrastive topic, and, thus, her work does not provide us with any formal criteria identifying the alternative propositions between which the contrast emerges (if any).

Another recent study which argues for considering contrastive topics a type of focus is van Hoof (2000). The author investigates the syntactic and semantic properties of sentences pronounced with a rise-fall intonation contour in German and Dutch, which have traditionally been assigned a contrastive topic–focus structure, and argues that they should rather be taken as instances of a multiple focus structure. She argues that this claim is supported by the fact that these sentences can be uttered as answers to Matching Questions, as illustrated by the following example:

- (55) [The soloists are rehearsing their parts for an oratorio.]
 A: Welche \SOLISTEN haben was für \STÜCKE geprobt?
 ‘Which soloists have rehearsed what kinds of pieces?’
 B: Die /MÄNNLICHEN Solisten haben \REZITATIVE geprobt und die /WEIBLICHEN Solisten \ARIEN.
 ‘The male soloists have rehearsed recitatives and the female soloists arias.’

The above proposal, however, cannot be generalized to Hungarian since, as Szabolcsi (1980) argues, wh-questions can not only be answered in Hungarian with sentences where the word (or phrase) corresponding to the wh-word is in focus position, as the following exchange (her (35)) illustrates:

- (56) Q: Ki tudná énekelni ezt a dalt?
 who could pfx-sing this the song-ACC
 ‘Who could sing this song?’
 A: Én el tudnám (énekelni). / Például én.
 I pfx could sing for example I
 ‘I could (sing).’ / ‘I, for example.’

The above example thus shows that Hungarian contrastive topics do not share all the features shared by contrastive topics and foci in other languages, and thus resist their assimilation to foci.

In this section we have reviewed some arguments for and against considering contrastive topics to be a subtype of topic or of focus. Arguments for assimilating them to topics are related to their syntactic position, and their contribution to the logical structure of the predication. Since they do not satisfy all requirements which have been associated with

²⁵ In this example, due to the unclear status of the sentence-initial constituent, the original typographical devices for marking the stress and intonation were retained.

ordinary topics, at least in Hungarian, however, I would not feel justified in considering them a subtype of topics.

As far as their similarity to foci is concerned, it was noted that the practice of using the term *focus* to denote intonationally prominent constituents as well constituents with a certain pragmatic function has given rise to considerable confusion regarding the status of contrastive topics. Proposals for assimilating contrastive topics to foci were based on the fact that they introduce alternative statements like foci do, and that they introduce certain presuppositions regarding the structure of the preceding discourse. However, since they do not make reference to alternative propositions in the same way as topics do (this is not part of their truth conditions) and they do not impose the same requirements on the preceding discourse as foci do (a more detailed discussion of this issue will follow in Chapter 2), I do not think that these properties constitute strong enough reasons for considering them foci.

Instead, I propose that the term contrastive topic should be used to denote a special type of construction, which can be identified on the basis its syntactic position in the sentence, its prosody (although the specific intonational pattern is not associated with all instances of contrastive topics, as was observed above²⁶), and the fact that it is followed by a constituent bearing an eradicating stress, pronounced with a falling intonation, which will be referred to as its *associate*. The contrastive topic construction requires that certain presuppositions regarding the structure of the preceding discourse be satisfied, and it also introduces an implicature of contrast. The nature of the above presuppositions and implicatures will be discussed in the next chapter. In the following section we turn to the characterization of what it means to be the associate of the contrastive topic.

6 The concept of the associate of the contrastive topic

It has been claimed by many authors, including Kenesei 1989, Lambrecht 1994, Vallduví & Engdahl 1996, Molnár 1998, Lee 1999, von Stechow 1994, Büring 1997, and van Hoof 2000, that contrastive topics have to be followed by a constituent bearing a falling pitch accent (or, in Kálmán and Nádasy's terminology, an eradicating stress with a falling tone). In most accounts, the above constituent is referred to as the focus of the sentence.

(57) below shows that Hungarian contrastive topics need not always be followed by constituents which function as the focus of the sentence according to the interpretation of the term in contemporary syntax, i.e., which occupy the preverbal focus position. For example, the DP *minden gyerek* 'every child' is excluded from the focus position of the Hungarian sentence²⁷, but it can legitimately appear after a contrastive topic with an eradicating stress (which is marked by underlining):

- (57) [CT 'Legalább egy könyvet] [Q minden gyerek] elolvasott.
 at least one book-ACC every child pfx-read
 'Every child has read at least ONE book.'

²⁶ In such, exceptional cases, however, we always find a resumptive pronoun coreferential with the contrastive topic, as observed above.

²⁷ Naturally, in spite of being excluded from the syntactic focus position, these constituents can still be considered the focus (i.e., the most important information) of the sentence in the semantic sense. In this case, naturally, they are not assumed to have the feature of exclusivity associated with the focus position.

(58b) below shows that even if there is a constituent in the focus position of the sentence, there may be a constituent preceding it which is pronounced with an eradicating stress, as a result of which the eradicating stress of the focus optionally disappears. (58a) illustrates the context in which (58b) could be uttered:

- (58)a. (Many teachers failed their students twice.)
 Hány ember**t** buktatott meg kétszer `János?
 how many person-ACC failed pfx twice John
 ‘How many people did JOHN fail twice?’
- b. [_{CT} `János][_Q mindenkit] [_F kétszer] buktatott meg.
 John everybody-ACC twice failed pv
 ‘As for John, he failed EVERYBODY twice.’

(59b) illustrates that a sentence can contain more than one contrastive topic. In such a case, the contrastive topics do not need to be followed individually by constituents bearing an eradicating stress, one such constituent following the last of the contrastive topics is enough:

- (59)a. János hány**sz**or buktatott meg `mindenkit?
 John how many times failed pfx everybody- ACC
 ‘How many times did John fail everybody?’
- b. [_{CT} `János] [_{CT} `mindenkit] [_F kétszer] buktatott meg.
 John everybody-ACC twice failed pfx
 ‘As for John, there were two occasions when he failed EVERYBODY²⁸.’

Note, however, that a contrastive topic expression cannot be followed by more than one constituent with an eradicating stress, even if the alternatives of the contrastive topic are assumed to be contrasted on two dimensions, as illustrated by the exchange in (60):

- (60)a. János sok diákot megbuktatott kedden.
 John many student-ACC pfx-failed Tuesday-SUPERESS
 ‘John failed many students on Tuesday.’

²⁸ Naturally, the universal DP *mindenkit* ‘everybody-ACC’ does not necessarily refer to the set of all people in the universe, but it can also denote the set of all people present on the relevant occasion. Thus, the sentence can mean that there were two occasions when John failed every examinee present on the particular occasion.

- b. *Nem, [CT 'János][Q`mindenkit] [F `szerdán] buktatott meg.
 No, John everybody- ACC Wednesday- SUPERESS failed pfx
 'As for John, everybody he failed he failed on Wednesday.'

The relevant generalization from the data above seems to be that (the range of) contrastive topics have to be followed by a constituent bearing an eradicating stress, which need not necessarily be identical to the constituent in the focus position, but can be any other constituent in a preverbal operator position. Moreover, it can also be identical to the verb itself or the negative particle *nem* 'not', as illustrated in (61):

- (61) a. [CT 'Jánost] `láttam.
 John-ACC saw-1SG
 'John, I have seen.'
- b. [CT 'Jánost] `nem láttam.
 John- ACCnot saw-1SG
 'John, I haven't seen.'

The eradicating stress on the verb in (61a) can signal two things. It can either mark the verb as a *verum focus*, or as a *contrastive focus*. In the former case, the denotation of the verb is implicitly contrasted to its negation, and thus the whole sentence is implicitly contrasted to propositions which state about other individuals that I did not see them. In the latter case, the denotation of the verb is implicitly contrasted to denotations of the same type, i.e., activities which could be considered alternatives to the activity of seeing a person, e.g., talking to him, inviting him for dinner, etc. The eradicating stress on the negative particle in (61b) signals that the negated predicate is contrasted to its non-negated counterpart.

The following example shows that an accented question word in focus position can also follow the contrastive topic:

- (62) [CT A 'tegnapi filmet] [F `ki] nem látta?
 the yesterday's movie-ACC who not saw-3SG
 'Who did not see YESTERDAY'S movie?'

The data reviewed in this section has illustrated that the range of constituents bearing an eradicating stress which can follow the contrastive topic in a Hungarian sentence does not only include those which can occupy the preverbal focus position,²⁹ but certain other types of constituents as well. In view of the above fact and the fact that there is a special semantic relation between contrastive topics and the constituents with the eradicating stress which compulsorily follow them in the sentence (since contrastive topics can only appear in non-neutral sentences³⁰) I proposed in Gyuris 2000a that a new term should be introduced to refer to the latter constituents, the term *associate of the contrastive topic*, which will also be used throughout this dissertation. To emphasize the presence of the associates, they have been marked in this section by underlining, although in the rest of the dissertation, they will only be marked by the accent mark `` before the word bearing the eradicating stress. The associates of contrastive topics, just like the contrastive topics themselves, will always assumed to be constituents, maximal projections containing the words with the eradicating

²⁹ Previously, Szabolcsi (1981b) claimed that contrastive topics have to be followed by a focus or negation.

³⁰ István Kenesei, p.c.

stress, and not individual words. Associates will be shown to play a central role in generating the presuppositions and the implicature associated with contrastive topics in the next chapter. Before turning to these issues, however, the main results of this chapter are summarized.

7 Summary

In this chapter we aiming to identify the central semantic properties of contrastive topics in Hungarian. In order to be able to achieve this aim, we first investigated the concept of topicality, its historical development as well as two of the dominant present-day theoretical approaches to topics, the topic-as entity approach and the topic-as question approach. Then we investigated the concept of topic as used in present-day Hungarian generative linguistics, in order to be able to compare the observable semantic properties of topics to those of contrastive topics. After that, we considered some of the theoretical approaches that argue that contrastive topics should not be assumed to be related to topics, but should rather be considered as second foci in the sentence. We concluded that there is not enough evidence to support the latter claim, as there is not enough evidence to support the claim that Hungarian contrastive topics constitute a subtype of Hungarian topics, in the most commonly used sense of the term. Instead, we proposed that sentences with contrastive topics should be regarded as a special type of construction, with particular syntactic and prosodic features, which include that they should be followed by a constituent pronounced with an eradicating stress, which was referred to as their *associate*. The constructions containing contrastive topics are also associated with specific presuppositions and implicatures, the discussion of which will follow in the next chapter.

CHAPTER 2

PRESUPPOSITION, IMPLICATURE, AND DISCOURSE STRUCTURE

1 Introduction

In the previous chapter it was shown that the conditions under which constituents referred to as contrastive topics can appear in a sentence differ significantly from those regulating the appearance of foci and ordinary topics. In this chapter it will be claimed that the use of contrastive topics is associated with specific presuppositions, implicatures and discourse structure. In fact it will be argued that the whole point of using a contrastive topic in a sentence is to convey a particular implicature, the one that there is at least one relevant alternative propositions whose truth or falsity is not entailed by the truth or falsity of the proposition expressed by the sentence with the contrastive topic. It will be shown here that sentences with contrastive topics cannot be uttered out of the blue, their felicitous utterance presupposes that they are part of a particular discourse structure. In certain cases, the placement of a constituent into contrastive topic position may lead to a change in truth-conditions as well, a discussion of which will be provided in Chapter 3.

The rest of the chapter is organized as follows. It has been emphasized in various theories (both for Hungarian and other languages) that the use of contrastive topics is associated with the introduction of alternative propositions into the discourse. These theories, however, differ as to whether they consider the existence of alternative propositions as part of the truth-conditions of the sentences or as part of the implicatures. Section 2 will discuss some theories based on Hungarian data, which differ in the above respect and will argue for the view that the introduction of alternative propositions by contrastive topics should be considered an implicature. In section 3 we turn to the issue of how the set of available alternative propositions can be derived formally and how the — systematically created — list of alternative propositions can be used to describe the implicatures and presuppositions of contrastive topics. In section 4 Hungarian data reflecting the idiosyncrasies of contexts with contrastive topics are investigated, and compared against some previously discussed theories. Since the alternative propositions are claimed in all relevant theories to be generated in a compositional manner, in section 5 it is investigated how the generation of alternatives of the contrastive topic constituent depends on the stress pattern of the constituent.

2 Alternative propositions: implicature or entailment?

Many theories on the contrastive topic in Hungarian and different other languages, including German, English and Korean (e.g., Szabolcsi 1980, 1981a, Kenesei 1989, de Swart 1998, Lee 1999, Alberti and Medve 2000, Büring 1997, É. Kiss 2000), have proposed that these constituents introduce alternative propositions into the discourse. There is no consensus about the issue, however, how these alternative propositions are to relate to the original one, that is, whether the existence of alternatives is entailed or implicated by the contrastive topic. In this

section we compare the conflicting claims made by a few theories based on Hungarian data with respect to the above issue, and discuss their consequences.

Szabolcsi (1981a) claims that, as opposed to focusing, which alters the asserted meaning of the sentence, contrastive topicalization “merely provides a possibility for another kind of interpretational surplus to arise” (p. 144), which constitutes a non-truth-conditional aspect of meaning.

As discussed in Chapter 1, Kenesei (1989) takes an opposite position. He argues that, similarly to sentences containing foci, which entail the falsity of propositions predicating the same property about alternatives to the focused constituent as that predicated in the original sentence about the focus denotation, reference to alternative propositions is part of the truth conditions of contrastive topics. He claims that the truth conditions of a sentence of the relevant type entail that there is at least one alternative to the contrastive topic about which the same predication cannot be made. The unwanted consequences of this view were discussed in Chapter 1.

Alberti and Medve (2000) also seem to be on the opinion that reference to alternative propositions is part of the truth conditional meaning of sentences which contain a contrastive topic. They argue that (1) (their (27a)) expresses the following: “I would introduce Mary to Peter, but there are one or more persons (e.g., friends of Peter’s) to whom I would not introduce Mary.”

- (1) [C_{TOPP} Péter-nek (neki/annak) be-mutat-ná-m Mari-t]³¹.
 Péter-DAT to-him/to-that PV_{in}-introduce-COND-1SG Mari-ACC
 ‘As for Peter, counter to others, I would introduce Mary to him, indeed.’

I believe that the reason why (1) seems to entail that there are others to whom I would not introduce Mary is due to the fact that its predicate refers to a particular intention of the speaker. The speaker, naturally, is aware of her own intentions, and she chooses to utter the particular sentence with the contrastive topic because she wants to convey a particular implicature, and knows that its implicature does not contradict the truth-conditions of the sentence. If it turns out at the end that the speaker’s intentions contradict the implicature, she is rightfully accused of misleading the audience. The same effect is only observed with respect to a ‘factual’ variant of (1), shown in (2), if the speaker turns out to have been aware of all relevant events of introducing in the context:

- (2) [C_T ‘Péternek] `bemutatta Kati Marit.
 Peter-DAT PV_{in}-introduce-PAST-3SG Kati Mari-ACC
 ‘As for Peter, Kate introduced Mari to him.’

Thus, I believe that the utterance of (2) is compatible with a situation where the speaker does not have information about the truth of corresponding propositions for alternatives of the contrastive topic denotation at all. Moreover, if it turns out after the utterance of the sentence that all the contextually determined alternatives of the denotation of ‘Peter’ have the same property as that described by the predicate in (2), it does not make this sentence false, which is a clear indication of the fact that reference to alternatives should not be considered part of the truth conditions.

³¹ Alberti and Medve’s (2000) formalism and translation.

Consider the following sentence:

- (3) [CT_{TopP} Mindhárom fiúnak_j op_{CTop} [FP csak Mari_i mutattam_k[VP t_k be pro t_i t_j.]]]³²
 all three boy-DAT only Mari-ACC introduced-1SG PV
 ‘Only Mary is such that I introduced her to all three boys.’

Alberti and Medve claim that (3) states about the entire set of three boys that only Mary was introduced to it, and that it is part of the truth-conditional meaning of the sentence that the predicate does not hold of all subsets of the set of these three individuals. For example, they claim that there must be a one- or two-member subset of the set of boys to whom individuals other than Mary were also introduced. This means that the sentence entails that at least one alternative statement is true.

Alberti & Medve (2000) do not offer any systematic description about the structure of alternative propositions besides the fact that for each sentence containing a contrastive topic there has to be a member of the power set of the set generated by the contrastive topic³³ for which the predicate expressed by the rest of the sentence does not hold (this is referred to by them as the ‘negative’ member of the power set). This characterization, however, is not sufficient. Consider the following sentence.

- (4) [CT Mindenki] három könyvet olvasott el.
 everybody three book-ACC read pfx
 ‘There are three books which were read by EVERYBODY.’

On the pattern of (3) above, (4) would be interpreted by Alberti & Medve as saying that it is true of the set of all people that they read three books.³⁴ Note, however, that on the above interpretation there would be no set in the power set generated by the contrastive topic expression *mindenki* ‘everybody’ (which, I believe, would consist of sets of people, which are subsets of the set of all people) for which the predicate would not hold, and the sentence is still well-formed.

Similarly, Alberti & Medve’s proposal would predict that the following example has an interpretation, since the negation of the property expressed by the predicate (i.e., the property of having arrived) could in theory hold for subsets of the set of all people, which would constitute the relevant power set:

- (5) #[CT Pontosan hárman] nem jöttek el.
 exactly three not arrived pfx
 #‘As for exactly THREE people, that many didn’t come.’

É. Kiss (2000) discusses the phenomenon that certain quantificational expressions playing the contrastive topic role in Hungarian sentences can have narrow scope readings (sometimes in addition to a wide scope reading), as illustrated in (6) below (É. Kiss’s example (25)):

³² This example is copied in an unchanged form from Alberti and Medve 2000.

³³ Alberti and Meves 2000 assume that plural noun phrases denote sets.

³⁴ This sentence, as will be shown in Chapter 4, cannot have the above reading, however.

- (6) [CT Minden regényt] [F kevés diák] olvasott el.
 every novel-ACC few student read pfx
 'Few students read every novel.'

É. Kiss attributes the above property of contrastive topics to the fact that contrastive topic DPs denote properties of sets, which are contrasted with other properties. The denotation of the contrastive topic in (6), for example, is not a concrete set or sets but a property related to the number of elements in a set (which is assumed to be contrasted with other properties). This explains why the set of novels to be read can vary together with the identity of the students concerned. É. Kiss characterizes the meaning of (6) the way shown in (7) below:

- (7) With respect to the properties of 'being the maximal set of novels' and 'being a non-maximal set of novels' the following statements are made. About the former we claim that it is true of few people that they read a representative of it. (An alternative statement is implicated about the property of 'being a non-maximal set of novels': it is true of many persons that they read a representative of it.)

(7) shows that É. Kiss considers reference to alternative entities and alternative propositions as part of the implicatures of sentences which contain contrastive topics. Consider two more of her examples below:

- (8) [CT Legalább egy diák] minden regényt elolvasott.
 at least one student every novel-ACC pfx-read
 'The property of 'being a set of students with at least one member' has the following feature: it is true for every novel that it was read by a representative of the property.'
 Implicature: 'There is an alternative statement about the property of being a set of students with at most zero members, namely the one that it is not true about any novel that it was read by a representative of the set.'
- (9) [CT Legalább három diák] minden kötelező olvasmányt elolvasott.
 at least three student every compulsory reading-ACC pfx-read
 'The property of 'being a set of students with at least three member' has the following feature: it is true for every novel that it was read by a representative of the property.'
 Implicature: 'There is an alternative statement about the property of being a set of students with at most two members, namely the one that it is not true about any novel that it was read by a representative of the set.'

I believe that the contrast generated by the above examples is not between the proposition expressed by the sentence and the propositions which É. Kiss provides as part of the implicatures. For example, I think that (8) is not contrasted implicitly to propositions about sets of students with zero members, since the relevant information about such sets follows from the truth of the original proposition. Rather, the sentence is contrasted to those which express the properties of some larger sets of students, e.g., propositions saying that the property of being a set of students having at least two members is such that its manifestations did not read all books. Similarly, (9) should be contrasted to propositions which express a predication about a property of sets of students with more than three members, e.g., ones which state about the representatives of the latter property that they did not read all books. The above data suggest that when providing the set of propositions which a proposition expressed by a sentence with a contrastive topic is assumed to be contrasted to, is not enough to substitute the denotation of certain constituents in the original sentence for denotations of

the same semantic type. It also has to be taken into consideration that only those propositions count as relevant alternatives in an intuitive sense to the one expressed by the sentence with the contrastive topic which are not entailed by the latter.

In the next section we consider some recent approaches which provide systematic characterization of the alternative propositions introduced by contrastive topics, and which thus contribute to formally defining the presuppositions and implicatures of these constituents.

3 Previous theoretical approaches to implicature and discourse congruence

3.1 Von Fintel's (1994) theory about the discourse conditions licensing contrastive topics

Von Fintel's (1994) theory, which was classified in Chapter 1 as an example of the topic-as-question approach, proposes a formal characterization of discourses where topics and contrastive topics can appear. Von Fintel (1994:53) extends the claim made by Rooth (1992) according to which foci are anaphoric expressions which need to find an antecedent/licenser in the discourse to topics as well. His definition of the Topic operator \approx responsible for introducing the anaphoric element is reproduced in (10) below, where ϕ stands for the topic expression, Γ for its antecedent, a set of propositions (e.g., a question) and $\phi \approx \Gamma$ for the anaphoric relation between the latter two:

- (10) Interpretation of the topic operator \approx :
- a. $\|\phi \approx \Gamma\|^o = \|\phi\|^o$ (no effect on assertion)
 - b. $\|\phi \approx \Gamma\|^f = \|\phi\|^f$ (no effect on focus)
 - c. Presupposition:
 $\|\Gamma\|^o \subseteq \{p: \exists \pi (p = \|\phi\|^o(\pi))\}$ with π of the lowest type such that
 $\|\phi\|^o(\pi)$ or $\pi(\|\phi\|^o)$ is of type t.

The topic operator, like Rooth's focus operator, only affects the presuppositions of the sentence, that is, it does not contribute to the truth-conditions, as shown in (10a), or to the focus semantic value of the assertion, shown in (10b), either. The topic operator instead does the following: "it introduces an anaphor into the context whose value is constrained to be a subset of the set of propositions of the form ' $\phi \pi$ '" (p. 53). In other words, a sentence with a topic presupposes that there is a set of propositions in which the properties of the denotation of the topic are discussed. The relevant π s have to be of a semantic type which is able to combine with the semantic value of the topic expression by means of function-argument application into a proposition. As von Fintel remarks, in the unmarked case the sentence topic would be anaphoric to a discourse topic, which is a set of propositions in the discourse context, corresponding to implicit or explicit questions, or other propositions in the discourse setting, like for example, Grice's and Stalnaker's 'common ground'.

The advantage of the approach is that it does not only enable us to account for the anaphoric properties of referential expressions in topic, but also for those of DPs interpreted as generalized quantifiers, and possibly of contrastive topics belonging to other syntactic categories as well.

A problem with von Fintel's account, which he himself acknowledges, concerns the definition of the set of propositions presupposed by the use of the topic operator, shown in (10c) above. The way the presupposed set of propositions is defined here entails that it would in fact constitute the set of all propositions, since there are many predicates which are insensitive to the identity of their arguments.³⁵ What this constraint intended to achieve is that, for example, a sentence where the name *John* appears as the topic should only appear in a context where the truth of at least one statement ascribing a property to John is presupposed. Von Fintel, however, does not propose a solution to the problem of how to restrict the presupposed set of propositions to make the idea workable.

As regards contrastive topics, von Fintel considers them topical and focal at the same time, i.e., he claims that they contain focus-marking within topic-marked material. A proper antecedent for a focus-marked expression, according to Rooth (1992) is such that its denotation (ordinary semantic value) is a subset of the focus semantic value of the focused element (a set of objects of the same type as the one denoted by the focus), and it contains the ordinary semantic value of the focus-marked expression and at least one more element.

Contrastive topics, according to von Fintel, then, have to satisfy the requirements imposed by both topic-marking and focus-marking. This means, on the one hand, that contrastive topics have to find a topical antecedent and a focal antecedent. For example, in (11b) below, the focal antecedent for the contrastive topic expression would be a set of entities of the same type as the referent of *I*, possibly, some relevant set of individuals referred to in the context. The antecedent for (11b) as a topic anaphor would have to be a set of propositions which describe properties of the referent of the contrastive topic. The set of propositions having the structure *I would buy x*, which corresponds to the semantic value of the question in (11a), would be an acceptable candidate.

- (11)a. What would you buy?
 b. [_{CT} I] would buy the BOOK.³⁶

This strategy, however, would not work for the example in (12b), from Büring (1997):

- (12)a. What did the pop stars wear?
 b. [_{CT} The FEMALE pop stars] wore CAFTANS.

The antecedent of the focus anaphor *the female pop stars* would be a set of elements which contain the denotation of this expression and at least one more object. The denotation of the expression *pop stars* in the question (12a) could be an object of this type. The same expression could only satisfy the requirements of being considered a topic, however, if the truth of certain propositions in which properties of the female pop stars are considered were presupposed. Due to the fact that the exchange in (12) can be uttered out of the blue, and that the question in (12) does not satisfy the requirement of being a topical antecedent, since it denotes a set of propositions of the form *The pop stars wore x*, the presupposition associated with the topicality of the DP 'the FEMALE pop stars' does not seem to be satisfied. This means

³⁵ As von Fintel puts it (1994:54) it is easy to define a property that maps any individual *x* into the proposition that it snowed more than 20 inches in Boston in the Blizzard of '93.

³⁶ Unless indicated otherwise, in the English examples to follow I will isolate the contrastive topic constituents with brackets, and mark the stressed word of the contrastive topic and that of the associate with small capitals.

that in von Fintel's system, some contrastive topics³⁷ will remain without an appropriate topical antecedent, unless we accept von Fintel's idea that antecedents of topic expressions could be 'implicit questions' in the discourse as well. If this solution is chosen, however, there would be no way to exclude non-felicitous topics, since we could always assume there to be certain implicit questions present in the discourse.

Moreover, von Fintel's system could not account for the licensing of those Hungarian contrastive topic DPs which are preceded by a DP with a different determiner in the discourse, as illustrated in (13) below, since it cannot be proved in this case that the properties of the denotation of the contrastive topic DP are presupposed at the relevant stage of the discourse.

(13)a. Sok híres ember volt a konferencián?
 many famous person was the conference-sup
 'Were there many famous people at the conference?'

b. [CT 'Néhány híres ember]`ott volt.
 some famous person there was
 'There WERE some famous people there.'

Having discussed von Fintel's (1994) theory on the structure of discourses where contrastive topics can felicitously appear, in the next section we turn to Büring's proposals aiming to capture the principles underlying the congruence of discourses and the implicatures of contrastive topics.

3.2 Büring (1997, 1999)³⁸ on the presuppositions and implicatures of contrastive topics

Büring's theory places a special emphasis on the fact that the appearance of contrastive topics (or, in his terminology, Topics) in particular contexts is necessitated for the well-formedness of the discourse. The following examples illustrate the contrast between dialogues which contain an interrogative followed by a declarative containing a contrastive topic (i.e., a declarative pronounced with a rise-fall contour) and those where the same interrogative is followed by a declarative with a falling intonation (i.e., without a contrastive topic) (Büring 1999:147):

³⁷ Such contrastive topics are referred to as *partial topics* by Büring (1997).

³⁸ Büring's two works referred to here do not differ significantly in their claims regarding the issues discussed in this section, therefore, I will not make a distinction between their respective claims in most cases.

- (14) A: What did the pop stars wear?
 B: The _[CT FEMALE] pop stars wore _[F CAFTANS].³⁹
 B': # The female pop stars wore _[F CAFTANS].
- (15) A: Which book would Fritz buy?
 B: Well, _[CT I] would buy _[F The Hotel New HAMPSHIRE].
 B': #Well, I would buy _[F The Hotel New HAMPSHIRE].

The discourses constituted by the A–B' pairs in the above sentences are felt to be ill-formed. (14B') appears to answer only part of the question in (14A), while (15B') appears to answer a question completely different from (15A). In the case of discourses constituted by the A–B pairs, however, there is no such a mismatch, the exchanges are felt to be completely felicitous.

In the creation of question-answer congruence, focus has traditionally been assumed to play a central role, since it has been viewed as a device to mark the part of the sentence which answers the question asked (Kadmon 2001), or, as Rooth (1992: 84) puts it, “the function of focus in an answer is to signal other propositions which are potential answers in the context of the question.” Rooth (1992) proposes an explicit formulation of a constraint which relates answers (containing a focus) to questions, which employs, besides the ordinary semantic values of sentences, their *focus semantic value*, defined first in Rooth (1985).

The generation of this second semantic value associated with sentences containing a focus takes place in the following steps. If α is a non-focused non-complex expression, its focus semantic value, $\|\alpha\|^f$ (using the notation in Rooth 1992), is taken to be identical to its ordinary semantic value, $\|\alpha\|^o$. If α is focused, then its focus semantic value is the set of objects in the model matching α in type. If α is a non-focused complex phrase (one of whose parts can, however, be focused), its focus semantic value is a set of denotations of the same type as the denotation of α . This set is derived with the help of a recursive procedure, by picking one element from each of the focus semantic values of the component phrases of α . In (17) below the procedure of deriving the focus semantic value for (16B) is illustrated:

- (16) A: Who did John introduce Bill to?
 B: John introduced Bill to _{[Sue]_F}.
- (17) $\|\text{introduced Bill to } [Sue]_F\|^f = \{R(x, y) \mid R \in \|\text{introduce}\|^f \ \& \ x \in \|\text{Bill}\|^f \ \& \ y \in \|[Sue]_F\|^f\}$
 $\|[Sue]_F\|^f = \{\text{introduce}(\text{Bill}, y) \mid y \in E\}$

Following the procedure described above, the focus semantic value of (16B) would be identical to the set of all propositions of the form ‘John introduced Bill to y’, where y runs through the set of individuals in the universe of discourse.

Rooth (1992) specifies a constraint on question-answer congruence which is based on focus semantic values and on Hamblin’s (1973) semantics for questions, according to which the (ordinary) semantic value of a question is identical to the set of its potential answers (both

³⁹ In the examples in this section, I will keep to Buring’s original notation, since otherwise my overview of his theory would not be understandable, with one difference. Instead of marking the constituents pronounced with the rising intonation as topics, I will refer to them as contrastive topics, and mark them accordingly.

true and false ones). According to Rooth, the ordinary semantic value of a question should be a subset of the focus semantic value of a corresponding answer (Rooth 1992:85).⁴⁰ The applicability of the above condition can be proved by comparing the answer given for (16A) in (16B) to (18), which could not serve as an appropriate answer for (16A):

(18) John introduced [_F Bill] to Sue.

The focus semantic value of (18) would be identical to the set of propositions of the form ‘John introduced *y* to Sue’, where *y* runs through the set of individuals in the universe of discourse, and thus cannot be a superset of the set constituting the ordinary semantic value of the question in (16A).

Let us now turn back to our original examples in (14) and (15), the relevant parts of which are repeated here in (19) and (20):

(19) A: What did the pop stars wear?
B: The [_{CT} FEMALE]⁴¹ pop stars wore [_F CAFTANS].

(20) A: Which book would Fritz buy?
B: Well, [_{CT} I] would buy [_F The Hotel New HAMPSHIRE].

Note that the above question-answer pairs do not satisfy Rooth’s criterion for question-answer congruence, discussed above, but they still count as felicitous exchanges. Büring (1997, 1999) proposes a theory which aims to account for the above instances of congruent question-answer sequences by means of introducing a third semantic/pragmatic value associated with sentences which contain a contrastive topic, which he refers to as their *topic value*, denoted by $\|S\|^t$. The topic value is introduced in order to be able to formalize the intuition that the use of the contrastive topic serves the purpose of foregrounding some other, potentially relevant alternative questions other than the one asked by the preceding interrogative. In (21) below the focus semantic value of (20B) is shown, while (22) illustrates the topic semantic value associated with this sentence by Büring (1999:147-148):

(21) {I would buy *War and Peace*, I would buy *The Hotel New Hampshire*, I would buy *The World According to Garp*, ...}

(22) {{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*, ...}, ... }

⁴⁰ Rooth claims that the reason why the ordinary semantic value of the question and the focus semantic value of the answer is not required to be identical is that the range of possible answers is mediated by contextual factors.

⁴¹ Note that Büring (1997) refers by the names ‘topic’ and ‘focus’ sometimes to the words bearing the rising and falling pitch accents, respectively, and sometimes to the maximal projections they are situated in, cf. [Auf der /NEUNundfünfzigsten Straße]_T (p. 55) vs. The [FEMALE]_T (p. 56) or /ALLE_T (p. 120). Naturally, Büring’s use of the term ‘topic’ for constituents like a single determiner, illustrated below, cannot be compatible with his definition of topic as ‘what the sentence is about’.

Following Hamblin (1973), the above set of propositions would correspond to the following set of questions:

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

Büring (1999: 148) formulates his condition for the congruence of questions and answers containing contrastive topics as follows:

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

Put differently, a declarative with a contrastive topic presupposes that it is used as an answer to a question which is a member of its topic value. The exchange in (20A, B) does meet the above condition, since the denotation of (20A) is a member of the topic value of (20B), shown in (22) and (23).

The exchanges in (19) and (20) illustrate some typical environments where contrastive topics are used (when the answer appears to answer a subquestion of the question posed, or a different, but related question). Büring identifies some other subtypes of sentences which contain contrastive topics, reproduced below in (25) and (26) (Büring 1999:145-146):

- (25) A: What did you buy on 59th Street?
 B: Auf der /NEUNundfünfzigsten Strasse habe ich [die SCHUHE]_F gekauft.
 'On 59th Street I bought the shoes.'
- (26) A: Did your wife kiss other men?
 B: [_{CT} MY] wife [_F DIDN'T] kiss other men.

According to Büring (1997, 1999), while (25B) simply functions as an 'ordinary' answer to (25A), whose semantic and pragmatic effect is identical to that of its counterpart without a contrastive topic intonation, the effect produced by (26B) is to move the topic of conversation to alternatives of the contrastive topic denotation, i.e., other wives in the context. The above effect is captured by Büring (1997, 1999) by claiming that the contrastive topic introduces the implicature in (27):

- (27) Given a sentence A , containing a contrastive topic, there is an element Q in $\|A\|^t$ such
 that Q is still under consideration after uttering A .

According to Büring (1997, 1999), the above claim is identical to the following: there is a question in the set of questions denoted by $\|A\|^t$ that is still *disputable*. For Büring (1997: 71), disputability of a set of propositions (which corresponds, according to Hamblin (1973) to the denotation of a question) means that, given a common ground (the set of propositions representing the knowledge shared by participants in the conversation), there should be at least one element in this set which is informative and non-absurd with respect to the common ground, that is, one which is not included in the common ground and is not in contradiction with it.

Kadmon (2001: 387) criticizes Büring for the above conclusion, however. She argues that what (26B) above implicates is that “some element (i.e., question) 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.” Kadmon argues that the above implicature can be missing in the case of sentences containing a contrastive topic, which indicates that it is a conversational implicature. She illustrates her claim with the following example. If the only potential kissers are Larry and Bill, and it is known that each of them kissed just one girl, then (28) below is still felicitous, without implying that any member of the topic value of (28C) is still to be considered:

- (28) A: Who kissed who?
 B: (Let’s see...) [CT Larry] kissed [F Nina].
 C: (Right, and) [CT Bill] kissed [F Sue].

I propose that the above phenomena can be captured in terms of the following conventional implicature: any sentence with a contrastive topic implicates that there is at least one alternative statement in the union of the set of sets of propositions constituting the topic value of the sentence, which could be referred to as the set of alternative propositions, which is neither entailed nor contradicted by the proposition expressed by the original sentence.⁴² In Chapter 1 we have seen some sentences with constituents in contrastive topic which are truth-conditionally equivalent to sentences where the same constituent is situated in some other position, as illustrated, for example, in (29):

- (14)a. [CT János] `nem jött meg.
 John notcame pfx
 ‘As for John, he did not arrive.’
 b. [T János] nem jött meg.
 John notcame pfx
 ‘John did not arrive.’

The above examples show that the contrastive topic is not needed to contribute in some special way to the truth-conditional meaning of the sentence. Instead, I want to argue, contrastive topics are used precisely in order to convey the particular implicature characterized above.

By the formulation of the implicature carried by the contrastive topic shown above we can avoid the problems related to the issue of whether the contrastive topic introduces alternative questions or not (cf. (27) above). In addition, by not requiring that the truth value of the alternative propositions be unknown to the interlocutors, only that there should be one which is not entailed by the sentence containing the contrastive topic, the problematic data in (28) is also accounted for. I believe that the above formulation of the implicature is also compatible with the dialogue in (25), since (25B) does not entail the truth or falsity of all possible alternative statements, which would state where other different items were bought.

⁴² This is identical to claiming that there should be one alternative question which the sentence with the contrastive topic does not entail a complete answer to.

Note that if it is presupposed that no other items were bought, then the answer in (25B) ceases to be felicitous. Consider the following variant of (25) and its Hungarian counterpart below:

- (30) A: What did you buy on 59th Street?
 B: Auf der /NEUNundfünfzigsten Strasse habe ich [SCHUHE]_F gekauft.
 ‘On 59th Street I bought shoes.’
- (31) A: Mit vettél a Váci utcában?
 What bought-2SG the Váci Street-INESS
 ‘What did you buy in Váci Street?’
- B: [_{CT} A ‘Váci utcában] [_F ‘cipőt] vettem.
 the Váci street- INESS shoe-ACC bought-1SG
 ‘In Váci Street I bought SHOES.’

Since (30) and (31) do not carry uniqueness presuppositions any more, (that is, it is not presupposed by the use of these sentences that there is only one pair (or set) of shoes which I bought at the relevant time), they are compatible with continuations of the type illustrated in (32), since the truth value of (32) is not entailed by (31B).

- (32) [_{CT} Az ‘Oktogonnál] szintén [_F ‘cipőt] vettem.
 the Oktogon- ADESS also shoe-ACC bought-1SG
 ‘At Oktogon I also bought shoes.’

This means that the set of propositions which constitute relevant alternatives to a proposition (i.e., which are such that they are neither entailed nor contradicted by the latter) has to satisfy the following criterion. For the original proposition and for each alternative, generate the pairs which consist of the contrastive topic or its alternative and the associate or its alternative, whichever appears in the particular proposition. The above set of pairs must be such that no contrastive topic alternative is associated with more than one focus alternative, but one focus alternative can be associated with several contrastive topic alternatives. In other words, the relation between the contrastive topic alternatives and focus alternatives which appear within the same proposition has to be a function.⁴³ On the basis of the above requirement, the fact that the dialog in (31) cannot be continued the way shown in (33) receives a trivial explanation, since the felicity of the resulting discourse would entail that the function assigns two different values to an argument.

- (32) [_{CT} A ‘Váci utcában] [_F ‘kalapot is] vettem.
 the Váci Street- INESS hat-ACC also bought-1SG
 ‘In Váci Street I also bought a hat.’

Naturally, the opposite case, illustrated by (31B) and (32) together, where one value is assigned to two arguments, is compatible with the relation between the contrastive topic and the associate alternatives which appear within one proposition being a function.⁴⁴

⁴³ I believe that van Hoof’s (2000) ‘diversity condition’ is based on the same intuition.

⁴⁴ Naturally, the above requirement for the relation between contrastive topic and associate alternatives is always satisfied when the associate is a verum focus or its negation.

Büring (1997) puts the topic values to a further use, since he proposes to explain the lack of particular readings for certain sentences with contrastive topics, particularly those where the roles of contrastive topic and associate (in Büring's terminology: focus) are played by constituents with denotations which are translated into logical languages as expressions capable of scope taking (e.g., negation or quantifiers). Büring argues that in sentences with more than one quantifier, one of which plays the role of contrastive topic, one or more of the potential readings are missing if the particular reading cannot give rise to 'reasonable implicatures' (p. 121). The requirement that a reading should have reasonable implicatures means that there should be an element in the topic value associated with the particular reading of the sentence which is disputable after uttering the sentence. In line with our definition of the contrastive topic implicature proposed above, this requirement for the existence of a particular reading could be reformulated as follows: a sentence with a contrastive topic can only have a reading which is potentially available for it considering the interpretation strategies associated with such sentences in the language (discussed more thoroughly in Chapter 4 below) if there is at least one proposition in the set of alternative propositions associated with the sentence on the intended reading which is neither entailed nor contradicted by the proposition expressed by the sentence. In case there is no alternative proposition of the required type, the reading in question will not be available.

One of Büring's most illustrative examples is reproduced in (34a) below. In German, as opposed to Hungarian, the syntactic positions of operators do not determine their scopal order, and therefore, all sentences with more than one operator are potentially ambiguous. (34a) below, however, can only have a reading according to which the negation takes wide scope over the universal quantifier, as paraphrased in (34b). The reading where the universal quantifier takes wide scope, shown in (34c), is missing:

- (34) a. [_{CT} ALLE] Politiker sind [_F NICHT] korrupt.
 all politicians are not corrupt
 b. 'It is not the case that all politicians are corrupt.'
 c. #'All politicians are such that they are not corrupt.'

Büring (1997) shows that in the topic value associated with the sentence on its (34c) reading, all propositions are such that they are entailed by or contradict the proposition expressed by the sentence, that is, no alternative proposition is logically independent of the original one. The formula in (35a) is an abstract characterization of this topic value set, while (35b) provides a list of propositions satisfying the formal requirements in (35a), according to Büring (1997):

- (35) a. $\lambda P. \exists Q_{\langle et, \langle et, t \rangle \rangle} [Q \in \text{ALT}(\mathbf{all}) \ \& \ P = \lambda p. \exists \pi_{\langle tt \rangle} [\pi \in \text{ALT}(\mathbf{not}) \ \& \ p = Q(\text{politicians})(\lambda x. \pi(\text{corrupt}(x)))]]$
 b. $\{ \{ \text{all}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{all}(\text{politicians})(\lambda x. \text{corrupt}(x)) \},$
 $\{ \text{most}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{most}(\text{politicians})(\lambda x. \text{corrupt}(x)) \},$
 $\{ \text{some}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \{ \text{some}(\text{politicians})(\lambda x. \text{corrupt}(x)) \},$
 $\{ \text{one}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \{ \text{one}(\text{politicians})(\lambda x. \text{corrupt}(x)) \},$
 $\{ \text{no}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \{ \text{no}(\text{politicians})(\lambda x. \text{corrupt}(x)) \} \}$

The formulae in (35b) are intended to express propositions which state about particular subsets of the set of politicians that they are or are not corrupt. (The representation in (35) reflects that the falling pitch accent on the negative particle is taken to mean that its

denotation is to be contrasted with the denotation of an implicit affirmative operator). If the proposition that the totality of politicians are corrupt is taken to be the denotation of the sentence in (34), then it follows that the same property must hold for any subset of the set of politicians, and thus the truth value of the alternative propositions in (35b) is taken to be dependent on the truth of the proposition expressed by (34c), which is the reason why the sentence cannot have this particular reading.

(36) below shows the topic value associated with the reading in (34b). Since only the first set of propositions in (36b) are such that they are entailed by the proposition the reading in question expresses, or are in contradiction with it, it correctly follows from Büring's reasoning that the reading according to which the negation takes wide scope is available for (34a):

- (35) a. $\lambda P. \exists Q_{\langle et, \langle et, t \rangle \rangle} [Q \in \text{ALT}(\mathbf{all}) \ \& \ P = \lambda p. \exists \pi_{\langle tt \rangle} [\pi \in \text{ALT}(\mathbf{not}) \ \& \ p = \pi Q(\text{politicians})(\text{corrupt})]]$
 b. $\{ \{ \neg \text{all}(\text{politicians})(\text{corrupt}), \text{all}(\text{politicians})(\text{corrupt}) \},$
 $\{ \neg \text{most}(\text{politicians})(\text{corrupt}), \text{most}(\text{politicians})(\text{corrupt}) \},$
 $\{ \neg \text{some}(\text{politicians})(\text{corrupt}), \text{some}(\text{politicians})(\text{corrupt}) \},$
 $\{ \neg \text{one}(\text{politicians})(\text{corrupt}), \text{one}(\text{politicians})(\text{corrupt}) \},$
 $\{ \neg \text{no}(\text{politicians})(\text{corrupt}), \text{no}(\text{politicians})(\text{corrupt}) \} \}$

The following sentence, as opposed to (34), can have two readings, according to Büring, since both scopal orderings can give rise to 'reasonable implicatures':

- (37) Zwei /DRITTEL der Politiker sind NICHT\ korrump.
 Two thirds of politicians are not corrupt
 a. 'It is not the case that two thirds of the politicians are corrupt.'
 b. 'Two thirds of the politicians are such that they are not corrupt.'

(38) below is the Hungarian counterpart of (37), which also has two readings:

- (38) [_{CT} A politikuskok két-harmada] nem korrump.
 the politicians two thirds not corrupt
 a. 'It is not the case that two thirds of the politicians are corrupt.'
 b. 'Two thirds of the politicians are such that they are not corrupt.'

On one of their readings, both (37) and (38) mean that there is no set consisting of two thirds of the politicians such that it is corrupt. On the other reading, the sentences state about a specific set of people (or a plural individual) consisting of two thirds of the politicians that they are not corrupt. Thus, it seems that the ambiguity of the above sentences could be attributed to the fact that the contrastive topic itself is ambiguous: it can have a specific and referential interpretation as well as a non-specific one. This is opposed to the situation in (34), where the contrastive topic expression only has a non-specific interpretation. The fact that the ambiguity of (37) and (38) is connected to the ambiguity of the contrastive topic expression can be illustrated by the fact that in Hungarian sentences with a quantificational DP in contrastive topic plus another quantifier expression in a preverbal operator position, the contrastive topic DP cannot take wide scope over the other one if the former is not a referential expression, as (39) shows:

- (39) [CT Legalább három gyerek] `négy könyvet olvasott el.
 at least three child four book-ACC read prefix
 a. 'There are four books which were read by at least three children each.'
 b. # 'There are at least three kids who read (the same or different) four books each.'⁴⁵

The proposition corresponding to the a) reading of (39) is that four books are such that they were read by at least three (possibly different) children. This proposition is implicitly contrasted to propositions saying that a different group of books was read by a different number of children. The proposition corresponding to the b) reading would be that there is a set of at least three children who read four (possibly different) books. The alternative propositions generated in this case would say about other groups of children that they read a different number of books. According to most native speakers, however, the second reading is not available for this particular sentence. This means, on the one hand, that the existence of wide scope readings for contrastive topics cannot automatically be attributed to the availability of alternatives, and, on the other hand, that the unmarked reading for contrastive topics is the narrow scope reading.

Büring (1997: 141) argues that there are grammatically well-formed sentences with no coherent interpretation, illustrated by (40) below:

- (40) */ALLE Politiker sind IMMER\ betrunken.
 all politicians are always drunk

The lack of available readings for (40) is due to the fact that it entails all the possible alternative statements associated with both of its potential readings, thus there remain no disputable questions after its utterance, and the sentence itself becomes unutterable.

Although Büring's theory can predict the availability of particular readings of sentences with contrastive topics and the type of questions such sentences can answer felicitously, he does not provide any systematic description of what count as alternative denotations for different syntactic classes of contrastive topics. Particularly, he never says explicitly whether the list of propositions provided in (35b) and (36b) above are intended to constitute the totality of alternative propositions or only a representative subset of them. What Büring (1997: 124) says about this issue is the following: "Let us assume that the alternatives to *all* are quantifiers such as *some*, *most* or *no* and that the sole alternative to *not* is the identity function."

The above issue has relevance in view of the fact that generalized quantifiers denoted by DPs like *few* NP, *at most five* NP, *between two and six* NP, and *exactly nine* NP, do not figure in the alternative propositions associated by Büring (1997) with the two readings of (34), listed in (35b) and (36b). The first option is that (35b) and (36b) only list some representative examples of the alternatives to the denotation of the determiner *all*. The question then arises, however, why the listed alternatives, right monotone increasing determiners, plus the right monotone decreasing *no* are more representative than the other right monotone decreasing and non-monotone ones.

⁴⁵ There are some people, including Márta Maleczki (p.c.) who find this reading available. I believe that this is due to the fact that they can associate a specific reading with the contrastive topic expression.

The second option is that the alternatives listed in (35b) and (36b) are intended to represent the complete set of available alternatives to the denotation of *all* in sentence (34). One possible way to discriminate between *all* and the right monotone decreasing and non-monotone determiners is to say that the latter cannot appear as part of the contrastive topic constituent in sentences with a structure parallel to that of (34), shown by the German and Hungarian examples in (41) and (42) below:

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

b. *[CT 'Legfeljebböt politikus] `nem korrupt.
 at most five politician not corrupt

(42)a. *Genau /FÜNF Politiker sind NICHT\ korrupt.
 exactly five politicians are not corrupt

b. *[CT 'Pontosan öt politikus] `nem korrupt.
 exactly five politician not corrupt

The fact that sentences like those in (41) or (42) do not count as well-formed in German or Hungarian does not mean, however, that there is anything wrong with the propositions expressing that it is not true that at most five politicians are corrupt or that it is not true that exactly five politicians are corrupt. In fact, these propositions are neither entailed nor contradicted by the intended reading of (34), and thus should be generated by any theory which aims to produce all the alternatives of a particular proposition. Note that by Büring's (1997) reasoning, the ill-formedness of (41a,b) and (42a,b) does not follow, since, for example, the proposition expressed by (34) would count as a legitimate alternative to the propositions intended to be expressed by these sentences.

In view of the data in (41)–(42), it could be claimed that Büring does not consider DPs interpreted as monotone decreasing or non-monotone quantifiers because they do not legitimately appear as contrastive topics. This reasoning, however, faces with two serious counterarguments. On the one hand, DPs interpreted as monotone decreasing or non-monotone quantifiers can legitimately appear as contrastive topics in certain sentences, as in (43)–(44), although they cannot in others, as shown in (45):

(43) [CT 'Kevés gyerek] [F `a zongorát] emelte fel.
 few kid the piano-ACC lifted prefix
 'As for few kids, they lifted the PIANO.'

(44) [CT 'Kevés gyerek] `befér a terembe.
 few kid can fit the room-ILL
 'As for few kids, that many CAN fit into the room.'

(45) #[CT 'Kevés gyerek] `bement a terembe.
 few kid pfx-went the room-ILL
 #'As for few kids, that number of them DID go into the room.'

The contrast between (43)–(44) and (45) shows that it is impossible to attribute the ill-formedness of (45) to a syntactic constraint since no significant syntactic difference can be observed between (44) and (45), thus, the lack of available readings for (45) must be due to a semantic or a pragmatic requirement.

On the other hand, as (46) and (47) illustrate, the determiners *one* or *no*, which Buring considers as alternatives to *all*, cannot appear in a sentence with a similar structure and stress pattern as (34) above:

(46)a. #/EIN Politiker ist NICHT\ korrupt.

one politician is not corrupt

b. #[CT ˈEgy politikus] `nem korrupt.⁴⁶

one politician not corrupt

(47)a. #KEIN Politiker ist NICHT\ korrupt.

no politician is not corrupt

b. #[CT ˈSemennyi politikus] `nem korrupt.

no politician not corrupt

The above data therefore show that Buring's (1997) characterization of the set of sets of propositions constituting the topic value does not enable us to determine for each sentence with a contrastive topic the topic value associated with it, thus, whether the sentence has a coherent interpretation or not.

In order to overcome the above difficulties, in the next section I will propose a procedure by which for each sentence the set of propositions constituting the set of its alternatives (which is assumed to correspond to the union of the sets of propositions constituting the topic value) can be unambiguously determined.

3.3 Contrastive topic alternatives and compositionality

In the previous section it was proposed that the function of contrastive topics is to introduce the implicature there is at least one proposition in the union of the sets of propositions constituting the topic value which is neither entailed nor contradicted by the proposition expressed by the sentence containing the contrastive topic. The union of these sets of propositions will be referred to below as the set of all alternative propositions. Here I offer a procedure by which the set of all alternative propositions can be generated in one step. For this, first we need to be able to determine the alternatives of the contrastive topic constituent and those of the associate. The intricacies of the above task will be discussed more thoroughly below. Having generated the set of all possible alternatives of the contrastive topic and that of the associate, we have to build up all possible propositions which differ from the one expressed by the contrastive topic in that the contrastive topic denotation and/or the associate denotation are exchanged in them for their type-identical alternatives. The set of these propositions, together with the one expressed by the original sentence, will constitute the set of all alternative propositions generated by the contrastive topic. (Naturally, some of these

⁴⁶ Note that this sentence would be well-formed if the main stress of the contrastive topic was on the noun.

propositions are entailed by or contradicted by the proposition expressed by the original sentence containing the contrastive topics. However, for the sentence with the contrastive topic to be considered interpretable, as there has to be at least one proposition in the above set which is neither entailed nor contradicted by the former one, as discussed in the previous section.)

Consider now the issue of how the alternatives associated with contrastive topic constituents can be determined on the basis of the alternatives associated with their parts. The need for doing this arises due to the fact that, as opposed to Büring (1997), but following the Hungarian syntactic tradition, we defined contrastive topics as constituents occupying a particular syntactic position in a sentence, and not as individual words.⁴⁷ (Similarly, we followed the syntactic tradition in considering whole constituents as foci.)

The three sentences in (48) illustrate that the stress and intonation pattern of the contrastive topic constituent has an essential role in determining what alternatives the contrastive topic denotation is contrasted with. The first clauses contain the relevant contrastive topics and the second clauses express propositions the first clauses can be contrasted to⁴⁸:

- (48)a. [CT Három 'macska] `nem fér be ide, de [CT három 'egér] igen.
 three cat not fit pfx here but three mouse yes
 ‘Three ‘cats do not fit in here, but three mice do.’
- b. [CT 'Három macska] `nem fér be ide, de [CT 'kettő] `igen.
 three cat not fit pfx here but two yes
 ‘THREE cats do not fit in here, but two do.’
- c. [CT 'Három 'macska] `nem fér be ide, de [CT 'két 'egér] `igen.
 three cat not fit pfx here but two mouse yes
 ‘“Three ‘cats do not fit in here, but two mice do.’

A comparison between the stress patterns and intonation of the contrastive topics above and the contrast they induce indicates that it is always the word which bears an eradicating stress and on which the rising intonation starts whose interpretation is intended to be contrasted to those of its alternatives. When the accented word is the first word of the constituent, as in (48b), then the intonational phrase extends till the end of the constituent. When both words in the constituent are intended to be contrasted, then both bear an eradicating stress and constitute separate intonational phrases, as in (48c).⁴⁹

The data above show close correspondences to the regularities described by Kálmán and Nádasy (1994) regarding the alternatives associated with expressions in the focus position of Hungarian sentences. According to Kálmán and Nádasy, whenever a constituent which cannot be moved out of a larger constituent is contrasted with constituents of the same

⁴⁷ In fact, Büring (1997) is rather controversial regarding this issue, as was pointed out above.

⁴⁸ The examples are due to Anna Szabolcsi.

⁴⁹ It is mentioned in Lee (1999:322) that the high peak in the fall-rise intonation characterising sentences containing contrastive topics is much more delayed if the alternatives of a contrastive topic NP are expressed by a different noun (accommodated cases) than if they are expressed by a different determiner and the same noun (non-accommodated partitioned cases). This more or less corresponds to the situation in Hungarian.

type (e.g. an attributive adjective which cannot be detached from the noun), the larger constituent moves into focus position, but only the constituent (word) to be contrasted bears an eradicating stress. The sentences in (49) (from Kálmán and Nádasdy 1994) illustrate the possible stress patterns of an adjective-noun complex in focus position, together with some expressions they can be contrasted with (where the material following an eradicating stress which does not contain another eradicating stress is marked with the signs < and >).

- (49) a. A `kórház] [a < `zöld takarókat rendelte meg> (nem a kék takarókat).
the hospital the green blankets-ACC ordered pfx not the blue blankets-ACC
‘The hospital ordered the GREEN blankets (and not the blue blankets).’
- b. A `kórház] [a `zöld <`takarókat rendelte meg> (nem a zöld lepedőket).
the hospital the green blankets-ACC ordered pfx not the green sheets-ACC
‘The hospital ordered the green BLANKETS (and not the green sheets).’
- c. A `kórház] [a <`zöld> <`takarókat rendelte meg> (nem a kék lepedőket).
the hospital the green blankets-ACC ordered pfx not the blue sheets-ACC
‘The hospital ordered the GREEN BLANKETS (and not the blue sheets).’

In this section we have seen that it is signalled by prosodic means which part of the constituent in contrastive topic is intended to be contrasted, in the same way as the locus of the contrast is signalled on focused constituents. This means that the alternatives to the denotation of a complex expression in contrastive topic can be generated by finding the alternatives of the stressed word(s) of the constituent and combining them individually with the denotation(s) of the rest of the phrase. In the rest of this work, the above method will be applied in the course of generating the alternatives to constituents playing the contrastive topic role in a sentence.

Note that the fact that the range of propositions which the ones expressed by sentences containing a contrastive topic implicate a contrast with can be systematically determined does not mean that such sentences can explicitly be contrasted only to the ones constituting the set of alternative propositions. A counterexample is shown in (50) (L. Kálmán, p.c.):

- (50) [CT `János] `sok könyvet elolvasott, mégis buta maradt.
John many book-ACC pfx-read however stupid remained
‘John did read many books, but he still remained stupid.’

I believe, (50) implicates that there is at least one proposition which ascribes the property of having read an alternative number of books to alternatives to John which is not entailed and not contradicted by it. The sentence, however, can be followed by the clause ‘but he still remained stupid’, as shown in (50), since the latter does not contradict it or the existence of the required alternative proposition.

Having proposed a compositional procedure for driving the alternative propositions associated with sentences containing a contrastive topic, in the next section we give an overview of Kadmon 2001, which proposes a new theory of the discourse structure presupposed by these constituents.

3.4 Kadmon's (2001) theory on discourse congruence

Kadmon (2001) criticizes Büring (1997, 1999) for not being able to predict that particular question-answer pairs are more appropriate than others. Kadmon illustrates the weaknesses of Büring's theory with help of the following examples:

- (51) a. [_{CT} Larry] kissed [_F Nina].
- b. Who did Larry kiss?
- c. Who kissed who?

Kadmon (2001: 387) claims that on Büring's theory it is not presupposed that (51a) is in fact answering (51b). On this theory, (51a) only presupposes that it is answering a question of the form 'Who did d kiss?', where d stands for an individual in the universe of discourse (cf. (24) above). Also, Kadmon notes that on Büring's theory, (51a) does not presuppose that it is answering (51c), since (51c) is not a member of the topic semantic value associated with (51a). To overcome the above difficulties, Kadmon (2001) proposes a theory which can predict for particular discourses with contrastive topics whether they should count as congruent or incongruent. In this section we give an overview of the major claims of Kadmon's theory, which will be applied to the analysis of Hungarian examples in the next section.

Kadmon (2001) proposes to solve the problems described above in the framework of Roberts' (1996) theory, which is built on the claim, due originally to Carlson (1983), according to which information is organized in the discourse in relation to questions being addressed.

Roberts 1996 sees discourses as successions of questions (some of which can be implicit) and their answers. Each move (i.e., a question or an answer) has to be relevant to the preceding discourse, that is, it has to 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 contextually entails the truth value of at least one element of the denotation of the question, i.e., a set of propositions in Hamblin's (1973) sense, while a complete answer contextually entails the truth value of all of them.) A question, however, is relevant to another question if it constitutes a subquestion of it (thus contributing to the general aim of answering the question). Since the discourse proceeds in a step-by-step manner, it is required, according to Roberts, that the latest question in the set of questions under discussion gets answered first, which entails that each move should be directly relevant (i.e., constitute a subquestion or a partial answer) to the last question under discussion (QUD). For a move α , the notation *last(QUD(α))* represents the last question under discussion at the time α is made. Roberts argues that an utterance is only felicitous if it satisfies the following focal presupposition: "any utterance B presupposes that the last question under discussion ... denotes precisely that set of propositions which constitutes the focus semantic value of B." (Kadmon 2001:344)

Kadmon proposes her own theory on the discourse structure associated with contrastive topics, which is based on the above insights of Roberts' (1996) theory, coupled with her own constraint on the felicitous use of contrastive topics. According to Kadmon 2001, an utterance presupposes that its topic semantic value is identical to the focus semantic value of its last QUD. Kadmon associates focus semantic values with questions as well,

which consist of the set of all questions where the denotation of the focused constituent is substituted for an alternative denotation of the same type. In (52) below an illustration of the workings of the above theory is provided. The topic semantic value of the sentence in (52a) is shown in (52b), which is identical to a set of sets of propositions, some members of which are listed in (52c), which in turn corresponds to a set of questions, listed in (52d) (Kadmon 2001: 391):

- (52) a. [_{CT} Larry] kissed [_F Nina].
 b. $\{\{ \parallel \text{kiss}(x,y) \parallel^g : g' \text{ is identical to } g \text{ except that it may assign a different value to } y \} : g \text{ assignment}\}$
 c. $\{\{ \text{'Larry kissed Sue,' 'Larry kissed Mary,' 'Larry kissed Lisa,' ... }, \text{'Bill kissed Sue,' 'Bill kissed Mary,' 'Bill kissed Lisa,' ... }, \text{'John kissed Sue,' 'John kissed Mary,' 'John kissed Lisa,' ... }, ... \}$
 d. $\{\text{'Who did Larry kiss?,' 'Who did Bill kiss?,' 'Who did John kiss?,' ... }\}$

Kadmon's constraint on the use of contrastive topics predicts that (52a) does not simply presuppose (51b), repeated here as (53a), but its variant with focus on *Larry*, shown in (53b):

- (53) a. Who did Larry kiss?
 b. Who did [_F Larry] kiss?

Roberts' formulation of the focal presupposition predicts that the ordinary semantic value of the last question under discussion for (52a) is (54a), the ordinary semantic value of both of (53a, b). Kadmon's constraint on the use of contrastive topic predicts that the focus semantic value of the last question under discussion for (52a) should be as shown in (52b), repeated in (54b) below, which corresponds to the focus semantic value of (53b) but not to that of (53a) (since the latter does not have a focus semantic value at all).

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

This explains why (52a) presupposes (53b), which is not accounted for on Büring's theory.

Kadmon thus proposes that a contrastive topic creates a presupposition regarding the focal structure of the last question under discussion (Kadmon 2001: 396). This, I believe, is equivalent to claiming that a sentence with a contrastive topic has to be immediately preceded by a (perhaps implicit) question in which the contrastive topic or an expression denoting one of its alternatives is focused. Kadmon argues that the use of foci and contrastive topics in a sentence is a means of recording the structure of the discourse preceding the above sentence. The use of focus records the structure of the question preceding the utterance with the focus, while the use of contrastive topic can be viewed as a means of recording the last two moves in the discourse (by imposing a requirement on the focus semantic value of the last question under discussion, which in turn imposes a requirement on the ordinary semantic value of its last question under discussion). For example, Kadmon (2001:397) argues that the structure of (52a) helps to record that the two moves preceding it are (55b) and (55a):

- (55) a. 'For each individual, who did that individual kiss?'
 b. 'Who did Larry kiss?'

Although Kadmon (2001:397) considers contrastive topics foci — she even uses the term TOPIC-Focus to refer to them —, the above considerations on the use of contrastive topics proposed by her would in fact support the claim that contrastive topics are topical in a sense, since the constituents playing this role have to be ‘given’ (i.e., previously mentioned).

Finally, we show how Kadmon’s theory predicts that (51a) and (51c), repeated here as (56) and (57) are related, which is not predicted on Büring’s theory.

(56) [CT Larry] kissed [F Nina].

(57) Who kissed who?

Kadmon illustrates the fact that (56) can be part of a strategy used for answering (57) by showing that pieces of discourse containing the above two sentences, illustrated in (58) below (Kadmon 2001: 393), are felicitous, since they obey the constraints on the last question under discussion for utterances containing foci and contrastive topics, as well as the requirement of direct relevance.

(58) A: Who kissed who?

B: Well, who did [F Larry] kiss?

C: [CT Larry] kissed [F Nina].

As discussed above, the last question under discussion for (58C) is (58B). Roberts’ constraint on focus determines that the last question under discussion for (58B) should have the ordinary semantic value shown in (59a), which corresponds to the set of questions shown in (59b):

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

b. $\{ \text{‘Who did Larry kiss?’}, \text{‘Who did Bill kiss?’}, \text{‘Who did John kiss?’}, \dots \}$

(60) illustrates the type of question whose ordinary semantic value is shown in (56b), which is in fact a collection of questions:

(60) [F For each individual, who did that individual kiss?]

Kadmon notes that the above question differs from (58A) in that while the possible answers to the latter consist of pairs of kisser and kissees, given in any order, the answers to (60) have to be ordered by the kissers. (60) can serve as a last question under discussion for (58B), since it satisfies the two constraints imposed by foci and contrastive topics on the last question under discussion. Furthermore, she argues that since (60) is in fact a subquestion of (58A), it turns out to be directly relevant to it, and thus (58A) is a legitimate last question under discussion for it, which makes the dialogue in (58) felicitous.

Having enumerated the basic claims of Kadmon’s (2001) theory on the discourse congruence of utterances containing contrastive topics, in the next section we discuss some Hungarian data concerning the structure of discourses with contrastive topics, and their possible explanations in terms of some existing theories.

4 Discourse congruence with Hungarian contrastive topics

4.1 Some relevant data

If the contrastive topic is a referential expression, as in (61a), it is only licensed if its referent or a superset of it was introduced into the discourse previously. This condition is thus similar to that applying when the same expression is used as an ‘ordinary’ topic. Thus, (61a), for example, can be uttered as an answer to the questions in (61b–e):

- (61) a. [CT *‘Pista’*] *‘nem volt ott.*
Steve not was there
‘Steve was not there.’
- b. *Kik voltak a koncerten?*
who-PL were the concert-SUPERESS
‘Who were at the concert?’
- c. (?) *Ki nem volt ott a koncerten?*
who not was there the concert- SUPERESS
‘Who was not at the concert?’
- d. *Pista ott volt a koncerten?*
Steve there was the concert- SUPERESS
‘Was Steve at the concert?’
- e. *Ott volt mindenki a koncerten?*
there was everybody the concert- SUPERESS
‘Was everybody there at the concert?’

Compare (61a) to the sentences in (62) below:

- (62) a. [CT *‘Öt diákot’*] *‘levizsgáztattam.*
five student-ACC pfx-examined-1SG
‘As for five students, I did examine that many.’
- b. [CT *‘Öt diákot’*] *‘nem vizsgáztattam le.*
five student- ACC not examined-1SG pfx
‘As for five students, I didn’t examine that many.’
- c. *Levizsgáztattál öt diákot?*
pfx-examined-2SG five child- ACC
‘Have you examined five children?’
- d. *‘Öt diákot’ levizsgáztattál?*⁵⁰
five student-ACC pfx-examined-2SG
‘Have you examined five students?’

⁵⁰ In this sentence the verb bears an eradicating stress and forms a separate intonational phrase from that of the object constituent.

- e. [CT ʔöt diákot] ʔlevizsgáztattál?
 five student-ACC pfx-examined-2SG
 ‘As for five students, have you examined that many?’

In (62a) above a quantificational DP occupies the topic position of a Hungarian sentence. This sentence means that there are at least five students that I examined. Perhaps marginally, it can also describe a situation in which the contrastive topic refers to a specific set of five students. (62b) states that there are no five students whom I examined. The specific reading seems to be missing in the latter case. Both sentences are licensed by a context where the contrastive topic DP has already been mentioned. This expression does not necessarily have to be situated in the focus position of any sentence, although it tends to bear an eradicating stress, as indicated in (62c–d). In (62e), the contrastive topic of the declarative appears as the contrastive topic again. Questions (62c–e) can all precede (62a, b). Those quantificational DPs which denote monotone increasing quantifiers in generalized quantifier theory (i.e., those which can appear in the topic position of the Hungarian sentence) are allowed to appear as contrastive topics in contexts where only the lexical noun has been mentioned before, as illustrated by the possible answers to (63a), some of which are listed in (63b–e). As (63f, g) illustrate, however, DPs denoting monotone decreasing or non-monotone quantifiers cannot be licensed in the same way:

- (63)a. Voltak híres emberek / Volt híres ember a konferencián?
 were famous people was famous person the conference- SUPERESS
 ‘Were there famous people / Was there a famous person at the conference?’
- b. [CT ʔNéhány híres ember] ʔott volt.
 some famous person there was
 ‘Some famous people were there.’
- c. ʔ[CT ʔSok híres ember] ʔnem volt ott.
 many famous person not was there
 ‘There weren’t MANY famous people there.’
- d. [CT ʔMinden híres ember] ʔnem volt ott.⁵¹
 every famous person not was there
 ‘Every famous person was not there.’
- e. [CT ʔÖtnél több híres ember] ʔnem volt ott.⁵²
 five-ADESS more famous person not was there
 ‘There were not more than FIVE famous people there.’
- f. *[CT ʔLegfeljebb öt híres ember] ʔott volt / nem volt ott.
 at most five famous person was there/ not was there
 #‘As for at most five famous persons, that many was/wasn’t there.’

⁵¹ Note that since DPs denoting the universal quantifier are taken to be specific in the sense of Enç (1990), the contrastive topic of (63d) satisfies the traditional definition of specificity as well.

⁵² Discussion about the impossibility of the negative counterpart of the b) example and the impossibility of the affirmative counterparts of the c)–e) examples will be provided in Chapter 4.

- g. *[_{CT} 'Pontosan öt híres ember] 'ott volt / nem volt ott.
 exactly five famous person not was there was there
 #‘As for exactly five famous persons, that many was/wasn’t there.’

DPs denoting monotone increasing quantifiers, as opposed to those denoting monotone decreasing or non-monotone quantifiers, appear to be licensed in contrastive topic by DPs containing the same noun and another monotone increasing determiner, as shown by (64b) and (65b), or a different noun but the same determiner in a previous utterance, illustrated in (65c). (64c) shows, however, that DPs denoting monotone decreasing (and non-monotone) quantifiers cannot be licensed in this way:

- (64)a. Volt 'sok híres ember a konferencián?
 was many famous person the conference- SUPERESS
 ‘Were there many famous people at the conference?’
- b. [_{CT} 'Néhány híres ember] 'ott volt.
 some famous person there was
 ‘‘Some famous people WERE there.’
- c. *[_{CT} 'Legfeljebb öt híres ember] 'ott volt.
 at most five famous person there was
 #‘As for at most five famous people, there WERE that many there.’
- (65)a. Eljött 'négy gyerek?
 pfx-came four child
 ‘Have four children come?’
- b. [_{CT} 'Három] 'eljött, de [_{CT} 'négy] 'nem.
 three pfx-came but four not
 ‘‘Three HAS arrived but ‘four has NOT.’
- c. [_{CT} Négy 'felnőtt] 'eljött, de [_{CT} négy 'gyerek] 'nem.
 four adult pfx-came but four child not
 ‘As for four ADULTS, that many did come, but four CHILDREN did not.’

Note again that in questions (64a)–(65a), no constituent is necessarily assumed to be focused.

Other DPs which are normally interpreted as monotone decreasing quantifiers, like *legfeljebb n* ‘at most n’ + NP, *kevés n* ‘few n’ + NP, and as non-monotone quantifiers, like *pontosan n* ‘exactly n’ + NP, mostly appear in contrastive topic position if the same DP appears in a preceding move, which is illustrated by the following question-answer sequences:

- (66)a. Hová utazott legfeljebb 'két turista?
 where travelled at most two tourists
 ‘Where did at most TWO tourists travel?’
- b. (?) [_{CT} Legfeljebb 'két turista] [_F a 'tengerhez] utazott.
 at most two tourists the sea-ALLATIVE travelled
 ‘As for at most TWO tourists, that many went to the sea.’

- (67)a. Mikor jött pontosan `három vendég?
 when came exactly three guest
 ‘When did exactly THREE guests arrive?’
- b. [_{CT} Pontosan `három vendég] [_F `kedden és pénteken] érkezett.
 exactly three guest Tuesday-SUPERESS and Friday- SUPERESS arrived
 ‘As for exactly THREE guests, that many arrived on Tuesday and Friday.’⁵³
- (68)a. Kedden `kevesen érkeztek?
 Tuesday-SUPERESS few arrived
 ‘Did FEW people arrive on Tuesday?’
- b. [_{CT} `Kevesen] [_F `szerdán] érkeztek.
 few Wednesday-SUPERESS arrived
 ‘As for FEW people, that many arrived on Wednesday.’

The exchange in (66), for example, could take place between two travel agents who are discussing how many people travelled to certain locations. It presupposes that sets of tourists with particular cardinalities have been identified previously as significant in the context (e.g., sets of at most two tourists, sets of two to ten tourists, sets of more than ten tourists), and entails that there is no location other than the seaside to which at most two tourists travelled. (67) could be uttered by hotel receptionists, who are checking the number of guests who arrived on particular days, where again sets with certain cardinality are agreed on as relevant. The sentence would be judged false if it turned out that exactly three guests arrived on Monday as well.⁵⁴ The answer in (68b) is used as a correction of the information provided in the question (68a). In this case, it does not necessarily have to be previously agreed on what count as relevant alternatives to *kevesen* ‘few people’, the denotation of the DP is most probably contrasted to its lexically specified alternative, *sokan* ‘many people.’

There are a few common features within the structure of the above question-answer pairs. First, note that in the b) sentences, the contrastive topic expressions are followed by a constituent in focus. Second, the expressions in the a) sentences which are identical to the contrastive topics of the b) sentences are situated in the preverbal focus (Predicate Operator) position. Third, the b) sentences are not uttered as affirmative or negative answers to yes/no questions. They either constitute answers to wh-questions (66)–(67) or serve as corrections of a previous utterance.

Compare the above exchanges to (69) below, which illustrates that DPs denoting monotone decreasing (also, non-monotone) quantifiers cannot appear in declaratives which are intended as answers to yes-no questions. (69a) is the only possible yes/no question which can be formed in Hungarian to ask whether the proposition *Few guests arrived* is true. (69b), where the subject DP occupies a postverbal position, is out, which is due to the fact, I believe, that the canonical position of DPs denoting monotone decreasing quantifiers is the immediately preverbal focus (Predicate Operator) position, and they can only occupy other positions if the former is already filled, as (66a) and (67a) above illustrate. (69c) illustrates

⁵³ Naturally, not necessarily the same guests.

⁵⁴ I believe this is predicted by the requirement, proposed above, according to which in the relevant alternative propositions, the relation between pairs of alternatives to the contrastive topic and the associate alternatives has to be a function.

the only possible way how (69a) can be answered affirmatively. This is the only way to express the proposition that the number of guests who arrived is indeed few. This means that there is no question in the language which the sentence shown in (69d) could be uttered as an answer to, which explains, on the basis of Kadmon's **Question-answer** condition, why (69d) is an impossible sentence in the language.

- (69)a. `Kevés vendég jött el?
 few guest came pfx
 'Did FEW guests arrive?' ('Is the number of those who arrived few?')
- b. *Eljött `kevés vendég?
 pfx-came few guest
 'Did FEW guests arrive?' ('Is the number of those who arrived few?')
- c. [_F Kevés vendég] jött el/ nem jött el.
 few guest came pfx not came pfx
 'The number of guests who arrived / didn't arrive is few.'
- d. * [_{CT} `Kevés vendég] `eljött / `nem jött el.
 few guest pfx-came not came pfx
 # 'As for few guests, that many did arrive/ didn't arrive.'

Note that Büring (1997: 42) also proposes a question-answer condition, repeated here as (70):

- (70) Question-Answer Condition
 Sentence S can be uttered as an answer to a question Q given a Common Ground CG
 if
 $[[S]]^f \subseteq [[Q]]^o$.

Büring's condition shown above, however, as opposed to the condition on the presuppositions induced by contrastive topics, cannot account for the impossibility of (69d), since it does not state that contrastive topics must always be preceded by questions of a particular type.

The generalization we arrived at above regarding the structure of discourses preceding contrastive topics which denote monotone decreasing or non-monotone quantifiers does not seem to be satisfied in the case of (71) below, since the DP which plays the contrastive topic role in (71b) does not appear in (71a).

- (71)a. Hányan utaztak hova?
 how many travelled where
 'How many people travelled where?'
- b. [_{CT} 'Kevesen] [_F a ` hegyekbe] utaztak, [_{CT} ' sokan] pedig
 few the mountains-ILLATIVE travelled many however
 [_F a `tengerhez].
 the sea-ALLATIVE
 'As for few people, that many went to the mountains, as for many, they went to the sea.'

When the noun bears the main stress of the DP constituent in contrastive topic, as illustrated in (72b) below, it is normally required that there be a noun in the preceding context which refers to a superset of the set referred to by the noun, or another subset of the same superset. (72a) illustrates a statement which can precede (72b) in discourse. ((65c) above illustrates a similar case.)

- (72)a. Hallom, hogy Mari létrehozott egy `pártot.
 hear-1SG that Mary created one party-ACC
 ‘I hear that Mary has founded a party.’
- b. [CT Egy ‘egyesületet] `létrehozott Mari (de [CT egy ‘pártot] `nem.)⁵⁵
 one association-ACC created Mary but one party- ACC not
 ‘As for an association, Mary did found one, but she did not found a party.’

The general rule for the licensing of contrastive topics of other categories is similar to the one at work in the latter case, that is, they have to be preceded by a constituent with the same denotation, or a constituent whose denotation subsumes the denotation of the contrastive topic, or whose denotation belongs to the same set as the denotation of the contrastive topic. For example, (73) is felicitous in a context if the property of being beautiful, or human properties, or positive properties, or another human property, etc., was previously considered:

- (73) [CT ‘Szépnek] `szép volt Sári.
 beautiful-DAT beautiful was Sarah
 ‘As for beauty, Sarah WAS beautiful.’

Similarly, (74) is felicitous if the phrase *magas fiú* ‘tall boy’ has been mentioned in the discourse, or if properties of boys are considered.

- (74) [CT ‘Magas fiúval] csak `Mari beszélgetett.
 tall boy-INSTR only Mary talked
 ‘As for a TALL boy, only Mary talked to one.’

Having given a survey of some discourses where contrastive topics, particularly DPs, can appear in Hungarian, in the next section we consider whether their structure can be explained on the basis of previous theoretical approaches.

4.2 Steps towards a theoretical explanation

Jäger 1999 argues that DPs denoting weak quantifiers, like *three unicorns* in sentence (75) below (which do not need to be interpreted in terms of generalized quantifiers, that is, sets of sets of entities, but can be taken to denote sets of entities), receive a partitive reading in contrastive topic, and the identity of their antecedent depends on whether the head noun or the quantity expression is the exponent of the rising tone:

⁵⁵ Note that if the contrastive topic DP was pronounced with the ordinary topic intonation, then sentence (72b) would not count as well-formed, due to the fact that it contains a definiteness-effect verb whose object argument has to be non-specific, which contrasts the requirement that topics have to be specific. This also means that contrastive topics do not need to be specific in the traditional sense of the word.

(75) THREE / unicorns are in the GARDen \

The former case is licensed if the antecedent is describable by a hyperonym of the head noun, for example, as in the following discourse:

(76) There is a whole herd of unusual animals all around. (...)
Three UNicorns / are in the GARDen \

Note, however, that the above explanation could not account for the discourse in (72), where the contrastive topic DP is anteceded by a noun whose denotation does not constitute a superset of the denotation of the noun in the contrastive topic constituent.

When the quantity expression is the exponent of the rising tone, then, according to Jäger (1999), the contrastive topic is licensed if the antecedent belongs to the same category as that defined by the head noun. In the following exchange, the three unicorns mentioned in (77b) are assumed to be part of a larger quantity of individuals that happen to be unicorns, denoted by the corresponding expression in the previous sentence:

(77) A: There is a whole herd of UNICORNS all around. (...)
B: THREE / unicorns are in the GARDen \

Note, however, that on the above formulation of the licensing relation an exchange where (77a) is followed by (78) would not be ruled out:

(78) FEW/ unicorns are in the GARDen \

The above sentence, as well as its Hungarian counterparts, shown above in (66b), (67b), and (68b), are only used felicitously when they are preceded by sentences containing an identical DP, as discussed above. These data suggest that Jäger's (1999) theory, which does not make a distinction between the weak quantifiers on the basis of their monotonicity properties, cannot explain the contrast between the licensing of (63b,c) versus (66b), (67b), and (68b).

Büring (1997) proposes the following constraint on the occurrence of contrastive topic DPs in English and German:

(79) "In general, the topic accent on the determiner of an NP signals that another NP*, which differs from NP only in the determiner, has previously been used, namely, in the D-topic."

As the discussion of the Hungarian data in the previous section has shown, the above constraint cannot cover the case of DPs denoting monotone decreasing or non-monotone quantifiers. Moreover, the constraint cannot explain the licensing of DPs denoting monotone increasing quantifiers, either, since it does not account for the case where the sentence containing a contrastive topic DP is preceded by a move which only contains the bare noun.

Having established that neither of the previous two proposals can account for the whole range of data regarding the structure of discourses containing a contrastive topic, I will show that they can be explained if Kadmon's (2001) insights are taken into consideration.

Consider first a variant of the dialogue in (67), repeated here as (80):

- (80) a. Mikor jött pontosan `három vendég?
 when came exactly three guest
 ‘When did exactly three guests arrive?’
- b. [CT Pontosan `három vendég] [F `kedden] érkezett.
 exactly three guest Tuesday-SUPERESS arrived
 ‘As for exactly three guests, they arrived on Tuesday.’

According to Kadmon’s (2001) constraint, an utterance presupposes that its topic semantic value is identical to the focus semantic value of its last QUD. The topic semantic value of (80b), based on a previous choice of relevant cardinalities, could be identical to the set of sets of propositions listed in (81a), that is, a set of questions listed in (81b):

- (81) a. { { ‘Exactly three guests came on Monday’, ‘Exactly three guests came on Tuesday’,
 ‘Exactly three guests came on Wednesday,’ ... },
 { ‘Less than three guests came on Monday’, ‘Less than three guests came on Tuesday’,
 ‘Less than three guests came on Wednesday’ ... },
 { ‘More than three guests came on Monday’, ‘More than three guests came on
 Tuesday’, ‘More than three guests came on Wednesday,’ ... }, ... }
- b. { ‘When did exactly three guests come?’, ‘When did more than three guests come?’,
 ‘When did less than three guests come?’, ... }

The question which would have as its focus value the set of questions in (81b) is the one shown in (80a) (or any of its counterparts where the DP is exchanged for one of its alternatives), provided that the DP is focused. The DP *pontosan három vendég* ‘exactly three guests’ in (80a) is situated in a postverbal position, and its determiner bears a compulsory stress, as the determiners of the contrastive topic DPs in the examples (66a), (67a), (68a) do. Thus, according to É. Kiss (2001), this constituent plays the role of information focus in (80a). Without the main stress, however, neither this constituent nor its counterparts in (66a), (67a) and (68a) would be felicitous in their respective sentences.

The data in (71) above, repeated here as (82), can also be handled in Kadmon’s (2001) theory if it is assumed (following Kadmon (2001)), that (82b) is in fact preceded by an implicit question like the one in (83):

- (82) a. Hányan utaztak hova?
 how many travelled where
 ‘How many people travelled where?’

- b. [CT´ Kevesen] [F a ` hegységbe] utaztak, [CT´ sokan] pedig
 few the mountains-ILLATIVE travelled many however
 [F a `tengerhez].
 the sea-ALLATIVE
 ‘As for few people, that many went to the mountains, as for many, they went to the sea.’

- (83) Hová utaztak `kevesen?
 where travelled few
 ‘Where did FEW people travel?’

In view of the fact that in (83) there is heavy stress on postverbal *kevesen* ‘few’, this expression seems to function as an information focus in the sense of É. Kiss (1998). (83) is a subquestion of (82a), i.e., directly relevant to (82a), and it can serve as a last question under discussion for (82b), according to Roberts’ and Kadmon’s theories. (83) also satisfies the requirements observed earlier regarding the structure of discourses which precede contrastive topic DPs denoting monotone decreasing or non-monotone quantifiers. If, following Kadmon (2001), it is assumed that implicit questions can also ensure the congruence of discourses, the congruence of (82) can immediately be explained.

Having accounted for the felicitous use of DPs denoting monotone decreasing and non-monotone quantifiers as contrastive topics in Kadmon’s (2001) framework, let us now turn to the analysis of DPs denoting monotone increasing quantifiers. The question-answer pair in (62c) and (62a) is repeated here as (84a,b):

- (84) a. Levizsgáztattál `öt diákot?
 pfx-examined-2SG five child-ACC
 ‘Have you examined five children?’
 b. [CT´Öt diákot] `levizsgáztattam.
 five student-ACC pfx-examined-1SG
 ‘As for five students, I did examine that many.’

If the stressed constituent in (84a) is assumed to be an information focus (É. Kiss 1998), for which a focus semantic value is generated in the same way as for contrastive foci, then (84a) is a proper last QUD for (84b). (85) below shows the focus semantic value of (84b) (assuming that the heavy stress on the verb signals verum focus), and (86) shows the topic semantic value for the same sentence, which is represented in (86a) in terms of a set of sets of propositions and in (86b) in terms of a set of questions.

- (85) {I examined five students, I didn’t examine five students}
 (86) a. {{I examined five students, I didn’t examine five students}, {I examined four students, I didn’t examine four students}, {I examined six students, I didn’t examine six students}, ... }
 b. {Did I/you examine five students?, Did I/you examine four students?, Did I/you examine six students?,...}

Since (85) corresponds to the ordinary semantic value of (84a) and (86b) to its focus semantic value, the exchange in (84) is predicted to be felicitous by Kadmon (2001). Since the ordinary semantic value and the focus semantic value of (62d) above, repeated here as (87a),

correspond to (85) and (86b), respectively, (87a) would form a felicitous exchange together with (62a), repeated here as (87b):

- (87) a. `Öt diákot `levizsgáztattál?
 five student-ACC pfx-examined-2SG
 ‘Have you examined five students?’
- b. [CT `Öt diákot] `levizsgáztattam.
 five student-ACC pfx-examined-1SG
 ‘As for five students, I did examine that many.’

Also, since the focus and the topic semantic values of (62b), repeated here as (88), are identical to those of (62a), the former sentence would form felicitous exchanges with any of the above questions as well.

- (88) [CT `Öt diákot] `nem vizsgáztattam le.
 five student-ACC not examined-1SG pfx
 ‘As for five students, I didn’t examine that many.’

I believe, however, that no adequate explanation can be given for the fact that (62e), repeated here as (89), can form a congruent discourse together with (87b) or (88).

- (89) [CT `Öt diákot] `levizsgáztattál?
 five student-ACC pfx-examined-2SG
 ‘As for five students, have you examined that many?’

DPs denoting monotone increasing quantifiers can be licensed by a DP with a different determiner, as it was shown by (64a, b), repeated here in (90):

- (90) a. Volt `sok híres ember a konferencián?
 was many famous person the conference-SUPERESS
 ‘Were many famous people at the conference?’
- b. [CT `Néhány híres ember] `ott volt.
 some famous person there was
 ‘Some famous people WERE there.’

(91) below shows the focus semantic value associated with (90b), while (92a) shows its topic semantic value in terms of a set of propositions, and (92b) in terms of a set of questions.

- (91) { There were some people at the conference, It is not true that there were some people at the conference }
- (92) a. { { There were some people at the conference, It is not true that there were some people at the conference }, { There were many people at the conference, It is not true that there were many people at the conference }, { Everybody was at the conference, It is not true that everybody was at the conference }, ... }
- b. { Were there some people at the conference?, Were there many people at the conference?, Was everybody at the conference?, ... }

It is easy to see that (91) is not identical to the ordinary semantic value of (90a), thus (90) would not count as a congruent discourse according to what was discussed so far from Kadmon's theory here. Kadmon (2001: 396), in the course of discussing an example similar to this one, proposes that a move in which an overt question is followed by an implicit one which is a member of the focus semantic value of the overt question should be considered felicitous. The denotation of the question in (93) is a member of the focus semantic value of (90a), shown in (92b):

- (93) Volt `néhány híres ember a konferencián?
 was some famous person the conference- SUPERESS
 'Were there some famous people at the conference?'

Thus, Kadmon's theory predicts that a discourse in which the overt question in (90a) is followed by the implicit move in (93), and by the declarative in (90b) is indeed a felicitous one.

Let us finally consider the case where a monotone increasing DP is licensed by a bare nominal, as shown in (63a,b), repeated here in (94):

- (94)a. Voltak híres emberek / Volt híres ember a konferencián?
 were famous people was famous person the conference- SUPERESS
 'Were there famous people / Was there a famous person at the conference?'
 b. [CT `Néhány híres ember] `ott volt.
 some famous person there was
 'Some famous people were there.'

The focus and topic semantic values of (94b) are those shown in (91) and (92) above. Naturally, they would not correspond to the ordinary and the focus semantic values of (94a). Thus, to make the exchange felicitous, we would have to assume, within the framework of Kadmon's theory, that (94a) is followed by an implicit question, the one shown in (93). This question would be a felicitous last QUD for (94b). It would also constitute a subquestion of (94a), since a complete answer to (93) would entail at least a partial (in fact: a complete) answer to (94a).

Thus, it can be concluded that by adopting Kadmon's (2001) proposals on the requirements of the congruence of discourses containing contrastive topics, most of the Hungarian facts listed in 4.1 can be accounted for.

5 Summary

In this chapter we have investigated the presuppositions, implicatures and discourse structure associated with the use of contrastive topics. It has been proposed by several theorists that the use of contrastive topics presupposes that the structure of the preceding discourse satisfies particular requirements. These requirements have been formalized differently in different theoretical frameworks, such as those by von Stechow (1994), Büring (1997) and Kadmon (2001), which were briefly reviewed here. Among the above theories, Kadmon's proposal

was judged to be the most comprehensive, which assumes that each move in a discourse has to be directly relevant to the preceding move, and that foci and contrastive topics impose certain constraints on the ordinary semantic value and the topic semantic value of the last question under discussion for sentences containing these constituents. The applicability of this theory to Hungarian was demonstrated through the analysis of a wide range of examples.

The fact that the use of contrastive topics generates a contrast between propositions has both been claimed to be part of the lexical meaning of these constituents and part of their implicatures. Here it was argued that reference to alternatives should be considered a conventional implicature (instead of a conversational one, as proposed by Kadmon 2001), and a new, 'operationalizable', definition of the implicature introduced by the contrastive topic was defined. It was argued that since the presence of contrastive topics is not required to express a special truth-conditional component of meaning, their primary function is to express the above implicature. Whenever the implicature is in conflict with the intended truth-conditional meaning of the sentence, however, the particular reading will not be available for it.

CHAPTER 3

THE SCOPE OF CONTRASTIVE TOPICS⁵⁶

1 Introduction

In this chapter we will take a closer look at one of the most puzzling facts about Hungarian contrastive topics, discussed in Szabolcsi 1981b, Kenesei 1989, É. Kiss 1992, 1998, 2000, and Alberti and Medve 2000, among others, namely, that certain classes of quantificational expressions (DPs or adverbials) in this position need to take narrow scope with respect to other quantifiers and operators in other preverbal operator positions, and for other classes of quantificational expressions the narrow scope interpretation is one of the possible options (though not necessarily the preferred one). These facts indicate that the general rule of scope assignment for Hungarian, discussed in Chapter 1, according to which the scope of preverbal operators, situated in the specifier positions of various functional projections dominating the VP, is reflected in their surface order (since these operators c-command their scope at Spellout), is not not always adhered to by contrastive topics. The following examples illustrate some of the relevant data. (1) and (2) contain contrastive topics which can only have a narrow scope interpretation, while in (3) the contrastive topic expression can take either wide or narrow scope with respect to the negation. To ease the comparison, we also provide in each case what the interpretation of the sentence would be if the quantifier in contrastive topic was allowed to take wide scope:

- (1) [CT *ˈMindenki*] *`nem ment el.*
everybody not went prefix
a. 'It is not the case that everybody left.'
b. # 'No person left.'
- (2) [CT *ˈLegalábbegy könyvet*] *`minden diák elolvasott.*
at least one book-ACC every student pfx-read
a. 'Every student is such that he/she read at least one book.'
b. # 'There is at least one book which every student read.'
- (3) [CT *A politikusok kétharmada*] *`nem korrupt.*
the politicians two thirds not corrupt
a. 'It is not the case that two thirds of the politicians are corrupt.'
b. 'Two thirds of the politicians are such that they are not corrupt.'

The tendency for contrastive topics to take narrow scope with respect to other quantificational expressions in the sentence has been observed for other languages, like English or German as well (Büning 1997). These languages, however, differ from Hungarian in that they generally allow much more freedom in assigning scope to quantificational expressions than Hungarian (but cf. Liu 1990), where scope ambiguity can only surface with respect to a contrastive topic and an operator following it or between two postverbal

⁵⁶ This chapter is based on my contribution to the paper 'Scope inversion under the rise fall contour or something else?', written jointly with Katalin É. Kiss.

quantifiers. In the next section we will give an overview of proposals for English and German which aim to explain the preferred narrow scope readings of sentence-initial quantificational expressions in general and contrastive topics in particular with respect to sentential negation and examine whether they could be applied to Hungarian. In section 3 we review some previous proposals made specifically for Hungarian, namely, É. Kiss 2000 and Alberti & Medve 2000, according to which DPs in contrastive topic positions are capable of denoting properties. In sections 4 and 5 we provide a compositional semantic interpretation for sentences where the contrastive topic role is played by argument DPs, which is based on É. Kiss's and Alberti and Medve's suggestions. In section 6 we consider the weak points of the approach based on the idea that non-referential contrastive topics denote properties.

2 Previous accounts of the possibilities of scope reversal between quantificational expressions and negation

2.1 Ladd 1980

Ladd's account is based on the idea that a particular meaning should be associated with the fall-rise contour, as shown in (4b) below,⁵⁷ namely, that it generally signals a subset or hyponym relation to a contextually accessible set. Thus, the utterance of (4b) evokes a set of entities, e.g., the set of cars, or the set of German cars, which the denotation of *Opel* could be a subset of:

- (4) a. You have a VW, don't you?
 b. I've got an ˇOpel (Well, not exactly, but...)⁵⁸

Ladd claims that in example (5), a counterpart of the Hungarian sentence in (1) above, where the DP *all the men* can be considered a contrastive topic, the fall-rise contour triggers the same type of subset interpretation as in (4).

- (5) ˇAll the men didn't go.
 'Not all men went.'

According to Ladd, this subset relation is semantically incompatible with the universal quantifier, since *all* cannot pick out a proper subset (nor can *both*) of the set referred to by the noun following it, thus, he claims, "the sentence is essentially reprocessed with the tacit caveat '*All* can't be subset, so it must mean *not all*.'" (Ladd 1980:161):

The problems I find with Ladd's theory are the following. On the one hand, he accounts for the reverse scope reading of sentences with contrastive topics on the basis of a very ad hoc process. The need for reprocessing, which is assumed to arise on particular occasions, indicates that the default interpretation for the sentence is the one where the scope of quantifiers corresponds to their surface position. If there is a principle according to which scope is assigned to operators on the basis of their surface position, it would be expected that sentences like (5) are not generated in the first place. On the other hand, Ladd's theory cannot

⁵⁷ This sentence does not contain an instance of contrastive topic.

⁵⁸ Whenever it does not lead to confusion, I use the original authors' notations to mark the contrastive topic.

explain why Buring's German example in (6) and its Hungarian counterpart in (3) above can be both ambiguous with respect to the scope of the contrastive topic:

- (6) Zwei /DRITTEL der Politiker sind NICHT\ korrupt.
 two thirds of politicians are not corrupt
 a. 'It is not the case that two thirds of the politicians are corrupt.'
 b. 'Two thirds of the politicians are such that they are not corrupt.'

If the 'reprocessing strategy' was obligatory for all constituents pronounced with the contrastive intonation, then only the narrow scope reading would be available. If, however, this strategy was to be applied only if the reading where scope corresponds to syntactic ordering contrasted with the subset interpretation, as in (5), then only the wide scope reading should be available for (6).

2.2 Horn 1989

Horn's (1989) theory is not concerned with the scope of contrastive topics but with the possibilities of reversing the scope of subject quantifiers with sentential negation in general. The reason why we are still discussing it here is that in most of the naturally occurring examples with quantificational expressions in the contrastive topic role in different languages, these expressions are followed by sentential negation, and interpreted as having narrow scope with respect to the negation.

According to Horn (1989:496), "the wide-scope (NEG-Q) reading of negation in sentences with quantified subjects occurs most naturally in metalinguistic uses." He claims that the accessibility of NEG-Q readings to English sentences with quantified subjects like (7a) and (8a) depends on whether the quantifier is a universal or an existential one:

- (7) a. Everybody didn't come.
 b. Not everybody came.
 (8) a. Somebody didn't come.
 b. Nobody came.

Horn suggests that the primary reading of sentences with at least two quantifiers pronounced with a neutral intonation pattern is the one where the quantifiers take scope according to their surface positions. Inverse scope readings are also possible, but these are blocked on the basis of the Division of Pragmatic Labor if there are other forms available in the language which express the inverse scope reading.⁵⁹ This applies to (7a) and (8a), too, as far as their ability to express NEG-Q meanings is concerned, since there are forms in the language, shown in (7b) and (8b), which express the same meaning, and where, in addition, the scope of operators correlates with surface order. The strength of the blocking effect varies inversely with the markedness of the alternative expressions. Since *not everybody* in (7b) is morphologically and syntactically more marked than *everybody*, Horn argues, the blocking effect on (7a) to convey the NEG-Q meaning will be relatively weak.

⁵⁹ As Huba Bartos (p.c.) notes, inverse scope readings can vary with respect to their availability. For example, the inverse scope reading of 'Someone kissed everyone' is more readily available than that of 'Everyone kissed someone'.

Horn's account cannot be extended to cases like (2) above, however, where both the contrastive topic and the other quantifier are DPs, since such sentences cannot have synonymous counterparts with one quantificational DP which unites the effects of the two quantificational DPs in the original sentence.

2.3 De Swart 1998

De Swart (1998) argues that the readings where sentential negation takes wide scope with respect to a quantifier in subject position in an English sentence need "to be pragmatically motivated by the contribution the utterance makes to the discourse" (p. 89), since such readings express essentially negative facts about the world, the number of which is, naturally, much larger than the number of true positive facts about the world, as claimed in Horn 1989. Readings where negation receives wide scope over the subject also induce a discrepancy between the syntactic and the semantic scope of an expression (since the syntactic scope of negation in English is generally smaller than the whole sentence⁶⁰), thus they need to be motivated by the fact that the reading in question adds informational value to the sentence, e.g., entails a positive statement or introduces a positive implicature.

For example, de Swart (1998) explains the possibility of assigning wide scope to the negation in (9) along the following lines:

- (9) All students didn't pass the exam.

On the one hand, the reading of (9) where negation receives wide scope corresponds to an universal statement under negation, which is equivalent to an affirmative sentence where negation takes narrow scope, i.e., one expressing a positive fact, as shown in (10b):

- (10)a. Not all students passed the exam \Leftrightarrow
 b. Some students didn't pass the exam

On the other hand, (9) also gives rise to a positive implicature, which is to be derived in the following way. As it was established by Horn (1972), the combination of the Gricean maxims Quality and Quantity leads to systematic implicatures based on items ordered on a scale⁶¹ in such a way that the truth of the statement containing the weaker item implicates the falsity of any statement containing stronger items. $\langle a, \text{all} \rangle$ constitutes a scale like this, since, if a sentence containing *a* or *some* is uttered, then the implicature (signalled by $\sim \rightarrow$ below) arises that the stronger statement containing *all* cannot be true. Thus, (11a) below implicates (11b):

- (11)a. Some students passed the exam $\sim \rightarrow$
 b. Not all students passed the exam

When the scale $\langle a, \text{all} \rangle$ is embedded under negation, however, it results in the scale $\langle \text{not all}, \text{not } a \rangle$. With respect to this scale, the weaker assertions are those which contain the quantifier *not all*. Thus, statements with *not all*, e.g., that in (12a), implicate the negation of

⁶⁰ In fact, it is probably true for a significant number of languages.

⁶¹ Such scales are referred to as Horn scales in the literature.

corresponding statements with *not a*, as in (12b), which in turn is equivalent to the statement in (12c).

- (12)a. Not all students passed the exam. $\sim >$
- b. It is not the case that not a student passed the exam \Leftrightarrow
- c. Some students passed the exam.

(12c) is thus the second positive statement associated with (9), which motivates the reverse scope reading of this example.

According to de Swart, monotone increasing quantifiers like *more than two* or *many* appearing together with sentential negation can induce positive assertions in a similar way, with the help of the scales <more than zero, more than one, ... more than n-1, more than n>, or <few, many>.

The theory proposed by de Swart accounts for the fact why sentences containing the determiner *few*, like (13) and (14), do not have inverse readings:

- (13) Few people are unlikely to arrive on time.
- (14) Few students did not pass the exam.

Since the pragmatic scale where *few* is situated is <few, many>, which, embedded under negation, becomes <not many, not few>, the statements above do not trigger scalar implicatures, since the expressions contained in them are associated with ‘strong’ propositions (the ones containing expressions situated at the ‘strong’ end of the scale), which cannot implicate the negation of the weaker statement.

De Swart’s theory is able to explain how the narrow scope reading for contrastive topics accompanied by a negative particle as associate, like in (1) above, arises. (However, we would need to appeal to some other theory to rule out the wide-scope reading in this case.) On the basis of the assumption that *not few* constitutes the stronger element in the scale <not many, not few>, de Swart can account for the fact that the contrastive topic cannot have the narrow scope reading in the following sentence:

- (15) *_[CT] Kevés ember] `nem jött el.
 few person not came pfx

The theory, however, cannot be extended to explain the narrow scope reading of sentences where the associate of the contrastive topic is another quantificational DP, as in (16):

- (16) _[CT] Pontosan két diák] `három könyvet olvasott el.
 exactly two student three book-ACC read pfx
 ‘It was three books that were read by exactly TWO students.’

The contrastive topic of (16) cannot be a member of a Horn scale, since the truth of a proposition expressing that a property holds for exactly two students can neither implicate nor be implicated by the applicability of the same property to a different number of individuals. Thus, de Swart’s theory would have nothing to say about why the reversal of the scopes of the quantifiers in (16) takes place.

Having described some theoretical approaches that aim to account for scope reversal in languages other than Hungarian, we will now review two theories which were proposed to account specifically for the narrow scope readings of Hungarian contrastive topics.

3 Previous proposals for capturing the narrow scope readings of contrastive topics in Hungarian

3.1 Alberti & Medve 2000

Alberti & Medve's basic claim is that a quantificational DP in the role of contrastive topic occupies the specifier position of a projection called CTopP as a result of movement from postverbal position. The operator head of the projection, op_{CTop} , has the widest scope among the operator heads, but, due to its position, its specifier is not interpreted distributively, but collectively, as referring to a set, or plural individual, as in (17), or to a kind, as in (18).

- (17) [$_{CTopP}$ Mindháromfiúnak_j op_{CTop} [_{FP} csak Marit_i mutattam_k [_{VP} t_k be pro t_i t_j.]]]⁶²
all three boy-DAT only Mari-ACC introduced-1SG pfx
‘Only Mary is such that I introduced her to all three boys.’

- (18) [$_{CTopP}$ Pontosan három fiúnak csak Marit és Zsuzsit mutattam be.]
exactly three boy-DAT only Mari-ACC and Zsuzsi-ACC introduced-1SG pfx
‘Only Mary and Susan is such that I introduced them to exactly three boys.’

Thus, in (17) it is stated about the entire set of three boys that only Mary was introduced to it. In Alberti and Medve's view, it is also part of the truth-conditional meaning of the sentence that the predicate does not hold of all subsets of the set of these three individuals. The unwanted consequences of this assumption were discussed in Chapter 2.

According to Alberti & Medve, sentence (18) is an instance of predicating of entities belonging to a kind, thus, they paraphrase it as follows: “as for the kind of sets consisting of exactly three of the relevant boys, only Mary and Susan were introduced to this set kind” (p. 114). The fact that the identity of the boys can vary for Mary and Susan is attributed to the assumption that only about manifestations of a particular kind can we make a statement to the effect that they were introduced to someone.

I believe that the central idea proposed by Alberti & Medve (2000), namely, that the apparent narrow scope of contrastive topics is due to the fact that such constituents are not necessarily interpreted as denoting entities, but they can also denote properties, is an innovative one. In the next section I will show how the compositional semantic interpretation of sentences containing contrastive topics could be derived on the basis of this idea, supplemented with various proposals from É. Kiss 2000, which will be summarized below.

⁶² This example is copied in an unchanged form from Alberti and Medve 2000.

3.2 É. Kiss 2000

The central idea of É. Kiss's account of the narrow scope reading of contrastive topics is that contrastive topic DPs denote properties of sets which are individuated as a result of being contrasted with other properties. The idea that the denotations of property-expressions are individuated due to being contrasted originates from Szabolcsi (1983), who analyzed the interpretation of focused bare nominals, as illustrated in (19):

- (19) [F Biciklit] látott Mari.
bicycle-ACC saw Mary
'It was a bicycle/bicycles that Mary saw.'

Due to the fact that preverbal focusing in Hungarian involves exhaustive listing, that is, the truth of a sentence with a focus entails that the predicate does not hold of any alternative of the focus denotation, in order to explicitly characterize the truth conditions of a sentence with a focus we need to know the alternatives the focus denotation is contrasted with. When a bare noun is focused, as in (19), it is necessary for providing an interpretation to the sentence to identify a subset of a relevant set of distinct properties the focus denotation is contrasted with.

É. Kiss (2000) assumes that a similar procedure of individuation takes place in the case of contrastive topics as well, and she proposes the following generalization. Any property expression can be individuated by being contrasted with its alternatives, which can be achieved either by focusing it or by pronouncing it with the contrastive topic intonation. She claims that the narrow scope of a quantificational expression playing the contrastive topic role is only apparent, since it is to be interpreted as the name of a property of sets. Whatever is predicated about this property in the sentence has to be fulfilled by sets having the particular property, and this is misinterpreted as if the contrastive topic expression had a narrow scope reading.

For example, the denotation of the contrastive topic in (20) is not one or more sets but a property related to the cardinality of sets (which is assumed to be contrasted with other properties). This explains why the set of novels to be read can vary together with the identity of the students concerned in this sentence (É. Kiss's example (25)).

- (20) /Minden regényt \kevés diák olvasott el.
every novel-ACC few student read pfx
'Few students read every novel.'

É. Kiss characterizes the meaning of (20) the way shown in (21) below:

- (21) With respect to the properties of 'being the maximal set of novels' and 'being a non-maximal set of novels' the following statements are made. About the former we claim that it is true of few people that they read a representative of it. (An alternative statement is implicated about the property of 'being a non-maximal set of novels': it is true of many persons that they read a representative of it.)

As mentioned in Chapter 2 above, I believe that, as opposed to sentences with property-expressions in focus, illustrated in (19) above, in providing the truth-conditions of sentences with contrastive topics, no reference should be made to the alternatives they are contrasted to, since the contrast is only part of the implicatures associated with the sentence. In order to be

able to build a compositional semantic interpretation procedure on the proposals made by Albert and Medve 2000 and É. Kiss 2000 regarding the denotation of contrastive topics, two specific tasks have to be fulfilled. On the one hand, the assumption that even full DPs in contrastive topic can denote properties, as opposed to DPs situated in other preverbal operator positions (which are normally assumed to denote sets or generalized quantifiers) has to be motivated. On the other hand, a way has to be found to combine the property denoted by the contrastive topic with the traditional denotation of the predicate part in order to achieve a propositional type denotation for the whole sentence. The next section will provide some arguments why contrastive topics can be assumed to have a property-denotation, while in section 5 a compositional interpretation procedure will be proposed which is able to formally derive the interpretations of sentences containing contrastive topics.

4 Property-denoting contrastive topics vs. sentence interpretation

4.1 Properties as noun phrase denotations

As promised in the previous section, in this section we intend to put into practice the proposal by Alberti and Medve 2000 and É. Kiss 2000, according to which the narrow scope readings of contrastive topics is due to the fact that they are assumed to denote a property. Naturally, it does not mean that contrastive topics can only denote properties. As the following example illustrates, contrastive topic DPs which are capable of identifying a specific referent retain this feature in contrastive topic as well, and thus (22) can have two interpretations. It cannot have a reading, however, according to which the contrastive topic DP denotes a generalized quantifier.

- (22) [CT két diákot] `nem láttam.
 two student-ACC not saw-1SG
 A. ‘AS FOR TWO PARTICULAR STUDENTS, I DID SEE THEM.’
 B. ‘AS FOR TWO STUDENTS, I DIDN’T SEE THAT MANY.’

In the rest of the paper we will focus on the property-denoting interpretation of contrastive topic noun phrases, illustrated in the (22b) reading, and ignore the referential reading, shown in (22a).

The assumption that contrastive topics denote properties, however, turns out to be incompatible with the traditional assumption that verbs denote n -place first-order predicates, since the property-denotation of the contrastive topic argument cannot be combined with the verbal denotation into a sentence-denotation, i.e., a proposition, by means of functional application. (23) illustrates the extensional representation of the interpretation which corresponds to the property-reading of the contrastive topic of (22), and (24) shows the representation of the meaning of the verb in (22) as an extensional first-order predicate. (We restrict our attention to an extensional framework here since the scope phenomena which we eventually want to explain do not have intensional implications.)

- (23) $[[\text{két diákot}]] = \lambda x \text{ two-student}(x)$
 (24) $[[\text{láttam}]] = \lambda y \lambda x \text{ saw}(x, y)$

The representation of the meaning of the contrastive topic noun phrase in (23) is based on the proposal by Maleczki (1992) according to which the denotations of common nouns in Hungarian correspond to join semilattices (cf. Link 1983). The property denoted by a noun phrase is assumed here to be the property of being a member of a set of elements in the join semilattice corresponding to the noun denotation which has as many atomic parts as specified by the determiner denotation. For example, the contrastive topic noun phrase in (23) denotes the property of being an element in the denotation of the common noun *student* which has *at least* two atomic parts. This property is denoted by the expression λx **two-student'**(x) in (23). (The property-denotation of DPs can be derived from the traditional denotation of DPs as generalized quantifiers as follows: it is the property of being identical to the individual sum of elements in any of the witness sets⁶³ corresponding to the generalized quantifier.)

The semantic values in (23) and (24), however, cannot be combined into a proposition-type denotation. The only way to overcome this type-clash is to raise the type of one of these expressions to a type which can combine with the other type by means of function-argument application. Since the type of the noun phrase-denotation cannot be lowered to a type which can act as an argument of (24), namely to type e (at least on the (b) reading of (22)), the only possible option seems to be to lift the type of (24) to a type which contains a property-variable.

The traditional assumption that the verbs of the language can only denote n -place first-order predicates has been challenged in several proposals before, some of which, particularly those pertaining to Hungarian, will be considered in the rest of the section.

Komlósy (1992) discusses the interpretation of sentences where the internal arguments of verbs are represented by bare nominals, which are not assumed to name or identify a particular object, but to name a particular property of the internal argument of the verb. (25) shows an example:

- (25) Péter újságot olvas.
 Peter newspaper-ACC reads
 'Peter is reading a newspaper.'

According to Komlósy (1992), the meaning of the bare nominal object in (25) is to be represented as in (26a), and the meaning of the verb would be as in (26b). These denotations, composed together by function-application, result in the formula in (27), corresponding to the meaning of the sentence:

- (26) a. *újságot* 'newspaper-ACC': λy **newspaper** (y_{obj})
 b. *olvas* 'reads': $\lambda F \lambda x \exists y [\text{read}(x, y_{obj}) \wedge F(y)]$

- (27) $\exists x [\text{read}(p, x) \wedge \text{newspaper}(x)]$

Komlósy claims that representations of verb meanings of type (26b) are always available whenever the verb can have a bare nominal argument, and are derivable from their usual

⁶³ Witness sets of generalized quantifiers correspond to those elements of the set of sets in the generalized quantifier denotation which are subsets of the smallest set the generalized quantifier lives on, cf. Szabolcsi (1997a).

representations in terms of two-place first-order predicates, e.g., $\lambda y \lambda x \text{read}(x, y)$, by means of a lexical process. Since most Hungarian verbs can have a bare nominal argument, Komlósy's theory would argue against considering property-denoting argument noun phrases and property-denoting verbs to have exceptional semantic properties, and for assigning multiple lexical representations to the verbs of the language.

According to Piñón (2001), a set of Hungarian verbs, the so-called definiteness effect verbs, lack the 'regular' n -place first order predicate denotation altogether, and can only denote predicates over properties. The verb *evett* 'ate' in (28) counts as a definiteness effect verb:

- (28) Anna evett egy almát.
 Anna ate an apple-ACC
 'Anna ate an apple.'

Piñón (2001) proposes that definiteness effect verbs should be considered functions taking a predicate (or property) argument. In his framework, the meaning of the verb of (28) would be represented (ignoring the dynamicity of the existential quantifier) in the following way:

- (29) $\text{evett}_{\text{def-eff}} \text{'eat'} \Rightarrow \lambda P \lambda x \lambda e [\exists y [\text{eat}(e, x, y) \wedge P(y)]]$

Van Geenhoven (1996) investigates noun incorporation in West Greenlandic. She claims that from a semantic point of view, West Greenlandic incorporated nouns are indefinite descriptions, which only denote a property. (30) below is the general formula she uses to represent the meaning of a complex consisting of a verb and an incorporated noun:

- (30) $\lambda P_{\langle s, \langle e, t \rangle \rangle} \lambda w_s \lambda x_e \exists y [\text{Verb}_w(x, y) \wedge P_w(y)]$

(30) shows that, according to van Geenhoven, the incorporated noun denotes a property (of type $\langle s, \langle e, t \rangle \rangle$) which is absorbed by an incorporating verb as the predicate of its internal argument's variable.

Van Geenhoven links the behaviour of West Greenlandic incorporated nouns to other indefinite constructions in other languages as well, namely, to bare plurals in West Germanic languages, and German split topics. She claims that the narrow scope effects characteristic of these three constructions can be given a uniform explanation, namely: they are instances of semantically incorporated, predicative indefinite descriptions, the existential interpretation of which is due to the verb itself. They cannot be interpreted as definite or partitive, since the variable representing the indefinite is always novel, so it cannot pick up a salient referent.

In his review of a version of van Geenhoven's theory (1996), Cohen (1999b) argues that the verbs of a language should be regarded as ambiguous between an incorporating reading and an ordinary n -place predicate interpretation, which is supported by the fact that in the Germanic languages verbs can combine with both bare plurals and with other noun phrases.

In this section we have reviewed three theories which claim — either about a particular class of verbs (those displaying the definiteness effect), or about verbs taking

arguments of a particular syntactic category (bare nominal) and semantic type (property) — that their lexical representation is not given in terms of an *n*-place predicate but contains a property variable. That is why such verbs can take an argument denoting a property. Although according to Piñón (2001), definiteness effect verbs always have to receive representations of this kind, it seems that the majority of verbs in the lexicon can appear together with both bare nominal arguments and proper noun phrase arguments. This fact indicates that there must be a lexical rule which maps the ordinary *n*-place predicate denotation of verbs onto denotations with property variables.

Having examined some constructions in which noun phrase arguments have been assumed to denote properties, in the next section we consider what characteristic features contrastive topic noun phrases share with those argument types which have previously been assumed to denote properties.

4.2 The property-reading of contrastive topics

The argument types which have been argued in the literature to denote properties cannot be regarded as definite or partitive, that is, they cannot be interpreted as anaphoric expressions linked to some salient *object*.⁶⁴ This property is shared by non-referential contrastive topics as well, and by those which can have referential and non-referential interpretations as well. In the following sentence, for example, the object noun phrase does not necessarily identify a particular referent, as reading (a) shows:

- (31) [CT 'Két könyvet] `elolvastam.
 two book-ACC read-PAST-1SG
 a. 'As for two books, I did read that many.'
 b. 'As for two particular books, I did read them.'

(32) illustrates a similar case:

- (32) [CT 'Kevés könyvet] `Mari olvasott el.
 few book-ACC Mary read PERF
 'It was Mary who read FEW books.'

The above sentence does not mean that Mary is the person who read particular books which are few in number, but that Mary is the person of whom the property of having read few books holds. The fact that (32) cannot be continued the way shown in (33) proves this:

- (33) [CT 'Kevés könyvet]_i `Mari olvasott el. #Ezek_i nagyon tetszettek neki.
 few book-ACC Mary read PERF these very pleased her
 'It was Mary who read few books_i. She liked them_{*i} a lot.'

The following example illustrates that in certain cases there is no individual which the contrastive topic expression could identify, but the sentence is still well-formed:

- (34) [CT 'Kevés könyvet] `senki nem olvasott.
 few book-ACC nobody not read

⁶⁴ Although, as discussed in Chapter 2, they appear to be 'familiar' in some other sense of the word.

‘As for few books, nobody read that number of them.’

As discussed in Chapter 2, (34) would be uttered as an answer to a question like the following one, which presupposes that there is at least one individual in the context for which the property of being an individual sum of books with few atomic parts holds.

- (35) Ki olvasott `kevés könyvet?
 who read few book-ACC
 ‘Who read FEW books?’

In the case of (34), the above presupposition is cancelled, naturally. Note that the interpretation of the DP *kevés könyvet* ‘few book-ACC’ in (32) is markedly different from that of the same DP in examples like (36) below:

- (36) Mari [_F kevés könyvet] olvasott.
 Mary few book-ACC read
 ‘Mary read few books.’

Having argued that postulating a property-reading for contrastive topic DPs does not contradict the assumptions which property-denoting expressions have traditionally been associated with in the literature, we will show in the following section how the assignment of property-denotations to arguments influences the interpretation of the verbs they appear together with in the sentence.

4.3 The lexical representation of verbs with contrastive topic arguments

It was claimed above that the contrastive topic arguments of verbs denote properties of plural individuals. It was also demonstrated in previous chapters that there is no restriction on the syntactic category (bare nominal versus full DP) or thematic role of the argument of the verb which plays the contrastive topic role in the Hungarian sentence. In view of these considerations, I suggest that all verbs in the language can be analyzed as predicates over property denotations, which can correspond to any argument of a verb. From the fact that verbs can have several arguments, it follows that each verb in the language must be associated with several denotations, which should all be derivable from its basic denotation in terms of an n -place predicate — although the nature of the type-raising mechanisms which can generate the former from the latter will not be discussed. Thus, the meaning of transitive verbs in Hungarian will be analyzed in terms of the following formulae:

- (37) a. $\lambda y_e \lambda x_e \mathbf{verb}(x, y)$
 b. $\lambda P_{\langle e, t \rangle} \lambda x_e \exists y [\mathbf{verb}(y)(x) \wedge P(y)]$
 c. $\lambda y_e \lambda P_{\langle e, t \rangle} \exists x [\mathbf{verb}(y)(x) \wedge P(x)]$

The first two of the denotations above are more or less similar to those proposed for West Greenlandic by van Geenhoven (1996). Contrary to van Geenhoven, however, we will assume here that the individual variables stand for both atomic and plural individuals in the join semilattice corresponding to the denotation of the common noun.

Having discussed the proposed interpretations for contrastive topic DPs and predicates combining with these in Hungarian, in the next section we will investigate how the interpretation of sentences can be built up compositionally from these.

5 Deriving the narrow scope readings of contrastive topics compositionally

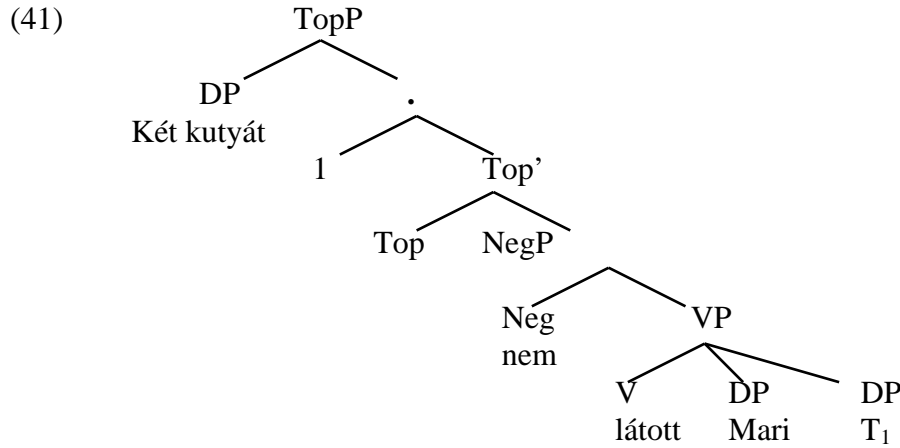
In this section we consider some examples which show how the apparent narrow scope reading of contrastive topic DPs falls out from the premises discussed above. The first example to be discussed is the one shown in (38), whose (a) reading could be represented in a traditional first-order form (which assumes that individual variables stand for atomic individuals only) shown in (39):

- (38) [CT Két kutyát] `nem látott Mari.
 two dog-ACCnot saw Mary
 a. ‘As for two dogs, Mary didn’t see that many.’
 b. ?‘As for two particular dogs, Mary didn’t see them.’

- (39) $\neg \exists x \exists y (\mathbf{dog}(x) \wedge \mathbf{dog}(y) \wedge x \neq y \wedge \mathbf{saw}(\mathbf{m}, x) \wedge \mathbf{saw}(\mathbf{m}, y))$

The syntactic structure of (38) is shown in (41) below, which makes use of the convention, used in Reinhart 1983, Rooth 1985, Cresti 1995 and Heim and Kratzer 1998, according to which the actual binder of the trace of a moved phrase is the index of the latter phrase, and which is defined in Cresti (1995:92) as follows:

- (40) *Movement Indices*: Structures of the form $XP_i \begin{array}{c} \diagup \quad \diagdown \\ \quad \quad \end{array} YP$ are rebracketed as $XP \begin{array}{c} \diagup \quad \diagdown \\ i \quad \quad \end{array} YP$,
 and $i \begin{array}{c} \diagup \quad \diagdown \\ \quad \quad \end{array} YP$ translates as $\lambda v_i \beta$, where β is the translation of YP , and v_i is the same variable that was chosen for the translation of t_i inside YP .



In (41) above, T_1 signals the trace of the moved constituent with a higher-order (property) denotation. Here are the denotations of some of the nodes of the syntactic tree:

- (42) a. $[[V]] = \lambda P_{\langle e, t \rangle} \lambda x_e \exists y_e [\text{**saw**}(x)(y) \wedge P(y)]$
 b. $[[VP]] = \exists y [\text{**saw**}(m, y) \wedge Q_i(y)]$
 c. $[[\text{NegP}]] = \neg \exists y [\text{**saw**}(m, y) \wedge Q_i(y)]$

(42a) represents the denotation of the verb whose object argument which denotes a property. (42b) represents the denotation of the VP resulting from the combination of the verb with its subject and object arguments (the latter given in terms of a second-order variable). (42c) shows the denotation of the negated VP, which, due to the fact that the Top head is not associated with any specific meaning component, corresponds to the denotation of the Top' projection as well. The denotation of the node dominating Top', generated on the basis of convention (40), labeled by '.' in the tree, can be given as follows:

(43) $\lambda Q_i \neg \exists y [\text{**saw**}(m, y) \wedge Q_i(y)]$

The denotation of the contrastive topic noun phrase corresponds to the property in (44):

(44) $\lambda z_e \text{**two-dog**}(z)$

Combining (43) and (44) via function-argument application results in the formula corresponding to the denotation of the whole sentence, shown in (45).

(45) $\lambda Q_i \neg \exists y [\text{**saw**}(m, y) \wedge Q_i(y)] (\lambda z_e \text{**two-dog**}(z)) = \neg \exists y [\text{**saw**}(m, y) \wedge \text{**two-dog**}(y)]$

In view of the fact that the thematic relation between the type of event denoted by *saw* and its patient participant has the properties referred to by Krifka (1989:92) as *mapping to events* and *summativity*, the definitions of which are repeated here in (46) and (47), the truth-conditional equivalence of (45) and (39) can be explained as follows.

(46) Mapping to events
 $\forall R[\text{**MAP-E**}(R) \leftrightarrow \forall e \forall x \forall x' [R(e, x) \wedge x' \subseteq_O x \rightarrow \exists e' [e' \subseteq_E e \wedge R(e', x')]]]$

(47) Summativity
 $\forall R[\text{**SUM}**}(R) \leftrightarrow \forall e \forall e' \forall x \forall x' [R(e, x) \wedge R(e', x') \rightarrow R(e \cup_E e', x \cup_O x')]]]$

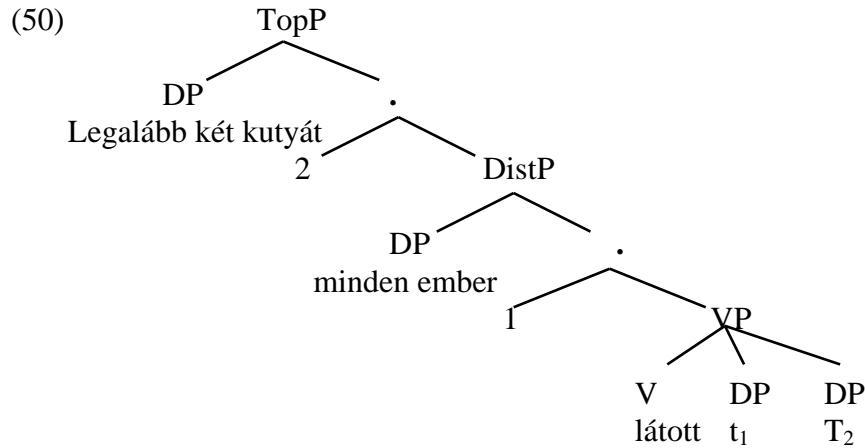
If there are no two atomic individuals in the denotation of *dog* which are patients of events of the type characterized by the predicate **saw** and with Mary as agent, then there can be no plural individual in the semilattice of dogs which plays the same role in a same type of event, and vica versa.

By the same procedure, and on the basis of the same assumptions, the narrow scope reading of the contrastive topic DP in the following sentence can also be explained:

- (48) [CT Legalább két kutyát] `minden ember látott.
 at least two dog-ACC every person saw
 'As for at least two dogs, everybody saw that many.'

(49) shows the first-order representation of the truth conditions of (48), and (50) represents the syntactic structure of the sentence:

- (49) $\forall x(\text{person}(x) \rightarrow \exists y \exists z(\text{dog}(y) \wedge \text{dog}(z) \wedge y \neq z \wedge \text{saw}(x, y) \wedge \text{saw}(x, z)))$



The denotation of the VP node can now be given in terms of the following formula:

- (51) $[[VP]] = \exists y [\text{saw}(z, y) \wedge Q_i(y)]$

(52a) shows the denotation of the node dominating the VP, generated according to convention (40), which, combined by means of function-argument application with the denotation of the universal noun phrase in (52b), results in the formula corresponding to the denotation of the DistP node represented in (52c):

- (52) a. $\lambda z \exists y [\text{saw}(z, y) \wedge Q_i(y)]$
 b. $\lambda P_{\langle e, t \rangle} \forall x [\text{person}(x) \rightarrow P(x)]$
 c. $\forall x [\text{person}(x) \rightarrow \exists y [\text{saw}(x, y) \wedge Q_i(y)]]$

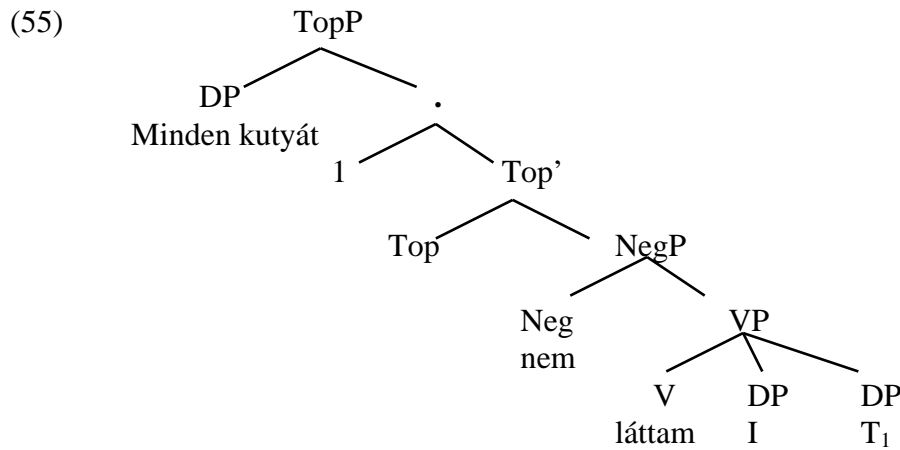
(53a) shows the denotation of the node dominating DistP, and (53b) that of the contrastive topic. (53c) indicates how we can arrive at the denotation of the whole sentence by combining these two denotations:

- (53) a. $\lambda Q_i \forall x [\text{person}(x) \rightarrow \exists y [\text{saw}(x, y) \wedge Q_i(y)]]$
 b. $\lambda x \text{ two-dog}(x)$
 c. $\forall x [\text{person}(x) \rightarrow \exists y [\text{saw}(x, y) \wedge \text{two-dog}(y)]]$

On the assumption that the relation between the event denoted by *saw* and its participant expressed by the contrastive topic satisfies the properties of mapping to events and summativity, the truth-conditional equivalence between (53c) and (49) follows.

In the next example to be discussed here, (54), the role of contrastive topic is played by a noun phrase which is normally taken to express universal quantification. (55) shows the syntactic structure associated with this sentence:

- (54) $[_{CT} \text{ 'Minden kutyát}] \quad \text{'nem láttam.}$
 every dog-ACC not saw-PAST-1SG
 'It is not the case that I saw EVERY dog.'



I propose that when such a universal DP appears as a contrastive topic, it can either denote an individual or a property, as other contrastive topics do. The denotation of the sentence, however, would be the same proposition on both interpretations. If the DP denotes an individual, it is the maximal individual in the semilattice corresponding to the denotation of the noun, as proposed by Maleczki (1995). This individual can directly combine with the property-denotation of the predicate, and thus the proposition corresponding to the meaning of the sentence is the following: the property of not being seen by me holds of the maximal individual in the denotation of *dog*. Naturally, the above proposition does not entail that there is no dog I have seen. This is what we expected.

Consider now the interpretation of the contrastive topic DP in terms of the property of being the maximal individual in the denotation of *dog*. (This is a property which is possessed by one individual only, the maximal individual in the semilattice corresponding to the noun denotation.) The above denotation is represented in (56a), while (56b) illustrates the denotation of NegP. The denotation of the TopP node of (55) is generated by means of function-argument application from the above two denotations, as indicated in (56c):

- (56) a. $[[\text{NegP}]] = [[\text{Top}']] = \neg \exists y [\text{saw}(I, y) \wedge Q_i(y)]$
 b. $[[\text{DP}]] = \lambda x \text{ max-dog}(x)$
 c. $\lambda Q_i \neg \exists y [\text{saw}(I, y) \wedge Q_i(y)] (\lambda x \text{ max-dog}(x)) = \neg \exists y [\text{saw}(I, y) \wedge \text{max-dog}(y)]$

(56c) could now be paraphrased as follows: there is no individual with the property of being the maximal individual in the denotation of *dog* which I saw.

Now we turn to sentences where the contrastive topic role is played by DPs which would be interpreted, in the generalized quantifier framework, as monotone decreasing or non-monotone quantifiers, and which are not normally assumed to introduce a discourse referent, illustrated by (57) and (58) below:

- (57) [CT *Pontosan két filmet*] [F *Péter*] látott.
 exactly two movie-ACC Peter saw
 ‘As for exactly TWO movies, it was Peter who saw that many.’

- (58) [CT *Kettőnél kevesebb könyvet*] [F *János*] olvasott.
 two-ADE fewer book-ACC John read
 ‘As for fewer than two books, it was John who read that many.’

(57) is a statement about the property of being an individual in the denotation of *movie* with exactly two atomic parts. The sentence expresses that Peter is the person who saw an entity with the above property. (58) is about the property of being an individual in the denotation of *book* with fewer than two atomic parts. It states that John is the person who read an entity with the above property. The sentence presupposes that the above property has been established as relevant in the context – by being set into contrast with properties expressed by, for example, *pontosan két könyvet* ‘exactly two book-ACC’ and *kettőnél több könyvet* ‘more than two book-ACC’. What is peculiar about (58), however, is that it can be true even if there is no book at all which John read. In this respect, this sentence is similar to (59) below:

- (59) [T *János*] [F *kettőnél kevesebb könyvet*] olvasott.
 John two-ADE fewer book-ACC read
 ‘The number of books John read is fewer than two.’

According to Szabolcsi (1997b), the DP *kettőnél kevesebb könyvet* in (59) would express how many (singular) individuals there are in the predicate denotation. There is one particular aspect, however, in which (58) differs from (59), however. In the case of (58), as discussed more thoroughly in Chapter 2, it is presupposed that properties of plural individuals in the denotation of *book* are considered. In the particular case, these properties are related to how many atomic parts particular members of the noun denotation have. (The above presupposition follows from the stress pattern of the contrastive topic. If the main stress of the constituent fell on the noun then the sentence would presuppose that properties of plural individual with fewer than two atomic parts in the denotation of *book* and in other structured sets which can be considered alternatives of the latter, e.g., those containing the elements in the denotation of *newspaper*, are considered.) This means that even if John did not read anything, by uttering (58) the speaker would assume that whatever John read is considered a book in some sense, since it is contrasted with other objects in the denotation of *book*. In other words, in a context where properties of books are considered, the empty set (more precisely, the zero element in the lattice) would also count as being in the denotation of *book*.

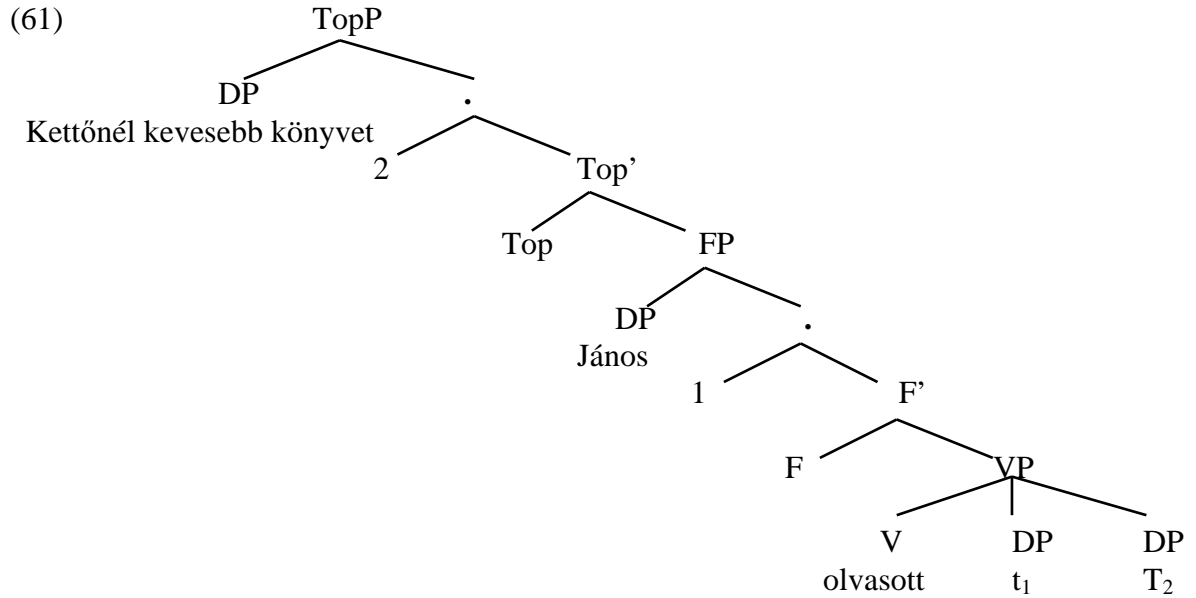
On the basis of the above considerations, we propose to define the property expressed by the DP *kettőnél kevesebb könyvet* ‘fewer than two book-ACC’, abbreviated in (60a) below, as the property of being an individual in the denotation of *book* with fewer than two atomic

parts, or being an individual with the above number of atomic parts which is considered a book in the context, shown in (60b). In this formula, **ATP** denotes a relation between atomic parts of a plural individual and the individual itself, adopted from Krifka (1989):

- (60) a. $[[[_{CT} \text{'Kettónél kevesebb könyvet}]]] = \lambda x \text{ fewer-than-two-book}(x)$
 b. $\lambda x \text{ fewer-than-two-book}(x) =_{\text{def}} \lambda x ((\mathbf{C}(\text{book})(x) \wedge \neg \text{book}(x)) \vee (\text{book}(x) \wedge \neg |\{y \mid \mathbf{ATP}(y, x)\}| \geq 2 \wedge \neg \exists y [\text{book}(y) \wedge x \subseteq_{OY} \wedge |\{z \mid \mathbf{ATP}(z, y)\}| \geq 2]))$

In (60b) above, $\mathbf{C}(\text{book})(x)$ denotes the individuals in the context which are assumed to be books. The property defined in (60b) relates to the generalized quantifier interpretation of the DP in the following way: it is the property of being the individual sum of a witness set of the generalized quantifier corresponding to the DP denotation or that of being a zero element.

On the basis of (60a,b), the truth-conditions of (59) can be derived as follows. (61) shows the syntactic structure associated with (59). The assumed denotations of some of the nodes are illustrated in (62):



- (62) a. $[[VP]] = \exists y [\text{read}(x, y) \wedge Q_i(y)]$
 b. $[[FP]] = \forall x [\exists y [\text{read}(x, y) \wedge Q_i(y)] \rightarrow x = j]$

(62a) shows the denotation of the VP, which is constructed in the same way as the denotations of VPs in earlier examples. The denotation of the FP is represented in (62b), which reflects the key feature of the interpretation of the focus in Hungarian, namely, that it expresses exhaustive listing. (63) illustrates how the denotation of the contrastive topic, given in (58b), can be combined with that of the rest of the sentence by means of function-argument application:

- (63) $\lambda Q_i \forall x [\exists y [\text{read}(x, y) \wedge Q_i(y)] \rightarrow x = j] (\lambda x [\mathbf{C}(\text{book})(x) \wedge \neg |\{z \mid \mathbf{ATP}(z, x)\}| \geq 2 \wedge \neg \exists z [\mathbf{C}(\text{book})(z) \wedge y \subseteq_{OZ}]] = \forall x [\exists y [\text{read}(x, y) \wedge \mathbf{C}(\text{book})(y) \wedge \neg |\{z \mid \mathbf{ATP}(z, y)\}| \geq 2 \wedge \neg \exists z [\mathbf{C}(\text{book})(z) \wedge y \subseteq_{OZ}]] \rightarrow x = j]$

The above formula thus expresses that any individual for which there is an object which is considered a book in the context with fewer than two atomic parts which does not form an

individual part of an object of the same type such that the individual read the object is identical to John. Note that on the above construal of the denotation of the contrastive topic DP, the existential quantifier in (63) does not lead to incorrect truth-conditions, since it is assumed that the proposition **read**(*j*, *y*) cannot be false for any individual which is considered to be a book in the context, including the zero element of the lattice corresponding to the denotation of *book*.

The last example to be discussed here, shown in (64), is particularly interesting since here the property of plural individuals denoted by the contrastive topic expression cannot have any objects in the denotation of the noun in its extension:

- (64) [_{CT} 'Semelyik film'] [_F 'Jánosnak'] nem tetszett.
 none movie John-DAT not liked
 'It was John who didn't like ANY of the movies.'

We will propose below that the denotation of the above sentence is derived by means of functional application from the denotation of the contrastive topic and that of the FP. The FP denotation is shown in (65):

- (65) [[[_F Jánosnak] nem tetszett]] = $\lambda Q_i \forall x [\neg \exists y [\text{liked}'(x, y) \wedge Q_i(y)] \rightarrow x = j]$

The above formula means that among all individuals it is John for whom there is no entity with the Q_i property which he liked. Intuitively, sentence (64) above means that it is John for whom there is no entity with the property of being a movie which he liked. This means that the property denoted by the contrastive topic of (64) cannot be identical to the property of not being a movie, which would appear to be the interpretation of this DP in isolation. The apparent mismatch between the interpretation of the contrastive topic taken in isolation versus taken as part of the meaning of the sentence is due to the fact that Hungarian is a negative concord language. The DP *semelyik film* 'none of the movies' never appears without sentential negation, and thus it does no harm if it is interpreted as denoting the property of being a movie. If the negative quantifier of (64) is replaced by a so-called non-D(iscourse)-linked variant, which lacks reference to the context, the sentence is out, as illustrated in (66). This fact indicates that explicit reference to the context has to be built into denotation of the contrastive topic of (64).

- (66) * [_{CT} 'Sehány film'] [[_F 'Jánosnak'] nem tetszett.
 none movie John-DAT not liked
 * 'No movie, John liked.'

(67) shows the proposed denotation of the DP *semelyik film* 'none of the movies':

- (67) $\lambda v \exists z [\text{movie}(z) \wedge \mathbf{C}'(z) \wedge z = v]$

The predicate **C'** above picks out contextually relevant individuals. The next formula shows how the above property is combined with the denotation of the rest of the sentence:

$$\begin{aligned}
(68) \quad & \lambda Q_i \forall x [\neg \exists y [\text{liked}'(x, y) \wedge Q_i(y)] \rightarrow x = j] (\lambda v \exists z [\text{movie}(z) \wedge C(z) \wedge z = v]) = \\
& = \forall x [\neg \exists y [\text{liked}(x, y) \wedge \lambda v \exists z [\text{movie}(z) \wedge C(z) \wedge z = v](y)] \rightarrow x = j] = \\
& = \forall x [\neg \exists y [\text{liked}(x, y) \wedge \exists z [\text{movie}(z) \wedge C(z) \wedge z = y)]] \rightarrow x = j]
\end{aligned}$$

(68) expresses that any individual for which there is no entity which he liked and which has the property of being identical to any of the movies in the context is identical to John, which corresponds to the intuitive meaning of the sentence.

In this section we have shown how the narrow scope readings of argument DPs in contrastive topic can be successfully generated on the basis of the assumption that such DPs denote properties of plural individuals. In the next section, some of the weak points of the approach will be pointed out, which necessitate approaching the problem of assigning narrow scope to quantificational expressions from a different angle.

6 Weak points of the ‘contrastive topic as property’ approach

The approach to the narrow scope reading of Hungarian contrastive topics discussed above is built on the assumption that these constituents take narrow scope with respect to all operators following them in the sentence. The following examples show, however, that quantificational expressions in contrastive topic cannot be assumed to necessarily take narrow scope with respect to all operators following them in the sentence in Hungarian, and moreover, that they normally take wide scope with respect to the quantificational expressions following their associate.

The following sentences illustrate the possible scopal interactions between preverbal quantifiers (including the contrastive topic) and postverbal ones.

- (69) [CT ‘Legalábbhárom gyerek] `minden könyvet elolvasott kétszer.
at least three kid every book-ACC pfx-read twice
‘All books are such that at least three kids read them twice.’
#‘It happened twice that all books were read by at least three kids.’
#‘There are at least three kids who read every book twice.’

- (70) [CT ‘Két gyerek] `minden könyvet sokszor elolvasott.
two kid every book-ACC several times pfx-read
‘There are two (specific) kids who read every book many times.’
?‘Every book is such that it was read by two (possibly different) kids many times.’
‘It happened many times that two kids read every book.’

- (71) [CT ‘Két gyerek] `minden könyvet kétszer olvasott el.
two kid every book-ACC twice read pfx
‘There are two (specific) kids who read every book twice.’
?‘Every book is such that it was read by two (possibly different) kids twice.’
‘It happened twice that two kids read every book.’

(69) can only have a reading where the contrastive topic takes narrow scope with respect to the associate. (70) and (71) can also have readings where the contrastive topic denotes a particular plural individual. In none of the above cases is it possible, however, for a

postverbal quantifier to take wide scope over any of the preverbal quantifiers. The following sentence (a variant of which is suggested by Anna Szabolcsi, p.c.) shows, however, that the above situation is not totally impossible, either:

- (72) [CT 'Legalább két könyvet] [F 'Péter] mutatott meg mindenkinek.
 at least two book-ACC Peter showed pfx everybody-DAT
 'It was Peter for whom there were at least two books which he showed to everyone.'
 'It was Peter who showed at least two, possibly different, books to everyone.'
 # 'There are at least two books which were such that they were showed by Peter to everyone.'

A further problem of the approach discussed above is that although it can derive the two readings of (31), repeated here as (73), it cannot account for the differences in acceptability between this example and the one in (74), (32), repeated here as (75), or (76):

- (73) [CT 'Két könyvet] 'elolvastam.
 two book-ACC read-PAST-1SG
 a. 'As for two books, I did read that many.'
 b. 'As for two particular books, I did read them.'
- (74) *[CT 'Kevés könyvet] 'elolvastam.
 few book-ACC read-PAST-1SG
- (75) [CT 'Kevés könyvet] 'Mari olvasott el.
 few book-ACC Mary read PERF
 'It was Mary who read FEW books.'
- (76) [CT 'Kevés könyvet] 'el tudnék olvasni.
 few book-ACC Mary read PERF
 'It was Mary who read FEW books.'

Naturally, one could claim that the above contrasts do not belong to the domain of semantics, rather to that of syntax. It was shown in the previous chapters, however, that there is no principle of syntax which could account for the fact that (75) and (76) are well-formed, whereas (74) is not. Consequently, I believe that the above asymmetries have to be accounted for within semantics/pragmatics, in a way which will be illustrated in the next chapter.

7 Summary

In this chapter we intended to examine a property of contrastive topics which influences the truth-conditional meaning of sentences they appear in, namely the property that quantificational expressions playing this role can, and in most cases, must be interpreted as taking narrow scope with respect to other quantificational expressions in the sentence, primarily with respect to their associate.

We have reviewed several proposals intended to explain scope reversal effects in other languages. It turned out, however, that these approaches mainly concentrate on the interaction of a quantificational DP with negation, and their results cannot be extended to the interaction

of two quantificational expressions, or that their pragmatically-based mechanisms make wrong predictions for Hungarian.

A semantics-based solution was suggested in Alberti and Medve 2000 and É. Kiss 2000, according to which, non-individual-denoting contrastive topics should be interpreted as denoting properties, which appeared a promising way to explain narrow scope effects. We showed how the above assumption, coupled with the idea that verbs can be assigned multiple lexical representations can derive us the narrow scope readings of quantificational expressions in contrastive topic in a compositional way. In the last section of the chapter some problems with the approach were discussed, which, in my opinion, necessitate abandoning the theory in favor of a method which does not assign minimal scope to contrastive topic quantifiers and can account for apparent asymmetries regarding the well-formedness of the sentences concerned.

CHAPTER 4

CONTRASTIVE TOPICS IN FACTUAL STATEMENTS

1 Informal characterization of the data

In this chapter we investigate the interpretation of Hungarian sentences containing contrastive topics which express factual statements, i.e., which describe particular events, located at a particular time, or make a predication about the lack of such events. In this sentence type, the role of the associate is played by the finite verb, a negative particle preceding the verb, a quantificational expression in a preverbal quantifier position, a negative particle preceding the latter, an expression in the preverbal focus position, or a negative particle preceding the latter. In these sentences, the contrastive topic DPs as well as the other DPs will be assumed to denote participants of the event in question. (1) shows an illustrative example:

- (1) [CT *Öt gyerek*] *`enekelt.*
five child sang
'Five children DID sing.'⁶⁵

The above sentence states that an event of singing occurred which involved either a particular sum individual with the *child* property or a non-specific sum individual of the same type, which has five atomic parts. The sentence implicates that there is at least one alternative proposition⁶⁶ (predicating the occurrence of a singing event by another group of children, which involves a different number of them) which is neither entailed nor contradicted by the one described in the sentence. Since the occurrence of an event described in (1) on the non-specific reading entails the truth of propositions which state that an event of singing by any number of kids fewer than 5 occurred at the relevant time and place, the sentence in fact implicates that there is at least one number larger than five for which both the occurrence and non-occurrence of an event of singing by that number of children at the relevant time and place is compatible with the meaning of the sentence. The fact that for speakers of the language the above reading of (1) normally conveys that there was no singing by any number of children larger than five is the result of a Gricean implicature due to the operation of the Maxim of Quantity.

The negated counterpart of (1), shown in (2) below, denies that any event of singing by at least five children occurred at the relevant time and place⁶⁷.

⁶⁵ Bare numeral determiners are normally interpreted in an 'at least' sense in positions other than the focus, as opposed to those situated in the focus position, which are interpreted in the 'exactly' sense. When it does not lead to confusion we will leave out explicit reference to the two interpretations in the English glosses, since English bare numerals are also interpreted in an 'at least' sense most of the time.

⁶⁶ The mechanism of generating alternative propositions will be described below.

⁶⁷ (2) is not too likely to have a reading, paraphrased in (2b), where the occurrence of a particular event involving a specific plural individual is denied.

- (2) [CT 'Öt gyerek] `nem énekelt.
 five child not sang
 a. 'It is not the case that there were FIVE children who sang.'
 b. ?'There are five children who did not sing.'

Sentence (2) entails that no event of more than five children singing could have taken place either (at the same time and place), since the latter would entail that an event of five children singing took place. (The mechanisms of the above inference are discussed later.) The sentence implicates that the occurrence of singing events involving fewer than five participants or the lack of these is both compatible with the meaning of the sentence. (3) illustrates a further example of the sentence type under consideration:

- (3) [CT 'Öt gyerek] `minden könyvet elolvasott.
 five child every book-ACC pfx-read-PAST
 a. 'There are five kids who read every book.'
 b. 'Every book is such that it was read by FIVE kids (though not necessarily the same one for every book).'

The above sentence can express that there was an event of reading in which five (specific or non-specific) children read all contextually available books, or that there was a reading event in which all the contextually available books were involved, and each of them was read by five, possibly different children. The implicature associated with the first reading of the sentence essentially boils down to the following: there is at least one other set of children which read a different number of (i.e., not all) books. The implicature associated with the second reading is that there is at least one subset of the set of (relevant) books which was read by a different number of kids⁶⁸. The negated counterpart of (3), shown in (4), denies the occurrence of events described in (3a) or (3b). (Although, similarly to (2), the sentence is not normally used to deny the occurrence of an event involving five specific individuals.)

- (4) [CT 'Öt gyerek] `nem minden könyvet olvasott el.
 five child not every book-ACC read-PAST pfx
 a. 'It is not the case that every book was read by FIVE kids.'
 b. ?'There are five kids that did not read all books.'

The implicature associated with the a) reading of the sentence is that some different number of kids read all books.

Naturally, sentences with contrastive topics can not only contribute to the assertion that a particular event occurred when they contain a quantificational DP as a contrastive topic, but also when a different expression plays the same role, e.g., a non-quantificational DP, as in (5), a verb, as in (6), an adjective, as in (7), or an adverb of quantification, as in (8):

- (5) a. [CT 'Szőke lánnyal] `nem beszéltem.
 blond girl-INSTR not talked-1SG
 'I didn't talk to a BLOND girl.'
 b. [CT Szőke lánnyal] `nem beszéltem.

⁶⁸ The fact that 'a different number of kids' normally means a larger number of them here is the result of properties of the relation between the event denoted by *read* and its agent participant.

blond girl-INSTR not talked-1SG
 ‘I didn’t talk to a blond GIRL.’⁶⁹

- (6) [CT ‘Látni] `láttam Pétert, de [CT ‘beszélni] `nem beszéltem vele.
 see-INF saw-1SG Peter-ACC but talk-INF not talked-1SG him-INSTR
 ‘As for seeing Peter, I did see him, but I didn’t talk to him.’
- (7) [CT ‘Szépnek] `nem szép Sári.
 beautiful-DAT not beautiful Sarah
 ‘As regards beauty, Sarah is not beautiful.’
- (8) a. [CT ‘Háromszor] `láttam a filmet, de [CT ‘négyszer] `nem.
 three times saw-1SG the movie-ACC but four times not
 ‘I did see the movie three times, but I didn’t see it four times.’
- b. [CT ‘Mindig] `nem hívtam meg Marit ebédre.
 always not invited-1SG pfx Mary-ACC lunch-SUBL
 ‘I didn’t ALWAYS invite Mary for lunch.’

(5a) denies that an event of me talking to a blond girl took place (at the relevant time and place). Depending on whether the main stress on the verb is intended to signal verum focus or contrastive focus, the sentence can either implicate that the occurrence of a different event of me talking to a girl with a different property is neither entailed nor contradicted by the truth of the sentence, or that it is the occurrence of an event of a type which can be considered an alternative of talking to someone (e.g., seeing him, etc.) in which I acted as the agent, and a girl with a different property as the theme which is neither entailed nor contradicted by it. The truth-conditional meaning of (5b) is identical to that of (5a). Due to the different stress pattern of the contrastive topic constituent, however, the implicature associated with this sentence is different from that of (5a): it implicates that the occurrence of events of the type described in the sentence involving other blond individuals, e.g., boys, is neither entailed nor contradicted by the truth of the sentence.

The first clause of (6) states that an event of me seeing Peter took place, while the second clause denies that an event of me talking to him occurred. The first clause implicates that there is at least one proposition expressing that an event of a type which can be considered an alternative of an event of seeing someone (i.e., talking to him, inviting him for dinner, etc.) occurred at the relevant time and place in which the speaker was the agent and Peter the theme, and that the truth of this proposition is neither entailed nor contradicted by the truth of the proposition expressed by the original clause. The above implicature is thus not in contradiction with the meaning of the second clause, which ensures the coherence of the whole sentence.

Sentence (7) denies the occurrence of a state of Sarah’s being beautiful. It implicates that there is at least one proposition which states the occurrence of a state which can be

⁶⁹ Note that although in these examples only the adjective or only the noun are contrasted, respectively, which is made explicit by the intonation pattern, in accordance with considerations in Chapter 2, the whole maximal projection containing the constituent with the contrastive intonation will be assumed to constitute the contrastive topic.

considered an alternative to the state of being beautiful (e.g., the state of being clever) which is neither entailed nor contradicted by the truth of the original proposition.⁷⁰

The first clause of (8a) expresses that three events of the same type, namely, events of me seeing the particular movie in question, occurred. The clause implicates that there is at least one proposition stating that the same event occurred a different number of times which is neither entailed nor contradicted by the meaning of the first clause. The truth-conditional meaning of the second clause, stating that no four events of the same type occurred, is thus compatible with the above implicature, which ensures the coherence of the complex sentence.

(8b) denies the occurrence of a complex event of me inviting Mary for lunch at all times relevant in the context (e.g., times when I cooked dinner myself, or when I had dinner at a particular restaurant, etc.). It implicates, however, that there is at least one proposition stating that I invited Mary for dinner in a different number of cases, or in a different proportion of relevant cases.

The following example illustrates a case where the contrastive topic is followed by a focused expression as associate.

- (9) [CT *Öt gyerek*] [F *a `zongorát*] *emelte fel.*
 five child the piano-ACC lifted pfx
 a. ‘As for five specific children, it was the piano that they lifted
 collectively/individually.’
 b. ‘It was the piano that was lifted by FIVE children collectively/individually.’

On one of its readings, (9) above means that as regards five specific children, it is the piano, among the contextually relevant things, which was lifted by them, either individually or collectively. This reading implicates that there is at least one alternative proposition which is not entailed and not contradicted by the meaning of the sentence, where alternative propositions express that a different plural individual, which consists of a different number of atomic parts than five lifted the same or a different object. On the other reading, the sentence expresses that it is the piano among the contextually available things which was lifted by five (non-specific) children either individually or collectively, and it implicates that there is at least one proposition expressing that some other thing was lifted by a different number of children which is not entailed and not contradicted by the meaning of the sentence. (Although the plural individual which performed the other lifting(s) and the one denoted by the contrastive topic in (9) may have common atomic parts, i.e., one person may participate in two lifting events.) Both readings presuppose, due to the presence of the focus, that there was one individual of the type denoted by the focus for which the focus frame holds, i.e., that there was one entity which played the patient role in an event of lifting by five children.

The following sentence, due to the lack of ambiguity of the contrastive topic expression, is unambiguous:

⁷⁰ It is pointed out by László Kálmán (p.c.) that alternatives of the denotation of *beautiful* should be positive qualities, since, for example, (7) could not be continued by the following:

- (i) De [CT *gonosznak*] *`gonosz.*
 but evil-DAT evil.
 ‘But as far as being evil, she is evil.’

- (10) [CT Az 'összes gyerek] [F a `zongorát] emelte fel.
 the all child the piano-ACC lifted pfx
 'It was the piano which was lifted by ALL children individually.'

(10) states that among the contextually available things, it is the piano which was lifted by all children individually, and it implicates that there is at least one proposition expressing that a different thing was lifted by a different number (i.e., not the total number) of children which is neither entailed nor contradicted by the meaning of the sentence. Here it becomes particularly clear that the event described by the sentence and the alternative events must share participants.

If the focus denotes a property instead of an individual, as in (11), the sentence expresses the identification of this property with the (contextually) unique property for which the denotation of the focus frame (which is identical in the present case to being a theme of a seeing event whose agent is the total number of children) holds:

- (11) [CT Az 'összes gyerek] [F `zongorát] látott.
 the all child piano-ACC saw
 'I was a piano that all children saw.'

The sentence implicates that there is at least one alternative proposition which ascribes to a different number of children the property of having seen an individual which belongs to a category which could be considered an alternative to the denotation of *piano*, which is neither entailed nor contradicted by the truth of the sentence.

Having described informally what we mean by the reading of sentences containing contrastive topics which express factual statements, we will now consider specific aspects of their semantics. For the most part, we will restrict our attention to sentences where the contrastive topic role is played by a quantificational DP or an adverb of quantification. The reason for this is that the placement of a constituent other than a quantificational expression into the contrastive topic position does not influence the truth-conditions of the sentence, it only contributes to the implicatures (i.e., it introduces an implicature of contrast). As opposed to this, two sentences which only differ in that in one of them a quantificational expression is situated in the contrastive topic position, while in the other the same expression is sitting in some other position, can differ in interpretability as well as in their truth conditions, as illustrated by the pairs of sentences in (12) and (13) below, respectively:

- (12)a. #[CT Minden diák] `elkéssett az óráról.
 few student pfx-was late the class-ABL
 # 'As for all students, there WERE late from class.'
- b. Minden diák elkéssett az óráról.
 every student pfx-was late the class-ABL
 'All students were late from class.'

- (13)a. [CT Legalább egy diák] [F `sok könyvet] olvasott el.
 at least one student many book-ACC read pfx
 ‘There are many books which were read by at least ONE student.’
 # ‘There is at least one student who read many books.’
- b. [Q Legalább egy diák] [F `sok könyvet] olvasott el.
 at least one student many book-ACC read pfx
 ‘There is at least one student who read many books.’

In (12a), the DP *minden diák* ‘all students’ is situated in the contrastive topic position, and the sentence is unacceptable. Its variant in (12b), where the same DP occupies a different preverbal position (the so-called Quantifier position), and is not pronounced with a rising intonation, is well-formed and interpretable. (13a), where the DP *legalább egy diák* ‘at least one student’ is situated in the contrastive topic position, has the only interpretation according to which there are several books each of which were read by at least one student. In contrast, (13b), where the same DP occupies a preverbal quantifier position, means that there is at least one student who read many books. Thus, in a situation where all students read at most one book, (13a) can be true but (13b) cannot.

The narrow scope reading of the contrastive topic in (13a) as opposed to the wide scope reading of the same expression in a different position is an illustration of the phenomenon discussed in Chapter 3, that contrastive topic DPs tend to have a narrow scope reading (in certain cases in addition to a wide-scope reading) with respect to their associate. It was argued there, however, that accounts on the preferred narrow scope interpretation for quantifiers in contrastive topic which are based on entirely pragmatic principles or on the assumption that the contrastive topic is an expression which is moved from a postverbal position but keeps its original scope properties cannot account for the range of phenomena under consideration. In this chapter, thus, a semantic account will be proposed.

I believe that the data presented at the end of the previous chapter lead to the following generalizations. The question of the possible scopal interactions between the quantifiers playing the roles of the contrastive topic and that of the associate has to be distinguished from the question of the scopal interactions between these latter constituents and postverbal quantifiers. Our central hypothesis, which the rest of the chapter is intended to prove, is that the issue of how contrastive topics and associates interact scopally is completely determinable on the basis of their syntactic position, lexical properties and the implicature introduced by the contrastive topic. This situation thus contrasts with the predictability of scopal relations between the contrastive topic and quantificational expressions following the associate, which do not always follow from the syntactic or semantic properties of the latter expression, as the above data showed. Since we believe that scopal relations of the latter type cannot influence the scopal relation between the contrastive topic and its associate, we will ignore them in the rest of the chapter.

I believe that in addition to specifying their scopal properties, the specification of the truth-conditional meaning of sentences with contrastive topic DPs cannot be complete without characterizing whether these DPs can contribute to collective or distributive interpretations of the particular sentence. In section 2 it will be shown that contrastive topic DPs cannot always receive those collective interpretations which would otherwise be available for them in a different syntactic position. I believe that the collective versus distributive interpretations of DPs and their relative scopes are the two central phenomena which determine the structure of

the event described by a particular sentence. For this reason, in the rest of this chapter an approach will be developed on the basis of the proposal by Landman (1996) which determines for each sentence the structure of the event described by it (e.g., how many immediate subevents it has, and whether they are atomic or are further dividable into subevents). In section 2, we investigate previous approaches to capturing collectivity/distributivity. In section 3, we give an overview of Landman's (1995) integrated approach to collectivity/distributivity and scope phenomena, and compare his analysis against Hungarian data. In section 4 a different theory of event semantics, the one by Krifka (1989) will be analyzed from the perspective of the relevant Hungarian data. Section 5 will present my proposal for compositionally generating the semantic interpretation of Hungarian sentences containing a contrastive topic on the basis of the insights of Landman (1996) and Krifka (1989). Section 6 will show how the present approach can account for uninterpretable sentences. Section 7 discusses the interpretation of sentences which have an adverb of quantification in contrastive topic.

2 Distributive versus collective interpretations

2.1 Some data

The following sentences show that the fact that a particular plural DPs is situated in the contrastive topic position can influence greatly whether the sentence receives a collective or distributive interpretation. Thus, an account of the meaning of sentences with contrastive topics must include an explanation for the availability of one of the readings or the other. Note that excluding the temporal adverb, the sentences in (14) and (15) are identical. The temporal adverb is only added in (14) show the difference between the two possible interpretations of the sentence.

- (14) [CT 'Öt gyerek] `felemelte a zongorát tegnap ötkor.
 five child pfx-lifted the piano-ACC yesterday five-AT
 a. #‘There WAS an event of FIVE children lifting the piano collectively at five o'clock yesterday.’⁷¹
 b. ‘There WAS an event of FIVE children lifting the piano individually at five o'clock yesterday.’
 c. ‘There WAS an event of five specific children lifting the piano individually/collectively at five o'clock yesterday.’

⁷¹ Note that here I have in mind the reading according to which at the relevant time and place there was a collective lifting and there was no other lifting of the piano by a different group of participants which was expected to take place. For example, in the context of a competition between groups, where the groups are identified by the number of their participants, the collective reading would be possible to express that only the group consisting of five children was capable of lifting the piano.

- (15) [CT Öt gyerek] (volt, hogy) felemelte a zongorát.
 five child was that pfx-lifted the piano-ACC
 a. ‘There WAS an event of FIVE children lifting the piano collectively (at one time or another).’
 b. ‘There WAS an event of FIVE children lifting the piano individually (at one time or another).’
 c. ‘There WAS an event of five specific children lifting the piano individually/collectively (at one time or another).’

The glosses show that when (14) is used to describe an event which takes place at a particular time, and the DP *öt gyerek* ‘five children’ does not receive a specific reading, the sentence can only be interpreted distributively, i.e., to describe a plural event which consists of atomic events of lifting the piano by one child. When the same sentence is used to express the fact that a similar type of event has already occurred, as shown in (15), however, both the collective and the distributive readings become possible. (16) shows, however, that all the three potential readings of (14) can be expressed by a sentence where the plural DP is not situated in the contrastive topic position, but in ordinary topic position.

- (16) [T Öt gyerek] felemelte a zongorát tegnap ötkor.
 five child lifted the piano-ACC yesterday five-AT
 a. ‘There was an event of five children lifting the piano collectively at five o’clock yesterday.’
 b. ‘There was an event of five children lifting the piano individually at five o’clock yesterday.’
 c. There was an event of five specific children lifting the piano collectively/individually at five o’clock yesterday.

A comparison between (14) and (16) shows that since the same kinds of events can be described by (16) as by (14), and even more, there must be a specific reason which justifies using (14) in a given situation instead of (16). This reason is that (14) is capable of introducing the special implicature characteristic of contrastive topics while (16) cannot. Before providing an explanation of how the availability of readings for (14) can depend on the contrastive topic implicature, we will give a short overview about the essence of the distributive/collective distinction, followed by an summary of the claims of various previous approaches to its semantics, and my proposal for a formal procedure which generates the truth-conditional meaning of sentences containing a contrastive topics.

2.2 Collective and distributive readings: the essence of the distinction

In the literature, the terms ‘collective’ and ‘distributive’ have been used to characterize the interpretation of both plural DPs and of sentences.⁷²

The *collective* reading of a noun phrase means that the individual which serves as the denotation of the noun phrase is assumed to act as one unit in the event described by the sentence. First consider (16) above. This sentence can describe an event in which five kids

⁷² Naturally, if there are more DPs in the sentence which can have both distributive and collective interpretations, not all possible interpretations of the sentence can be classified as either distributive or collective.

acted jointly, due to which the table became lifted, which corresponds to reading a). This reading does not necessarily entail that each of the five kids actively took part in the lifting (some may have only coordinated the procedure), but it requires that they acted as a unit. The second interpretation, on which the DP receives what is normally referred to as the *distributive reading*, requires that each of the five kids lifted the table by themselves. In other words, the a) reading of the sentence describes an atomic event of lifting, while the b) reading describes a complex event which consists of at least five subevents of lifting.

Besides collective and distributive interpretations of sentence, there is a third reading which is often distinguished by the latter two, and which is referred to by Scha 1981 as the *cumulative reading*. A cumulative interpretation surfaces most naturally in sentences which are intended to describe a relation between two sum individuals, or an event involving these as participants, as shown in (17). For this example, we do not only provide its literal translation into English but also the characterization of some types of events which it could be used to describe.

- (17) Két gyerek [F`öt asztalt] emelt fel.
 two kid five table-ACC lifted pfx
 ‘Two kids lifted exactly five tables.’
 a. ‘There are two kids, each of whom took part in lifting tables, and five tables which were lifted by kids.’ (cumulative interpretation)
 b. ‘There are two kids who took part in events, either individually or as a group, of lifting five tables, either together, or one after the other.’

The cumulative reading of (17) is thus compatible with a situation in which one kid lifted one table, while the other lifted the other four tables.

As (14) above illustrates, contrastive topics in particular sentences are only allowed to receive a distributive reading but not a collective one. This means that the sum individual denoted by the contrastive topic cannot be assumed to participate jointly in the event described by the sentence. Instead, the event must be assumed to be divided into as many parts as there are atomic parts of the contrastive topic denotation, and each of the atomic individuals must play the same role in its respective subevent.

In view of examples like (14), I believe that the semantics needs to be able to predict for each sentence whether the collective or the distributive interpretation is available for each of its DPs. I thus disagree with Kálmán (2002), according to whom it cannot be taken for granted that those sentences which can be interpreted both as distributive and collective predications are in fact ambiguous. He claims that the meanings of the above sentences should be regarded as underspecified as to whether cooperation or individual properties are responsible for making the sentence true.

In the next subsection we consider some previous approaches to the collective/distributive distinction, each of which take different positions as to where (i.e., within the semantics of DPs, that of predicates, etc.) the distinction needs to be accounted for.

2.3 Previous approaches to the collective/distributive distinction

In this section we will provide an overview of some previous approaches to explaining the differences between collective and distributive readings of sentences and the sources of these differences.

The first theory to be discussed is the one by Scha (1981), in which the source of the difference between distributive and collective readings is located in the determiners, in view of the fact that there exist so called “mixed verbs” (Link’s terminology) like *lift*, *bring*, *carry*, *give*, *take*, *own*, etc., whose subjects sometimes appear to be distributive and sometimes collective. (18) below illustrates some relevant data:

- (18) a. Four women brought a salad to the potluck.
 b. Every woman brought a salad to the potluck.
 c. The women brought a salad to the potluck.

While (18a) appears to be ambiguous with respect to the distributive/collective distinction, (18b) only has a distributive reading, and (18c) is strongly biased towards a collective (group) reading. Based on the above and similar data, Scha proposes the following classification of determiners into two classes. Members of the first class are assumed to force a distributive reading on a sentence while those in the second class force a collective one:

(19) Scha’s (1981) classification of determiners

Distributive	Collective
each	
every	
a	
both	
∅	∅
all	all
some _{sing/pl}	some _{pl}
no _{sing/pl}	no _{pl}
2,3,4	2,3,4
the _{sing}	the _{pl}

Roberts (1987), however, criticizes the above classification on the grounds that it does not account for certain empirical data. She illustrates her claim with the following example:

- (20) Every woman brought a dish to the putluck.
 The hostess asked those from Acton to bring a casserole.
 The women from Boxborough brought a salad, and those from Littleton a dessert.

Roberts (1987) claims that the underlined sentence is interpreted distributively in the present context, which Scha’s theory does not account for, since it presents plural *the* as unambiguously collective. Roberts accepts that there are data, including (18c) above which support Scha’s classification of plural *the* as collective, but, according to her, Scha’s approach would entail that the distributive reading of the particular sentence in (20) is to be attributed to meaning postulates on predicates. In view of the compulsory collective reading of (18c)

above, it would lead to the assumption that meaning postulates are incoherent. The other option to account for the problematic case would be to claim that the verbs themselves are ambiguous, having both a collective and distributive reading. This, however, would not explain the markedness of the distributive reading in (18c).

Link (1983) takes a different approach, since he proposes to build the collective/distributive distinction into the lexical semantics of predicates. He identifies a subset of distributive predicates which admit only atoms in their extension, which includes, among others, common nouns and intransitive verbs like *die*, for example. According to Link, the contrast between the valid and invalid inferences in (21) vs. (22) is to be attributed to the distinction between distributive and non-distributive predicates:

(21) John, Paul, George, and Ringo are pop stars.
Paul is a pop star.

(22) Tom and Dick carried the piano upstairs.
Tom carried the piano upstairs.

Roberts (1987) argues that the above distinction between distributive and non-distributive predicates is unnecessary because it is redundant (the fact that a particular lexical item is a group predicate or a distributive predicate follows from the sense of the predicate, and thus it does not need to be specified independently), and it fails to capture important generalizations about the nature of distributivity (p. 6), for example, it cannot account for the ambiguity in the following examples:

(23)a. The crowds dispersed.
b. The species were numerous.

According to Roberts, Link's approach seems to be problematic in view of the fact that predicates are sometimes not composed of single lexical items, and thus there would be no place to locate the fact in the lexicon that *make a good team* or *win a relay race* are obligatorily given group interpretations while *win a 100 yard dash* needs to receive a distributive reading.

In view of the above problems, Roberts (1987) argues that the source of the collective/distributive distinction should be located in the meaning of noun phrases. She distinguishes between two kinds of NPs, which she calls *quantificational* vs. *individual-denoting*. In quantificational NPs, the determiner provides the quantificational force underlying distributivity, which means that the sentences containing (only) these NPs are obligatorily assigned distributive readings. Individual-denoting NPs have a subset of *group denoting* NPs, which is constituted by NPs with denotations which only include nonatomic elements (i-sums) from the lattice-structured domain. The set of individual denoting NPs includes proper names and pronouns, as well as NPs with indefinite and definite determiners. The list of determiners characterizing individual denoting versus quantificational NPs is shown below:

(24) **Roberts' classification of determiners**

Individual denoting	Quantificational
a	each
some _{sg/pl}	every
1,2,3...	no _{sg/pl}
the _{sg/pl}	most
this, that	few
these, those	many
	both
	neither

While quantificational NPs always force a distributive reading on the sentence (provided the sentence contains only one NP), individual denoting NPs do not necessarily force it to have a group reading, only when there is no implicit or explicit adverbial operator, the latter is exemplified by the “floated quantifier” *each* in (25) (Roberts' example (4)), which could provide the quantificational force underlying distributivity:

(25) Bill, Pete, Hank, and Dan each lifted a piano.

Having provided a brief overview of some approaches to incorporating the source of the distributive/collective distinction into the semantics, we consider below whether the proposals above could be used to characterize the same distinction in Hungarian.

The most problematic aspect of the above theories seems to be that they do not consider the interpretations of sentences with more than one quantificational DP. As the following examples show, the lexical characteristics of determiners as regards preference for group versus distributive readings (if they have any) can significantly be altered if they appear in the same sentence together with another DP.

(26) Két fiú minden lányt meghívott.⁷³
two boy every girl-ACC pfx-invited
'Two boys invited every girl.'

(27) Minden lányt két fiú meghívott.
every girl-ACC two boy pfx-invited
'Each girl was invited by two boys.'

Sentence (26) is compatible with an interpretation according to which the two boys invited all of the girls as a group, i.e., the universal DP does not need to receive a distributive interpretation. Sentence (27), however, is only compatible with a reading where the same DP receives a distributive interpretation. These data show that classifying determiners according to their ability to participate in distributive or collective readings, as done in Scha (1981) and Roberts (1987), would not be able to deliver us the possible readings of particular sentences.

In Roberts' theory, the determiner *few* is assumed to force a distributive reading on a sentence. The same property does not carry over to its Hungarian counterpart, *kevés*, as the following examples show:

⁷³ This type of example was brought to my attention by Márta Maleczki.

- (28) Pista kevés lányt hívott meg.
 Steve few girl-ACC invited pfx
 ‘Steve invited few girls.’
- (29) [_{CT} ‘Kevés lányt’] [_F Pista] hívott meg.
 few girl-ACC Steve invited pfx
 ‘It was Steve who invited FEW girls.’

Having described some of the most significant contributions to the semantics of collectivity/distributivity and some of the problems which the application of these theories to Hungarian would run into, we turn to the theory by Landman (1996), which proposes a unified approach to the meaning of sentences as event descriptions in which the scopes of (multiple) DPs and their collective/distributive interpretations are equally taken into consideration.

3 A unified approach to scope and collectivity/distributivity: Landman (1996)

3.1 Overview

Landman (1996) assumes that sentences are event descriptions. Verbs denote event types, and DPs denote participants of the events concerned. A plural DP can either denote a sum of atomic individuals or a group (cf. Link 1984). Landman makes a distinction between singular and plural events. Singular events are those which have atomic individuals or groups as participants, and thus cannot be divided into subevents of the same type. The case in which a group acts as a participant in an event corresponds to what is traditionally referred to as a collective reading of a DP. Participants of an event are assumed to play thematic roles in it, the list of available thematic roles is specified in the lexical representation of the verb.

Plural events are sums of singular events. The participants of plural events are individual sums. These participants do not play thematic roles in the plural event (only singular events have participants playing thematic roles), they instead play non-thematic, *plural roles* in it. The reason why Landman makes a distinction between thematic roles and plural roles is that in the case of plural events (which correspond to the distributive reading of sentences according to the traditional terminology), the inferences which are normally associated with a particular thematic role do not hold, and thus there cannot be any semantic content to the notion of *agent*, *theme*, etc., at all (p. 431). In a plural event, the role of *plural agent*, *plural theme*, etc., is played by the sum of agents, themes, etc., of the singular event-parts of the plural event. Landman’s definition of plural roles (1996:439) is repeated below:

(30) **Plural roles:**

Let R be a role.

$*R$, the plural role based on R , is defined by:

$$*R(e) = \sqcup \{R(e') : e' \in AT(e)\}$$

if for every $e' \in AT(e)$: $R(e')$ is defined; otherwise undefined.

(30) thus means that each event which assigns a particular plural role has atomic subevents which assign a corresponding thematic role, and the individuals playing a particular plural role in an event are the sums of individuals playing the corresponding thematic roles in the subevents.

The above approach to the meaning of sentences is based on denotations assigned to lexical items in the following way. Verbs are assumed to denote functions that take n arguments into a set of events. The theory associates with each verb a verbal predicate constant of type $\text{pow}(e)$. The basic interpretation of the verb is unmarked for semantic plurality, but since for any predicate P the singular form P is a subset of the plural form $*P$, Landman considers the plural form as the unmarked form. In (31), the denotations of two verbs are presented in the above system (Landman 1996: 440):

- (31) a. $walk \rightarrow \lambda x. \{e \in *WALK : *Ag(e) = x\}$
 b. $kiss \rightarrow \lambda y \lambda x. \{e \in *KISS : *Ag(e) = x \wedge *Th(e) = y\}$

For example, (31b) means that the denotation of *kiss* is a function that maps an object and a subject onto the set of (sums of) kissing events with that subject as plural agent and that object as plural theme.

As for noun phrases, the theory treats non-quantificational noun phrases differently from quantificational noun phrases. Landman assumes that non-quantificational noun phrases, i.e., proper names, definites and indefinites, can shift their interpretation from plural to group interpretations. The following example illustrates the phenomenon:

- (32) *three boys* $\rightarrow \lambda P. \exists x \in *BOY : |x| = 3 \wedge P(x)$ (sum)
 The set of properties that a sum of three boys has.
 $\rightarrow \lambda P. \exists x \in *BOY : |x| = 3 \wedge P(\uparrow(x))$ (group)
 The set of properties that a group of these boys has.

Quantificational DPs are assumed in Landman (1996) to receive their standard interpretations, two of which are illustrated in (33):

- (33) *every girl* $\rightarrow \lambda P. \forall x \in GIRL : P(x)$
no girl $\rightarrow \lambda P. \neg \exists x \in GIRL : P(x)$

In Landman's theory, arguments are associated with verbs by means of functional application, which is accompanied by a type-shifting mechanism to handle cases where the type of the verb and that of the noun phrase do not match. Landman refers to the above procedure as *in-situ application*. After in-situ application but before quantifying-in, the mechanism of existential closure takes place.

The theory uses Cooper-storage (Cooper 1983) as its scope mechanism. Quantificational NPs are stored obligatorily, for non-quantificational NPs, storage is optional. Storage takes place according to the following rule (Landman 1996: 443):

- (34) STORE_n
 Let α be an NP meaning and S the quantifier store:
 $\text{STORE}_n(\langle \alpha, S \rangle) = \langle X_n, S \cup \{ \langle n, \alpha \rangle \} \rangle$

As a result of the above procedure, the meaning of α is stored, in-situ application will use a variable, i.e., X_n instead. The rule of quantifying-in which is assumed by Landman (1996) is referred to by him as *scopal quantifying in*, and defined as in (35), where $\text{APPLY}[a, b]$ denotes the operation of applying the function b to argument a :

- (35) **Scopal quantifying in:**
 $\text{SQI}_n(\langle \varphi, S \rangle) = \langle \text{APPLY}[\alpha, \lambda x. \forall x_n \in \text{AT}(x) \varphi], S - \{ \langle n, \alpha \rangle \} \rangle$

The above rule of quantifying-in forms the property $\lambda x. \forall x_n \in \text{AT}(x): \varphi$, “the property that you have if all your atomic parts have φ ”, and assigns it to α .

Landman claims that sentences with two DPs, like that illustrated in (36), have eight primary readings.

- (36) Three boys invited four girls.

Below we provide short characterizations of the above eight readings, and the mechanism by which they are associated with sentences like (36), according to Landman (1996: 445–451).

1. Cs–Co: the double collective reading – group subject and group object in-situ
 Description: There is an event of a group of three boys inviting a group four girls.
 Derivation:
 $\text{Invite} \rightarrow \lambda y \lambda x. \{ e \in * \text{INVITE}: * \text{Ag}(e) = x \wedge * \text{Th}(e) = y \}$
 $\text{Three boys} \rightarrow \lambda P. \exists x \in * \text{BOY}: |x| = 3 \wedge P(\uparrow(x))$
 $\text{Four girls} \rightarrow \lambda P. \exists y \in * \text{GIRL}: |y| = 4 \wedge P(\uparrow(y))$

The denotation of *four girls* and that of *three boys* is combined with the meaning of the verb via in-situ application, which is followed by existential closure, with the following result:

$$\begin{aligned} \exists e \in * \text{INVITE}: \quad & \exists x \in * \text{BOY}: |x| = 3 \wedge * \text{Ag}(e) = \uparrow(x) \wedge \\ & \exists y \in * \text{GIRL}: |y| = 4 \wedge * \text{Th}(e) = \uparrow(y) \end{aligned}$$

Since both the plural agent and the plural theme are atoms, the following thematic statement can be derived from the above formula:

$$\begin{aligned} \exists e \in \text{INVITE}: \quad & \exists x \in * \text{BOY}: |x| = 3 \wedge \text{Ag}(e) = \uparrow(x) \wedge \\ & \exists y \in * \text{GIRL}: |y| = 4 \wedge \text{Th}(e) = \uparrow(y) \end{aligned}$$

2. Ds(Co) (distributive subject and collective object) – group object in-situ, quantify-in sum subject

Description: There are three boys such that each boy invites a group four girls.

Representation:

$$\exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \\ \exists e \in INVITE: Ag(e) = a \wedge \exists y \in *GIRL: |y| = 4 \wedge Th(e) = \uparrow(y)$$

3. Do(Cs) (distributive object and collective subject) – group subject in-situ, quantify-in sum object

Description: There are four girls such that each girl is invited by a group of three boys.

Representation:

$$\exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \\ \exists e \in INVITE: \exists x \in *BOY: |x| = 3 \wedge Ag(e) = \uparrow(x) \wedge Th(e) = b$$

4. Ds(Do) (distributive subject and object) – sum object in-situ, quantify-in sum subject

Description: There are three boys such that for each boy there are four girls such that that boy invites each of those four girls

Representation:

$$\exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \\ \exists e \in INVITE: Ag(e) = a \wedge Th(e) = b$$

5. Do(Ds) (distributive subject and object) – sum subject in-situ, quantify-in sum object

Description: There are four girls such that for each of those girls there are three boys such that each of those boys invites that girl.

Representation:

$$\exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \\ \exists e \in INVITE: Ag(e) = a \wedge Th(e) = b$$

6. Ds–Co: sum subject and group object in situ

Description: There is a sum of inviting events with a sum of three boys as plural agent and a group of four girls as plural theme.

Representation:

$$\exists e \in *INVITE: \exists x \in *BOY: |x| = 3 \wedge *Ag(e) = x \wedge \\ \exists y \in *GIRL: |y| = 4 \wedge *Th(e) = \uparrow y$$

According to Landman, on this reading the group of four girls will be the theme of each atomic subevent, while the three boys are distributed as agents over the atomic subevents.

Thus, the description given above is identical to the following:

There is a group of four girls and there are three boys such that for each of those boys there is an event of that boy inviting that group of girls.

7. Cs–Do: group subject and sum object in-situ

Description: there is a sum of inviting events with a group of three boys as plural agent and a sum of four girls as plural theme.

Representation:

$$\exists e \in *INVITE: \exists x \in *BOY: |x| = 3 \wedge *Ag(e) = \uparrow(x) \wedge \\ \exists y \in *GIRL: |y| = 4 \wedge *Th(e) = y$$

Similarly to case 6 above, here Landman also claims that the group of three boys satisfying the description above will be the agent of each atomic subevent, while the four

girls are distributed as themes over the atomic subevents. Thus, the description given above will be identical to the following:

There is a group of three boys and there are four girls such that for each of those girls there is an event of the group inviting that girl.

8. Ds–Do (scopeless plural reading): sum subject and sum object in situ

Description: there is a sum of inviting events that has a sum of three boys as plural agent and a sum of three girls as plural theme.

$$\begin{aligned} \exists e \in *INVITE: \quad & \exists x \in *BOY: |x| = 3 \wedge *Ag(e) = x \wedge \\ & \exists y \in *GIRL: |y| = 4 \wedge *Th(e) = y \end{aligned}$$

According to Landman, it follows from the above characterization that every atomic part of the plural event e has one of these boys as agent and every atomic part of e has one of these girls as theme. Thus, every one of these boys invites one (or more) of these girls and every one of these girls is invited by one (or more) of these boys, which corresponds to the cumulative reading of the sentence.

Landman considers the following to be the main advantages of his theory. On the one hand, readings 6–7, which have traditionally been assumed to correspond to special instances of readings 2–3, are taken here to be scopeless readings (derived without recourse to a scope mechanism), which explains why in most cases they are easier to get than their scoped counterparts. On the other hand, cumulative readings fall out of the theory without invoking the mechanism of binary quantification. Cumulative readings are not reduced to collective readings, instead, they are made more alike to distributive readings (and thus said to manifest semantic plurality) by being considered non-thematic.

Having outlined the theory proposed in Landman (1996), in the next section we will consider whether the claims he makes about the available readings of some English sentences can in fact be generalized to all possible examples in the language. Also, we will investigate whether his claims are of cross-linguistic validity, that is, whether his theory could be used to give the possible readings associated with sentences containing quantificational expressions in other languages, for example, Hungarian.

3.2 Comments on Landman (1996)

Landman (1996) claims that readings 1 to 8, discussed above, are the primary readings of a sentence like (36), and other readings are to “be derived in context through optional shifting of the meaning of the verb” (p. 457). However, the fact that the following Hebrew example from Gil (1982) (from the 7.5.1980 issue of the Israeli newspaper *Maariv*) can naturally describe three unrelated events, each involving group participants, calls into question the general validity of the claim that the events corresponding to the ‘primary readings’ (whatever this expression means) of sentences involving plural NPs are always dividable into singular events involving atomic individuals as participants.

- (37) šiv^c a ne^c arim ganvu šaloš mexoniyot beholon
 seven-m boys stole-3pl three-f cars in-Holon

‘Seven boys stole three cars in Holon.’

According to Gil (1982), in the particular context of the original occurrence of the above sentence, it was used to describe three unrelated incidents. In the first of these, three boys stole one car together, in the second, two boys stole one car together, and in the third, again two boys stole one car together.

Landman (1996) does offer a mechanism to account for the above reading of (37), since he claims that sentences can describe events in which the denotations of the plural NPs play so-called *cover roles*, defined as follows (p. 452):

(38) Let R be a thematic role.

cR , the **cover role based on R** , is the partial function from De into Dd defined by:

${}^cR(e) = a$ iff $a \in \text{ATOM} \wedge \sqcup (\{\downarrow(d) \in \text{SUM} : d \in \text{AT} (*R(e))\}) = \downarrow(a)$
undefined otherwise

According to the above definition, cover roles are played by groups which are generated by taking the sums corresponding to the groups playing the thematic roles in the singular subevents of the event described by the sentence and forming a group out of them.

Landman’s theory involves a type shifting mechanism for verbs, shown in (39), according to which they can switch from n-place scope domains with a plural role $*R$ to n-place scope domains with a cover role cR in the following way (Landman 1996: 453):

(39) $\lambda x_n \dots x \dots x_l. \{e \in *V : \dots *R(e) = x \dots\} \Rightarrow$
 $\lambda x_n \dots x \dots x_l. \{e \in *V : \dots {}^cR(e) = x \dots\}$

According to Landman (1996), the reading corresponding to the one discussed above for (37) (i.e., where the participants of the atomic subevents are groups) can be derived for (36) in the following way. (40) shows the denotation of the verb, and (41) illustrates the result of combining the group denotations of the object and subject with the meaning of the verb:

(40) $\lambda y \lambda x \{e \in *INVITE : {}^cAg(e) = x \wedge {}^cTh(e) = y\}$

(41) $\exists e \in *INVITE : \exists x \in *BOY : |x| = 3 \wedge {}^cAg(e) = \uparrow(x) \wedge$
 $\exists y \in *GIRL : |y| = 4 \wedge {}^cTh(e) = \uparrow(y)$

Applying the definition in (38) to (41) we get the following:

(42) $\exists e \in *INVITE : \exists x \in *BOY : |x| = 3 \wedge \sqcup (\{\downarrow(d) : d \in \text{AT} (*Ag(e))\}) = x \wedge$
 $\exists y \in *GIRL : |y| = 4 \wedge \sqcup (\{\downarrow(d) : d \in \text{AT} (*Th(e))\}) = y$

(42) means the following: “there is a sum of inviting events, a sum of three boys and a sum of four girls and the plural agent of the sum of inviting events is the sum of groups covering that sum of boys, and the plural theme of the sum of inviting events is a sum of groups covering that sum of girls” (Landman 1996: 453)

László Kálmán (p.c.) argues that the above solution, according to which the denotations of the plural NPs correspond to collections of groups on the reading of (36) under consideration is not motivated empirically, since the groups of girls and boys involved in the

subevents whose collection the sentence is assumed to describe do not give rise to any ‘collective implications’ (whatever the term might mean), which Landman (1996) proposes to motivate group readings of NPs. Landman argues that for those NPs is a group reading motivated which can be considered to form a coherent body, illustrated in (43), have a collective responsibility, as in (44), or can be said to form a predetermined ‘whole’ with pre-assigned roles for performing an event, as illustrated in (45):

(43) The boys touch the ceiling.

(44) The gangsters killed their rivals.

(45) The boys carried the piano upstairs.

Note that (45) does not entail that each boy is directly involved in the carrying of the piano. The sentence can be judged true, Landman notes, if one boy was just walking in front with a flag. I believe that (45) is also fine if the boys were part of a pre-assigned group which had to perform the event in question, even if some of them did not participate in the carrying at all. Similarly, (46) can also be true if only John went to the shops, provided that Mary and John constituted a group which had to perform this particular task:

(46) John and Mary did the shopping.

L. Kálmán (p.c.), in fact doubts that the sum–group distinction is a correct way to capture the differences in the denotation of plural NPs, since it indicates a qualitative difference which is not motivated empirically. Although I agree with Kálmán regarding the unnaturalness of the sum–group distinction, for lack of a more satisfactory method, I will assume that plural NPs receive group readings when they are used to describe an event in which the individuals corresponding to the NP denotation take part collectively, and sum readings otherwise.

In view of (37) above and the following Hungarian sentence, I wish, however, to call into question whether the eight readings identified for (36) by Landman are in fact its most natural readings:

(47) Hét fiú ellopott három kocsit múlt éjjel Miskolcon.
 seven boy stole three car-ACC last night Miskolc-SUPERESS
 ‘Seven boys stole three cars last night in Miskolc.’

(47) can as naturally describe a plural event which consists of singular events having group individuals as participants as one in which all the singular events have atomic individuals as participants.

Note that it is nearly impossible to determine what counts as a reading of a sentence, not to mention its ‘primary reading’ (Landman (1996)). I would subscribe to the view that different readings of sentences must correspond to significant differences in the structures of the events which these sentences can describe. For example, readings 4, 5 and 8 of sentence (36) should definitely be considered different, since they can significantly differ in the fact

how many boys and girls they involve and how many subevents they can have⁷⁴. Naturally, the notion ‘significantly different’ is inherently vague, and suggests that there is no a priori method to determine which features of events should count as relevant and which should not.

In view of the fact that the readings according to which (37) or (47) describe sums of events which themselves consist of events involving group participants sound as natural to me as readings 1–8 proposed by Landman (1996), and that I do not want to increase the number of ‘primary’, or ‘essentially different’ readings, I will take the following path. I will assimilate those readings of sentences with plural NPs which describe sums of events involving group participants to those which describe sums of events (having as many parts as there atomic parts of the individuals constituting the groups in the above reading) with atomic individuals as participants. This move, however, would necessitate doing away with plural roles in the lexical representations of verbs, and substituting them for what I will call *sum roles* in what follows, defined in (48):

(48) **Sum roles:**

Let R be a role.

sR , the sum role based on R , is defined by:

${}^sR(e) = \sqcup \{ \downarrow R(e') : e' \in AT(e) \}$

if for every $e' \in AT(e)$: $R(e')$ is defined; otherwise undefined.

The expressions *sum agent*, *sum patient*, etc. will be used from now on to denote individuals playing sum roles in an event, in the sense of definition (48).

In view of (48), consider the eight readings, shown in (50), which I will assume to be identical to the set of available readings for (36), repeated here as (49). Note that these readings are not ‘primary readings’ in the sense of Landman (1996), i.e., they are not the most important readings of the sentence, but they together represent its *only* readings. Naturally, the set of those events which can be described by one of the readings can be further subdivided into sets on the basis of additional criteria, but I believe that these eight representations cover all the intuitively possible readings of the sentence, in other words, all possible events which the sentence is capable of describing fit one of the patterns 1–8 in (50) below.

(49) Three boys invited four girls.

(50) Event types which sentences with two plural NPs are capable of describing

1. Cs–Co: the double collective reading

Description: There is an event of a group of three boys inviting a group four girls.

$$\begin{aligned} \exists e \in \text{INVITE}: \quad & \exists x \in *BOY: |x| = 3 \wedge \text{Ag}(e) = \uparrow(x) \wedge \\ & \exists y \in *GIRL: |y| = 4 \wedge \text{Th}(e) = \uparrow(y) \end{aligned}$$

⁷⁴ More precisely, in view of the fact that bare numerals can have an ‘at least’ interpretation in addition to an ‘exactly’ reading, the above readings of (36) do not primarily differ in the number of girls and boys involved in the event but in the relations between the possible numbers of girls and boys.

2. Ds(Co) (distributive subject and collective object)

Description: There are three boys such that each boy invites a group four girls.

$$\begin{aligned} \exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \\ \exists e \in INVITE: Ag(e) = a \wedge \exists y \in *GIRL: |y| = 4 \wedge Th(e) = \uparrow(y) \end{aligned}$$

3. Do(Cs) (distributive object and collective subject)

Description: There are four girls such that each girl is invited by a group of three boys.

$$\begin{aligned} \exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \\ \exists e \in INVITE: \exists x \in *BOY: |x| = 3 \wedge Ag(e) = \uparrow(x) \wedge Th(e) = b \end{aligned}$$

4. Ds(Do) (distributive subject and object)

Description: There are three boys such that for each boy there are four girls such that that boy invites each of those four girls.

$$\begin{aligned} \exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \\ \exists e \in INVITE: Ag(e) = a \wedge Th(e) = b \end{aligned}$$

5. Do(Ds) (distributive subject and object)

Description: There are four girls such that for each of those girls there are three boys such that each of those boys invites that girl.

$$\begin{aligned} \exists y \in *GIRL: |y| = 4 \wedge \forall b \in AT(y): \exists x \in *BOY: |x| = 3 \wedge \forall a \in AT(x): \\ \exists e \in INVITE: Ag(e) = a \wedge Th(e) = b \end{aligned}$$

6. Ds-Co

Description: There is a sum of inviting events with a sum of three boys as plural agent and a group of four girls as plural theme.

$$\begin{aligned} \exists e \in *INVITE: \exists x \in *BOY: |x| = 3 \wedge {}^sAg(e) = x \wedge \\ \exists y \in *GIRL: |y| = 4 \wedge {}^sTh(e) = \uparrow y \end{aligned}$$

7. Cs-Do

Description: there is a sum of inviting events with a group of three boys as plural agent and a sum of four girls as plural theme.

$$\begin{aligned} \exists e \in *INVITE: \exists x \in *BOY: |x| = 3 \wedge {}^sAg(e) = \uparrow(x) \wedge \\ \exists y \in *GIRL: |y| = 4 \wedge {}^sTh(e) = y \end{aligned}$$

8. Ds-Do (scopeless plural reading)

Description: there is a sum of inviting events that has a sum of three boys as plural agent and a sum of three girls as plural theme.

$$\begin{aligned} \exists e \in *INVITE: \exists x \in *BOY: |x| = 3 \wedge {}^sAg(e) = x \wedge \\ \exists y \in *GIRL: |y| = 4 \wedge {}^sTh(e) = y \end{aligned}$$

A different issue, which is not discussed in Landman (1996), but which does not seem possible to be integrated into the approach presented there concerns the interpretation of

certain quantificational DPs, like *every girl*. In Landman's system these would necessarily go through quantifier raising, and thus readings 1 and 6–8, which involve in-situ application, would not be available for them. There are certain Hungarian sentences with quantificational expressions, however, which can give rise to one or more of the above four readings, as illustrated in (26) above, repeated here in (51).

- (51) Két fiú minden lányt meghívott.
 two boy every girl-ACC pfx-invited
 'Two boys invited every girl.'

Besides readings 2 and 4 (which only differ in that in the former the girls were invited individually and in the latter as a group), (51) can also have reading 1, i.e. it can describe an event in which a group of two boys invited a group which consisted of all the (contextually specified) girls. It can also have reading 6, i.e., it can denote a plural event of inviting which consists of singular events each involving all the girls as a group as theme and an individual part of a sum of two boys as agent. Reading 7 is also available, which denotes a plural event consisting of singular events each involving a group of two boys as agent and an individual part of the sum of all girls as patient. Moreover, reading 8 is also available, which describes a plural event consisting of singular events of inviting, each of which involve an individual-part of the sum individual consisting of two boys as agent and an individual-part of the sum of all girls as patient.

There are other, quantificational DPs, like *fewer than three girls, exactly five dogs* (i.e., those denoting (right) monotone decreasing quantifiers) which are not discussed in Landman 1996 but which are predicted to be interpreted with the help of quantifying in, and are thus assumed not to have readings 1 and 6–8. This prediction is not satisfied in the case of Hungarian, either, since sentence (52) can have seven of the eight readings listed in (50). Moreover, it can have a ninth reading as well, paraphrased in g) below. In order to best illustrate the possible event types which the Hungarian sentence is capable of describing, we give both its English translation and the characterizations of these (plural) events.

- (52) [CT 'Két lányt] [F négynél `kevesebb fiú] hívott meg.
 two girl-ACC four-ADE fewer boy invited pfx
 'Two girls were invited by fewer than FOUR boys.'
- (reading 1) 'There is a group of (at least)⁷⁵ two girls which were invited by a group of fewer than four boys.'
 - (reading 2) 'There are fewer than four boys each of which invited (possibly different) groups of (at least) two girls.'
 - (reading 3) 'There are (at least) two girls each of which was invited by (possibly different) groups of fewer than four boys.'
 - (reading 4) 'There are fewer than four boys each of which invited (at least) two girls individually.'
 - (reading 5) 'There are (at least) two girls each of which was invited by fewer than four boys individually.'

⁷⁵ Bare numerical determiners are given an 'at least' interpretation in positions other than the focus in the Hungarian sentence. For convenience, we will sometimes leave out the 'at least' part in the glosses, in view of the fact that the English numerals are equally ambiguous. (Cf., Krifka 1999 on the issue.)

- f. (reading 6) ‘There is a group of (at least) two girls which were invited by boys and a set of fewer than four boys each member of which took part in inviting the girls, either alone or in groups.’
- g. (reading 7) ‘There is a group of fewer than four boys which invited girls and a set of at least two girls such that each member of it was invited by the boys, either alone or as a member of a group.’
- h. # (reading 8) ‘There are fewer than four boys and (at least) two girls such that each of the former group took part in inviting girls and each of the latter group was invited by boys.’
- i. (reading 9) ‘The number of boys who invited two girls is fewer than four.’

I consider reading i) to be different from all the previous ones since this interpretation is compatible with a situation where there was no boy who invited two girls at all. The fact that the sentence can have the above reading is supported by the possibility to continue (52) the way shown in (53):

- (53) Sőt, nem is volt olyan fiú, aki két lányt hívott meg.
 moreover not too was such boy who two girl-ACC invited pfx
 ‘Moreover, there was no boy who invited two girls at all.’

As (53) shows, the i) reading of (52) is not an event-description, instead, it asserts that the number of boys who have the property described by the focus frame is fewer than four.

Formally, this reading could be represented as in (54), where AT denotes a predicate which has only atomic individuals in its extension:

- (54) $|\{x \mid AT(x) \wedge *BOY(x) \wedge \exists e \exists y[*INVITE(e) \wedge *GIRL(y) \wedge |y| = 2 \wedge {}^sAg(x) \wedge {}^sTh(y)]\}| < 4$

(54) says that the number of individual boys for whom it holds that they invited two girls (either individually or as a group) is fewer than four. Note that the type of reading shown in (53i) only counts as a separate reading when the second DP is situated in the Focus/Predicate Operator position, since only in this case is it possible that there is no event which satisfies the description in the sentence, i.e., it cannot have readings 1–8, although the sentence might have reading i). In the rest of the cases, the truth.conditions of this latter reading, to be referred to as reading 9 below, for brevity, would in fact be identical to one of the other readings.

In this section, some criticism was directed at Landman’s (1996) theory, claiming that the readings of sentences with plural noun phrases which he refers to as ‘primary’ cannot be considered more preferred than others he intends to derive by means of special mechanisms. Consequently, a new list of possible readings for sentences with two plural NPs was proposed. It was also pointed out that Hungarian sentences with quantificational DPs have readings which are not predicted on Landman’s theory.

In the next section we will show how Landman’s theory with the required modifications can be applied to the analysis of the meaning of Hungarian sentences with quantificational expressions which either do or do not contain contrastive topics.

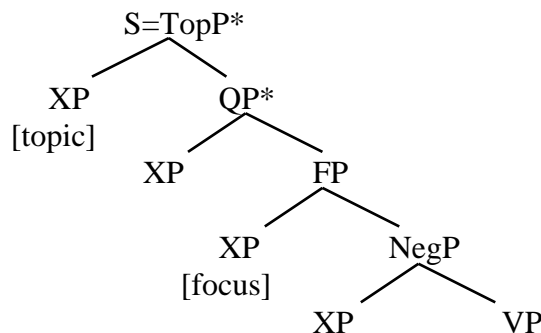
3.3 Interpretation of Hungarian sentences in terms of Landman's (1996) event semantics

3.3.1 Sentences without contrastive topics

In this section we will investigate whether Landman's (1996) theory could be applied to the analysis of the meaning of Hungarian sentences with quantificational expressions. We will try to determine whether the nine different interpretations proposed above in (50) for sentences with two quantificational DPs capture important semantic distinctions in Hungarian or not, and whether they are all needed for the proper characterization of the meanings of these sentences. Naturally, some of the nine readings may be lacking for particular manifestations of this sentence type, which will be said to be due to syntactic features and lexical properties of DPs, to be described below. In order to be able to isolate the contributions of syntactic structure and lexical properties, we will consider Hungarian sentences with and without contrastive topics separately.

Since our aim is to eventually describe the interactions between the scopes of contrastive topics and those of their associates, we will concentrate on preverbal quantificational DPs throughout. First we consider sentences with two preverbal quantificational DPs but without a contrastive topic. As mentioned in Chapter 2, the general rule of scope assignment to quantificational expressions has traditionally been assumed to be the following: the scope of a preverbal quantificational expression corresponds to its place in the linear order of all preverbal quantificational expressions. Consider the structure in (54), repeated here from Chapter 1, which shows the preverbal operator positions in the Hungarian sentence.

(54)



As discussed in Chapter 1, the position (Spec, TopP) can only be filled by referential expressions. This means that even if there are more topics in a sentence, none of them depends for its denotation on the denotations of the others, or on the denotation of any other constituent in the sentence. The DPs which are situated in an immediately preverbal position, (Spec, FP), traditionally referred to as the focus position, can receive two kinds of interpretation.⁷⁶ First, the DPs in this position can identify a referent about which it is asserted by the sentence that this and only this possesses the property expressed by the rest of the sentence, the so-called *focus frame*. For example, (55) below can have a reading according to the focused DP denotes two specific individuals, paraphrased in (55a):

⁷⁶ But cf. Szabolcsi (1997b), according to whom the two different types of constituents listed below are in fact located in two different positions, as discussed in Chapter 1 above.

- (55) Mindenki [_F két jelöltre] szavazott.
 everybody two candidate-SUBL voted
 a. ‘There are two specific candidates everybody voted for.’
 b. ‘Everybody has the property of having voted for two candidates.’

As the glosses show, the focused DP in (55) can have a second interpretation as well, according to which it counts the number of elements in the extension of the predicate (cf. Szabolcsi 1997b).

Compare the following two examples from the point of view of thethetic/categorical distinction:

- (56) [_{FP} Legfeljebb három vendég érkezett.]
 at mostthree guest arrived
 ‘At most three guests arrived.’
- (57) [_{QP} Mindenki [_{FP} legfeljebb három vendéget hívott meg.]]
 everybody at most three guest-ACC invited pfx
 ‘Each person invited at most three guests individually/as a group.’

Sentence (56) does not predicate a property about any individual, but counts the elements in the predicate extension, thus it makes a predication about the situation itself, and, consequently, would be considered athetic statement. As opposed to this, (57) makes a predication about each relevant individual in the context, which means that it expresses a categorical statement. This means that in this sentence the expression *mindenki* ‘everybody’ counts as a topic in a semantic sense, in spite of the fact that it cannot appear in the topic position of the Hungarian sentence. An important feature of this sentence, compared to those with a filled topic position is that it can only predicate a property of the relevant individuals separately, but not as a group.

The principle that scope corresponds to linear order is fulfilled without exception (i.e., scope reversal is impossible) if the second DP appears in the preverbal Quantifier position of the sentence, (Spec, QP), as (58) and (59) illustrate:

- (58) [_{QP} Mindenki [_{QP} legalább két tanárt meghívott.]]
 everybody at least two teacher-ACC pfx-invited
 a. Each person has invited at least two teachers as a group or individually. (readings 2 and 4)
 b. #There are at least two teachers who were invited by everybody, acting as a group or individually. (readings 3 and 5)⁷⁷

⁷⁷ The rest of the readings listed in (50) above are not available for this sentence.

- (59) [QP Legalább két tanárt [QP mindenki meghívott.]]
 at least two teacher-ACC everybody pfx-invited
- There are at least two teachers who were invited by everybody. (reading 3)
 - There is a group of at least two teachers which was the patient of inviting events the sum of whose agents was the maximal individual. (reading 5)
 - #Each person is such that he/she invited at least two teachers. (readings 2 and 4)
 - #There are at least two teachers which were invited by at least one person and each person took part in inviting teachers. (reading 8)

Compare the above sentences to (26), repeated here as (60):

- (60) Két fiú minden lányt meghívott.
 two boy every girl-ACC pfx-invited
- There are two boys who, as a group or individually, invited all girls together or separately. (readings 2, 4, 1, 7, 6)⁷⁸
 - #Every girl is such that she was invited by two boys acting together or individually (readings 3 and 5).
 - There are two boys who invited at least one girl and all the girls are such that they were invited by a boy. (reading 8)⁷⁹

The fact that the universal DP *minden lányt* ‘every girl-ACC’ cannot receive wide scope in the above example indicates that scope and the possibility of referential interpretation has to be distinguished from each other. Further arguments supporting this view will be discussed below, with respect to sentences containing a contrastive topic.

To sum up, the most important observations about the scope of preverbal quantificational expressions in sentences without a contrastive topic were the following. Scope reversal is always possible if the expression to receive wide scope is assumed to have a referential interpretation. It was observed, however, that DPs denoting monotone increasing quantifiers can participate in unscoped readings as well, provided certain conditions are satisfied (i.e., they are not playing the semantic role of topic, because there is a topic expression situated in the topic position of the sentence). In a sentence-initial position, however, these expressions need to receive wide-scope, distributive readings. Although most of the facts observed above are still lacking an explanation, we will not make an attempt at providing these here, due to the fact that this dissertation is about the contrastive topic. The reason why we included the above observations here was to show that the claim according to which all readings of sentences with quantificational DPs can be derived on the basis of the assumption that scope corresponds to linear order is mistaken.

⁷⁸ In this case, readings 2 and 6 are equivalent

⁷⁹ Note, however, that a variant of (60), where the subject and object DPs are reversed, shown in (i), cannot receive reading 8. I have no explanation of this phenomenon.

(i) Minden lányt két fiú hívott meg.

3.3.2 Sentences with contrastive topics

In this section we contrast some of the observations made in section 3.3.1 about the scopal relations between two quantificational expressions in sentences without a contrastive topic to those which apply to sentences containing a contrastive topic DP. In this section we will only concentrate on providing the truth-conditional interpretations of sentences, without indicating the implicatures associated with them due to the contrastive topic. Consider (61) first, a Hungarian variant of (36) above:

- (61) [CT *Három fiú*] [F *öt lányt*] *hívott meg*.
 three boy five girl-ACC invited pfx
 ‘~Three boys invited FIVE girls.’
- (reading 1) ‘There is a group of three boys which invited a group of five girls.’
 - (reading 2) ‘There are three boys such that each of them invited five (possibly different) girls as a group.’
 - (reading 3) ‘There are five girls each of which was invited by three (possibly different) boys as a group.’
 - (reading 4) ‘There are three boys each of which invited five girls individually.’
 - (reading 5) ‘There are five girls each of which was invited by three boys individually.’
 - (reading 6) ‘There is a group of five girls which were invited by boys and there are three boys which took part in inviting these girls.’
 - (reading 7) ‘There is a group of three boys which invited girls and there are five girls who were invited, either individually, or in groups.’
 - (reading 8) ‘There are three boys and five girls such that each of the former took part in inviting girls and each of the latter was invited by boys.’

As the above paraphrases show, (61) has the first eight readings listed in (50).⁸⁰ The question which remains, however, is whether the above readings all encode significant interpretational differences.

The following sentence has a DP in contrastive topic which is assumed to denote a monotone decreasing quantifier in Generalized Quantifier Theory. Such expressions are not normally assumed to introduce a discourse referent.

- (62) [CT *Négynél kevesebb fiú*] [F *öt két lányt*] *hívott meg*.
 four-ADE fewer five two girl-ACC invited pfx
 ‘As for fewer than FOUR boys, that many invited TWO girls.’
- #(reading 1) ‘There is a group of fewer than four boys which invited a group of two girls.’
 - #(reading 2) ‘There are fewer than four boys such that each of them invited two (possibly different) girls as a group.’
 - (reading 3) ‘There are two girls each of which was invited by fewer than four (possibly different) boys as a group.’
 - #(reading 4) ‘There are fewer than four boys each of which invited two girls individually.’
 - (reading 5) ‘There are two girls each of which was invited by fewer than four boys individually.’

⁸⁰ Reading 9 is ignored due to the reasons discussed above.

- f. #(reading 6) ‘There is a group of two girls which was invited by boys and there are fewer than four boys who invited the group of girls, either individually or in smaller groups.’
- g. #(reading 7) ‘There is a group of fewer than four boys which invited girls and there are two girls who were invited by the boys either individually or in small groups.’
- h. #(reading 8) ‘There are fewer than four boys and two girls such that each of the former took part in inviting girls and each of the latter was invited by boys.’

As the above glosses show, none of the readings are available for (62) which presuppose that the referent of the contrastive topic expression is independently identified, the sentence can only have readings where the contrastive topic expression participates in expressing the property of the (independently identified) associate denotation. Consider now the following sentence, where the contrastive topic and the associate expressions are exchanged, which can have all the nine readings proposed above except for reading 8:

- (63) [CT *‘Két lányt’*] [F *négynél kevesebb fiú*] hívott meg.
 twogirl-ACC four-ADE fewer boy invited pfx
 ‘~Two girls were invited by less than FOUR boys.’
- a. (reading 1) ‘There is a group of fewer than four boys and a group of (at least) two girls such that the former invited the latter.’
 - b. (reading 2) ‘There are fewer than four boys such that each of them invited (at least) two (possibly different) girls as a group.’
 - c. (reading 3) ‘There are (at least) two girls each of which was invited by fewer than four (possibly different) boys as a group.’
 - d. (reading 4) ‘There are fewer than four boys each of which invited (at least) two girls individually.’
 - e. (reading 5) ‘There are (at least) two girls each of which was invited by fewer than four boys individually.’
 - f. (reading 6) ‘There is a group of (at least) two girls which was invited by boys and there are fewer than four boys who invited the group of girls, either individually or in smaller groups.’
 - g. (reading 7) ‘There is a group of fewer than four boys which invited girls and there are (at least) two girls who were invited by the boys either individually or in small groups.’
 - h. #(reading 8) ‘There are fewer than four boys and (at least) two girls such that each of the former took part in inviting girls and each of the latter was invited by boys.’
 - i. (reading 9) ‘The number of boys who invited two girls is fewer than four.’

A comparison of the the list of available readings for (62) and (63) shows that even DPs denoting monotone decreasing quantifiers, like *négynél kevesebb fiú* ‘fewer than four boys’ in (63), can lend themselves to a referential interpretation when they act as the associate of the contrastive topic, and thus can denote a *specific* participant of the plural event described by the sentence.

It has already been pointed out that reading 8 seems to be missing for sentences with contrastive topics. The following example, which differs from (60) above in that the sentence-initial DP here plays the role of contrastive topic is a further illustration of the case:

- (64) [CT 'Két fiú] `minden lányt meghívott.
 two boy every girl-ACC pfx-invited
 'Two boys invited EVERY girl.'
- (reading 1) 'There is a group of (at least) two boys which invited every girl as a group.'
 - (reading 2) 'There are (at least) two boys such that each of them invited the group of all girls.'
 - (reading 3) 'Each girl was invited by (at least) two (possibly different) boys as a group.'
 - (reading 4) 'There are (at least) two boys each of which invited every girl individually.'
 - (reading 5) 'Each girl was invited by (at least) two boys individually.'
 - (reading 6) 'There are (at least) two boys each of whom took part in inviting the group of all girls, either by himself, or as part of a group.'
 - (reading 7) 'There is a group of (at least) two boys which invited girls, and every girl was invited by the boys, either individually or as a member of a smaller group.'
 - h. #(reading 8) 'There are (at least) two boys which invited girls and every girl was invited by a boy.'

The lack of reading 8 seems to me to be connected to a processing difficulty. As it will be explained more thoroughly below, in alternative statements introduced by the contrastive topics, the counterparts of the contrastive topic and that of the associate receive the same type (group, sum or set of atoms) denotations as the former expressions do. If both DPs receive a sum type of denotation in (64) above, however, the sentence meaning becomes so underspecified as to the number and structure of subevents that the listener will be unable to find out in what respect they are contrasted to others. However, when both DPs are referential and specific (i.e., fit for appearing in topic position), the relevant sentences will also have reading 8.

The following sentence has a universal DP as its contrastive topic. It does not have reading 8, as expected, and it does not have readings where the contrastive topic expression has wide scope.

- (65) [CT 'Minden lányt] [F 'három fiú] hívott meg.
 every girl-ACC three boy invited pfx
 'All girls were invited by THREE boys.'
- (reading 1) 'There is a group of three boys which invited all girls as a group.'
 - (reading 2) 'There are three boys such that each of them invited all the girls as a group.'
 - c. #(reading 3) 'Each girl was invited by three boys as a group.'
 - c. (reading 4) 'There are three boys each of which invited each girl individually.'
 - d. #(reading 5) 'Each girl was invited by three boys individually.'
 - e. (reading 6) 'There are three boys each of whom took part in inviting the group consisting of all girls, either individually, or as a member of a group.'
 - f. (reading 7) 'There is a group of three boys which invited girls and every girl was invited, either by herself, or as part of a group.'
 - g. #(reading 8) 'There are less than four boys and two girls such that each of the former took part in inviting girls and each of the latter was invited by boys.'

The lack of wide-scope readings for the contrastive topic in (65) and other sentences will be discussed in section 7 below, and will be attributed to the fact that on this reading there would be no alternative statements which are neither entailed nor contradicted by the one expressed by the sentence, although the central function of sentences with contrastive topics was claimed above to be that they introduce the implicature that there is at least one alternative proposition which is neither entailed nor contradicted by the one expressed by the sentence.

Having investigated some relevant data about the scopal interactions of two quantificational DPs in Hungarian sentences, one of which plays the topic or the contrastive topic role, the following conclusions can be reached about the applicability of Landman's proposals. We have seen that the availability of a wide-scope or a group reading for a particular DP does not only depend on the lexical properties of its determiner but also on the DP's syntactic position in the sentence. In Landman's system, which treats all DPs with denotations playing thematic roles or plural roles in a sentence on a par, it does not seem to be possible to account for the above distinctions. As mentioned above, Landman only treats indefinite DPs, so we do not know how the meaning of DPs which denote monotone decreasing or non-monotone quantifiers (and which also manifest meaning distinctions in different syntactic positions) could be captured in his theory. As the examples discussed above indicate, the availability of the nine readings for Hungarian sentences must be connected both to syntactic and lexical properties. Landman, however, does not propose any indications for such a correlation.

Naturally, Landman's theory has several valuable components. The most important among them is the distinction between singular and plural events and thus between thematic roles and plural roles. This makes it possible to assign roles to the denotations of DPs in each sentence (e.g., to the universal DP) without committing oneself to the view that these denotations fulfill thematic roles in the event (act as one body), and thus to the existence of thematic implications.

However, the application of Landman's (1996) theory for the formal representation of the meaning of Hungarian sentences with contrastive topics does not seem to be unproblematic, particularly because this theory does not have the apparatus to distinguish between components of the meaning of DPs which arise from their lexical meaning and those which are due to their syntactic position.

In the next section therefore a different approach to the representation of sentence meaning in terms of event semantics will be reviewed, the one proposed by Krifka (1989), with the aim to investigate whether this approach is more applicable to the semantic analysis of Hungarian sentences with contrastive topics than Landman's.

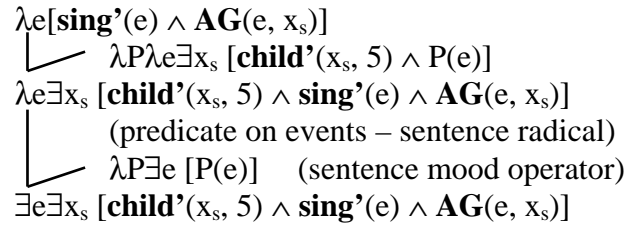
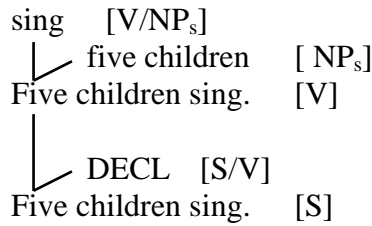
4 Krifka's (1989) event semantics and its applicability to Hungarian

4.1 General overview

Krifka's (1989) framework assumes an extensional type-theoretic language. The extension of predicates characterizing objects have the structure of a complete join semi-lattice without a bottom element (cf. Link 1983), and count nouns are taken to represent two-place relations

between numbers and entities. Thus, the meaning of the common noun *cow* would be represented as $\lambda n \lambda x \text{cow}'(x,n)$. According to Krifka (1989), verbal predicates denote events (Davidson 1967), and the set of events, **E**, is also a complete join semi-lattice without a bottom element. He also assumes that verb arguments and adverbial attributes are reconstructed as two-place relations between events and objects, and capture thematic roles like **AG**, **PAT**, **IN** (agent, patient, interior location). Based on the above assumptions, Krifka (1989) represents the meaning of the English sentence in (66), whose syntactic tree, assumed by him, is shown on the left, in terms of the formula shown in the last row of the right column. The steps in the semantic computation are shown in the same lines as the corresponding syntactic constituents.

(66) Five children sing.



The syntactic tree shown on the left indicates that Krifka assumes that “verbal predicates have a specified set of arguments which are related to specific syntactic functions like subject and object.” (p. 89) He labels the arguments on the basis of their syntactic function, *s* standing for subject and *o* for object. The semantic tree on the right shows that verbs are represented as one-place predicates of events, which have no specification as to the number and type of their syntactic arguments. This is why they must be related to the event by thematic relations. The thematic roles of syntactic arguments are specified in the syntactic entry of the verb, and those of free adjuncts are specified within the adjunct.

The reasons why Krifka disprefers representing the meaning of the verb in (66) in the more traditional way as $\lambda x \lambda y \lambda e[\text{sing}'(e) \wedge \text{AG}(e, x_s)]$ (which would be based on the assumption that the verb is applied as a function to its syntactic arguments, as opposed to the formula in (66), where the denotations of the verb and those of the arguments are combined by means of unification), are twofold. On the one hand, the traditional formula would fix the order of application, which appears counterintuitive in the case of languages without a fixed word order. On the other hand, since the application of the verbal expression to a syntactic argument changes the type of the verbal expression, we would have to assume multiple types for free adjuncts. Krifka instead uses free variables in the lexical representations of verbs, which are assigned to syntactic functions (e.g., x_s assigned to the subject and x_o to the object). The variables come in with the determiner and get bound as a result of unifying the meaning of the verbal predicate with that of the arguments. After all the individual variables get bound, we obtain the predicate on events, the sentence radical. This is transformed into a sentence by the application of a sentence mood operator, e.g., the declarative operator. Krifka (1989) assumes that the semantic role of the declarative operator is to bind the event variable with an existential quantifier.

Consider now how Krifka’s proposals could be applied to the analysis of the meaning of Hungarian sentences with contrastive topics, like the one in (67):

(67) [_{CT} 'Öt gyerek] 'énekelt.
 five child sang

‘~Five children DID sing.’

Due to the fact that the truth conditions of (67) correspond to those of (66) above, I suppose we could associate the same interpretations with its constituents as that associated with the corresponding constituents in (66). The corresponding derivation is shown in (68):

(68)	[_{CT} ‘Öt gyerek] `énekelt.	
	énekelt [V/NP _s]	$\lambda e[\text{sang}'(e) \wedge \mathbf{AG}(e, x_s)]$
	└─ öt gyerek [NP _s]	└─ $\lambda P \lambda e \exists x_s [\text{child}'(x_s, 5) \wedge P(e)]$
	Öt gyerek énekelt.[V]	$\lambda e \exists x_s [\text{child}'(x_s, 5) \wedge \text{sang}'(e) \wedge \mathbf{AG}(e, x_s)]$
	└─ DECL [S/V]	└─ $\lambda P \exists e [P(e)]$
	[_{CT} ‘Öt gyerek] `énekelt.[S]	$\exists e \exists x_s [\text{child}'(x_s, 5) \wedge \text{sang}'(e) \wedge \mathbf{AG}(e, x_s)]$

The formula corresponding to the meaning of the whole sentence, shown on the bottom line of the right-hand column, thus says that there is a plural individual in the denotation of *child* with five atomic parts such that it was an agent of an event of singing, which corresponds to what we intuitively associate with the sentence above.

Consider now the possible interpretations of sentences where the contrastive topic DP is followed by a negative particle as associate, illustrated in (69):

- (69) [_{CT} ‘Öt gyerek] `nem énekelt.
 five child not sing-PAST
 ‘As for five children, there WEREN’T that many among those who sang.’

Krifka (1989) represents the meaning of the negation of (66) in the manner shown in (71). This formula makes use of the concept of *maximal events*, denoted by **MXE**(e). Maximal events characterizing a particular point in time are defined as the fusion of all events at the relevant time. Krifka’s formal definition of a maximal event of a specific time and a maximal event of some time is reproduced here in (70b, c), respectively (Krifka 1989:101). These definitions are based on the fusion operation, defined by him as in (70a), where the subscript S refers to a predicate of individuals with an extension which has a structure of a complete join semi-lattice without bottom element (Krifka 1989: 77):

- (70) a. $\forall x \forall P [\mathbf{FU}_S(P) = x \leftrightarrow \forall x' [P(x') \rightarrow x' \subseteq_S x] \wedge \wedge \forall x'' [\forall x' [P(x') \rightarrow x' \subseteq_S x''] \rightarrow x' \subseteq_S x'']]$
 b. $\forall e \forall t [\mathbf{MXT}(e, t) \leftrightarrow e = \mathbf{FU}_E(\lambda e [\tau(e) \subseteq_T t])]$
 c. $\forall e [\mathbf{MXE}(e) \leftrightarrow \exists t [e = \mathbf{FU}_E(\lambda e [\tau(e) \subseteq_T t])]]$

(71) Five children did not sing.

sing [V/NP_s]

└ did not [AUX]

did not sing [V/NP_s]

└ five children [NP_s]

Five children did not sing. [V]

└ DECL [S/V]

Five children did not sing. [S]

$\lambda e[\text{sing}'(e) \wedge \mathbf{AG}(e, x_s)]$

└ $\lambda P \lambda e[\mathbf{MXE}(e) \wedge \neg \exists e'[P(e') \wedge e' \subseteq_E e]]$ ⁸¹

$\lambda e[\mathbf{MXE}(e) \wedge \neg \exists e'[\text{sing}'(e') \wedge \mathbf{AG}(e', x_s) \wedge e' \subseteq_E e]]$

└ $\lambda P \lambda e \exists x_s [\text{child}'(x_s, 5) \wedge P(e)]$

$\lambda e \exists x_s [\text{child}'(x_s, 5) \wedge \mathbf{MXE}(e) \wedge \neg \exists e'[\text{sing}'(e') \wedge \mathbf{AG}(e', x_s) \wedge e' \subseteq_E e]]$

└ $\lambda P \exists e [P(e)]$

$\exists e \exists x_s [\text{child}'(x_s, 5) \wedge \mathbf{MXE}(e) \wedge \neg \exists e'[\text{sing}'(e') \wedge \mathbf{AG}(e', x_s) \wedge e' \subseteq_E e]]$

As the semantic tree on the right above indicates, Krifka assumes that in (71) it is the predicate that is negated. The notion of maximal events is needed to maintain the assumption that sentence radicals denote sets of events, and that sentences themselves assert about particular events that they occurred. In this system, negated sentences assert the occurrence of a maximal event which has no subevent of the type described by the affirmative counterpart of the sentence. Sentence (71) thus asserts that a maximal event occurred and that there is a plural individual in the denotation of the noun *child* having five atomic parts such that the former has no subevent which is a singing event having the latter as its agent. The predicate *did not sing* itself corresponds to maximal events which do not contain an event of singing. Note however, that the meaning assigned by Krifka to (71) would not correspond to the meaning, since the latter means that there was no singing event whatsoever which had an agent which is denoted by the DP *five children*. In other words, the scope of negation does not only include the verbal predicate but the whole proposition. This means that in Krifka's system the scopes of operators correspond to the syntactic positions they occupy in the sentence, since this determines the order in which their denotation is unified with the predicate meaning. In order to be able to generate the formal representation of what native speakers take to be the meaning of sentence (69), the negative particle has to be associated with a specific meaning when it serves as the associate of the contrastive topic, in other words, when it appears in a specific construction. This specific meaning is propositional negation. The following derivation shows the result (the meaning of propositional negation is indicated in line 4):

(72)

énekelt [V/NP_s]

└ öt gyerek [NP_s]

öt gyerek énekelt [V]

└ nem [V/V]

[CT Öt gyerek] `nem énekelt [V]

└ DECL [S/V]

[CT Öt gyerek] `nem énekelt [S]

$\lambda e[\text{sang}'(e) \wedge \mathbf{AG}(e, x_s)]$

└ $\lambda P \lambda e \exists x_s [\text{child}'(x_s, 5) \wedge P(e)]$

$\lambda e \exists x_s [\text{child}'(x_s, 5) \wedge \text{sang}'(e) \wedge \mathbf{AG}(e, x_s)]$

└ $\lambda P \lambda e[\mathbf{MXE}(e) \wedge \neg \exists e'[P(e') \wedge e' \subseteq_E e]]$

$\lambda e[\mathbf{MXE}(e) \wedge \neg \exists e' \exists x_s [\text{child}'(x_s, 5) \wedge \text{sang}'(e') \wedge \mathbf{AG}(e', x_s) \wedge e' \subseteq_E e]]$

└ $\lambda P \exists e [P(e)]$

$\exists e[\mathbf{MXE}(e) \wedge \neg \exists e' \exists x_s [\text{child}'(x_s, 5) \wedge \text{sang}'(e') \wedge \mathbf{AG}(e', x_s) \wedge e' \subseteq_E e]]$

According to (72), (69) would mean that there was a maximal event such that it did not have an event of singing by five children as a part, which is what we were aiming for.

⁸¹ It is assumed here that the reference time of the event is explicit, since otherwise MXE does not have the required effect.

Consider next how Krifka (1989) would account for the relative scopes of two quantificational DPs. His example (37) is repeated here in (73):

(73) Two girls ate seven apples.

Krifka assumes that for sentences like (73) the cumulative reading is the basic one, from which the distributive readings are derived. The representation of the cumulative reading of the above example is shown in (74c) below. (74a, b) show the formal denotations of the two DPs:

- (74) a. *two girls* [NP_s] $\lambda P \lambda e \exists x_s [P(e) \wedge \mathbf{girl}'(x_s, 2)]$
 b. *seven apples* [NP_o] $\lambda P \lambda e \exists x_o [P(e) \wedge \mathbf{apple}'(x_o, 7)]$
 c. *two girls ate seven apples* [V] $\lambda e \exists x_s \exists x_o [\mathbf{eat}'(e) \wedge \mathbf{AG}(e, x_s) \wedge \mathbf{PAT}(e, x_o) \wedge \mathbf{apple}'(x_o, 7) \wedge \mathbf{girl}'(x_s, 2)]$

The distributive readings of the sentence are derived from (74c) as follows. The representation of distributivity can either be built into the denotation of particular noun phrases, or into that of the verbal predicate. (75) below shows how the representation of the reading of (73) according to which two girls ate seven apples each can be derived if distributivity is built into the meaning of the subject noun phrase, where **ATP** denotes a relation between an atomic part of an object and the object itself:

- (75) *ate seven apples* [V/ NP_o] $\lambda e \exists x_o [\mathbf{eat}'(e) \wedge \mathbf{AG}(e, x_s) \wedge \mathbf{PAT}(e, x_o) \wedge \mathbf{apple}'(x_o, 7)]$
 \swarrow *two girls* [NP_s] $\lambda P \lambda e \exists x [\mathbf{girl}'(x_s, 2) \wedge \forall x_s [\mathbf{ATP}_o(x_s, x) \rightarrow \exists e' [(e') \wedge e' \subseteq_E e]]]$
two girls ate seven apples [V] $\lambda e \exists x [\mathbf{girl}'(x, 2) \wedge \forall x_s [\mathbf{ATP}_o(x_s, x) \rightarrow \exists e' \exists x_o [\mathbf{eat}'(e') \wedge \mathbf{AG}(e', x_s) \wedge \mathbf{PAT}(e', x_o) \wedge \mathbf{apple}'(x_o, 7)] \wedge e' \subseteq_E e]]]$

The representation in (75) presupposes that indefinite noun phrases like *two girls* can have several denotations, which vary not only with respect to the distributivity ‘parameter’ (i.e., whether they are interpreted as a sum, group or a collection of atoms), but also with regard to their syntactic position. According to the following strategy, illustrated in (76), the distributive meaning, which manifests itself optionally in the adverbial *each*, is built into the meaning of the verbal predicate, but it is bound, somewhat unconventionally, to a syntactic variable. This means that *each*, for example, could receive several interpretations.

- (76) *ate seven apples* [V/ NP_s] $\lambda e \exists x_o [\mathbf{eat}'(e) \wedge \mathbf{AG}(e, x_s) \wedge \mathbf{PAT}(e, x_o) \wedge \mathbf{apple}'(x_o, 7)]$
 \swarrow $(each_s)$ $\lambda P \lambda e \forall x [\mathbf{ATP}_o(x, x_s) \rightarrow \exists x_s \exists e' [x = x_s \wedge \mathbf{PAT}(e', x_s) \wedge \mathbf{apple}'(x_s, 7)]]$
 \swarrow $[(V/ NP_s)/(V/ NP_s)]$ $\lambda e \forall x [\mathbf{ATP}_o(x, x_s) \rightarrow \exists x_s \exists e' [x = x_s \wedge \exists x_o [\mathbf{eat}'(e') \wedge \mathbf{AG}(e', x_s) \wedge \mathbf{PAT}(e', x_o) \wedge \mathbf{apple}'(x_s, 7)] \wedge e' \subseteq_E e]]]$
 \swarrow *ate seven apples* $(each_s)$ [V/ NP_s] $\lambda P \lambda e \exists x_s [\mathbf{girl}'(x_s, 2) \wedge P(e)]$
 \swarrow *two girls* [NP_s] $\lambda e \exists x_s [\mathbf{girl}'(x_s, 2) \wedge \mathbf{ATP}_o(x, x_s) \rightarrow \exists x_s \exists e' [x = x_s \wedge \exists x_o [\mathbf{eat}'(e') \wedge \mathbf{AG}(e', x_s) \wedge \mathbf{PAT}(e', x_o) \wedge \mathbf{apple}'(x_s, 7)] \wedge e' \subseteq_E e]]]$
two girls ate seven apples $(each_s)$ [V]

The strategies illustrated in (75) and (76) lead to identical representations. The problem with these, I believe, is that it is not specified what conditions determine whether a particular noun phrase can receive a distributive interpretation. As it was discussed in section 3.3 above, the distributivity/collectivity of DPs in Hungarian does not only depend on the lexical properties of the determiner, but also on its syntactic position. In the case of the strategy in (76), the distributive meaning is integrated into the meaning of the predicate before it combines with the meaning of the DP concerned, which means that the issue of whether a DP can receive a distributive interpretation is decided before the interpretation procedure actually starts. Like Landman (1996), Krifka (1989) does not discuss the interpretation of sentences where the thematic roles are played by DPs which are taken to denote monotone decreasing or non-monotone quantifiers in Generalized Quantifier Theory, either. One further worrisome aspect of the theory is that the cumulative reading is considered to be the primary one (at least in the case of bare numerical determiners). As discussed in the previous section, the majority of possible Hungarian sentences with contrastive topics does not have a cumulative reading at all.

In the previous section we criticized Landman (1996) for not taking into account the syntactic positions of quantificational DPs. For Krifka's theory, however, a criticism from the opposite direction seems to apply. Since it is based on the unification of denotations in a binary syntactic tree starting from the bottom up, the scopes of quantifiers would correspond to their linear order, and thus there would be no possibility to represent scope reversal. For example, it is hard to imagine how (67) would receive a reading according to which the object DP gets wide scope. Such a reading, as argued by Gil (1982), must, however, be made available for the above sentence.

Nevertheless, the mechanism of unifying the meanings of constituents in a binary tree seems to be a viable procedure, if a mechanism is built into the semantics by means of which the readings involving scope reversal can be accounted for, when available. In the next section we propose an integrated method for providing the semantics of sentences with contrastive topics in Hungarian, which uses the most valuable insights of Landman (1996) and Krifka (1989), and is based on the empirical observation that Hungarian sentences with contrastive topics can have essentially three types of logical structure.

5 An event semantics of Hungarian sentences with contrastive topics

5.1 Logical structure of sentences with contrastive topics

I view of the fact that neither the semantic properties of sentences with contrastive topics (scope of quantifiers, availability of collective/distributive readings) nor the well-formedness of sentences containing them can be accounted for without paying attention to their specific semantic and pragmatic function⁸², it was proposed in Chapter 1 of this work that sentences with contrastive topics constitute a specific construction of the language. The function of the contrastive topic itself is to introduce the implicature that there is at least one alternative

⁸² For example, DPs denoting monotone decreasing quantifiers would not normally be allowed to appear in a preverbal position other than the one immediately preceding the verb, cf. (78) below.

statement whose truth is neither entailed nor contradicted by the truth of the proposition expressed by the sentence with the contrastive topic.

The possible contrastive topic DPs fall into two distinct semantic classes, which differ from each other as regards the logical structures of the (factual) statements they can appear in. (It will be argued in chapter 5 that modal/intensional statements constitute a distinct category.) Certain contrastive topic DPs are capable of introducing a discourse referent in the traditional sense of the word, like the ones in (77) below:

- (77) a. [_{CT} 'János] `énekelt.
 John sang
 ‘John `did sing.’
- b. [_{CT} 'Öt gyerek] `énekelt.
 five child sang
 ‘Five children `did sing.’

The above set of expressions includes referential DPs and those denoting monotone increasing quantifiers. Some of these, like *János* in (77a) above, or *öt gyerek* in (77b), could normally function as the topic of the sentence in the semantic sense, although some others, i.e., non-referential expressions denoting monotone increasing quantifiers, to be illustrated below, cannot appear in the topic position. The sentences in (77) predicate a property about John, or about a plural individual with five atomic parts falling into the denotation of *child*, the property of being a participant in a (plural) event of singing. The implicature introduced by the sentence, depending on whether the stress on the verb is to signal verum focus or contrastive focus, is the following. According to the first interpretation strategy, the sentences implicate that there is at least one other type of singing event (performed by an individual who could be considered an alternative of John, or by a different number of children, respectively) such that both its occurrence and its non-occurrence at the relevant time and place is compatible with the meaning of the sentences. According to the second strategy, the sentences implicate that there is at least one type of event which can be considered an alternative to an event of singing (e.g., an event of dancing) such that both its occurrence and its non-occurrence at the relevant time and place and involving an alternative of John or a different number of children, respectively, as participants, is compatible with the meaning of the sentence.

The second type of contrastive topic is exemplified by expressions which do not introduce a discourse referent. This is illustrated by the examples in (78)–(79):

- (78) [_{CT} Öt-nél 'kevesebb könyvet] [_F 'Mari] olvasott.
 five-ADE fewer book-ACC Mary read
 ‘As for fewer than five books, it was Mary who read that many.’
- (79) [_{CT} 'Pontosan két gyereke] [_F 'Jánosnak] van.
 exactly two kid-3SGPOSS John-DAT be-3SG
 ‘As for exactly two kids, it is John who has that many.’

The contrastive topics in the above sentences are unable to introduce discourse referents. These sentences predicate properties about the denotations of the associate expressions, that is, about Mary and John, respectively. The first says that it was Mary who read fewer than five

books, or, in other words, it was Mary who took part in an event of reading fewer than five books. The second expresses that it is John who has exactly two children, in other words, that it is John who is in the state of having two children.⁸³ This means that the contrastive topics take part in the expression of the properties which are claimed to hold of the associate denotations. The above sentences, however, are also “about” the denotations of *fewer than five books* or *exactly two kids* in some sense of the word. As it was argued in Chapter 2, these latter expressions satisfy the requirements of topicality to the extent that these properties have to have been mentioned previously in the discourse to make the sentence felicitous. This means that in this sentence type, the two most important features of topics, i.e., establishing what the sentence is about, and attaching the sentence to the preceding context, are assigned to two different constituents, the first to the associate expression, and the second to the contrastive topic. (These findings also show that if the above two properties constitute the essence of topicality then contrastive topics cannot be considered a subtype of topic.) Thus, those sentences which have an expression in the role of the associate which is capable of introducing a discourse referent, either because of its lexical properties (e.g., those in (72) and (73)), or because it is situated in the focus position (discussed in section 3.3.2), have an interpretation according to which the sentence predicates a property about the specific individual denoted by the associate.

Contrastive topic expressions belonging to some other syntactic categories, i.e., bare numerals, verbs, etc., illustrated in (5)–(7) above, would also be interpreted according to the second strategy. The contrastive topics in them would contribute to the expression of a property predicated of some individual. Adverbs of quantification in the role of contrastive topic will be investigated in section 7 of this chapter. For reasons discussed in section 1 above, in the rest of the chapter we will concentrate on the semantics of contrastive topic DPs, unless indicated otherwise.

In view of the above data I would not agree with I. Kenesei (p.c.) who claims that the two sentence structures illustrated by (71) vs. (72)–(73,) are related to each other semantically as two homonyms are. Instead, I believe that the two construction types illustrated above, i.e., those containing a contrastive topic which can introduce a discourse referent and those containing one which cannot, constitute two subtypes of one construction with the function of implicating some contrast.

As it was claimed above in section 3.3.2, there is a third interpretational strategy for sentences with contrastive topics as well, illustrated in the i) reading of (52), which is available for sentences where the associate is an expression which is not assumed to introduce a discourse referent in sentences without a contrastive topic. On this reading, the sentence expresses that the number of individuals in the denotation of the nominal part of the associate expression which participate in events satisfying the description given by the rest of the sentence is as specified by the determiner of the DP. The majority of expressions capable of inducing this interpretation is constituted by the set of those which denote a monotone decreasing or non-monotone quantifier, although certain other DPs, i.e., the DP *hatnál több fiú* ‘more than six boys’, also belong to this set (Szabolcsi 1997b).

This means that whenever a factual sentence with a contrastive topic DP is interpreted by a speaker of the language, the sentence is matched against these three possible

⁸³ In the rest of the work, the expression ‘event’ will, loosely, be used to cover states as well, i.e., more in the sense of Bach’s (1986) *eventualities*.

construction types. If the contrastive topic can introduce a discourse referent (i.e., belongs to the class of DPs which can appear in topic or quantifier position), then the sentence can be interpreted according to the first strategy. If it is an expression which can have a denotation other than picking out a definite referent (i.e., other than a proper name, personal pronoun or a definite description) and it is accompanied by an associate which can serve as the logical subject of predication, it can also be interpreted according to the second strategy.⁸⁴ Finally, if the associate is an expression which can only appear in the Focus position in sentences without a contrastive topic, then the sentence makes predication about how many individuals fall into the denotation of the property expressed by the rest of the sentence.

If the contrastive topic and the associate are such that they satisfy the the conditions licensing more than one of the above readings, then the sentence will have several interpretations, as illustrated in the case of (80), which can be interpreted according to both of the first two strategies:

- (80) [CT 'Két fiú] `minden lányt meghívott.
 two boy every girl-ACC pfx-invited
 'Two boys invited EVERY girl.'
 a. 'There are two boys who, either as a group or individually, have the property of
 having invited all girls as a group or individually.'
 b. 'All girls are such that they were invited (either as a group or individually) by two
 boys, acting either as a group or alone.'

The above two strategies to the interpretation of sentences with contrastive topics closely mirror the observation made by Jacobs (1997), according to whom "one requirement for scope inversion with quantifiers is that the quantified NP that ends up with wide scope be partitive, that is refer to some quantity of elements of a contextually given set" (Krifka 1998:103). Krifka (1998) argues, for example, that the reason why the NP *ziemlich viele Romane* 'quite a few novels' cannot take wide scope in (81) below is that it is hard to interpret as partitive. This expression contrasts with the minimally differing expression *ziemlich viele von den Romanen* 'quite few of the novels', which can take wide scope in (82):

- (81) Mindestens /EIN Student hat ziemlich \VIEle Romane gelesen. \exists (MANY)
 at least one student has considerably many novels read
 'At least one student read quite a few novels.'

 (82) Mindestens /EIN Student hat ziemlich \VIEle von den Romanen gelesen.
 at least one student has considerably many of the novels read
 \exists (MANY), MANY(\exists)

Krifka (1998:103) claims that the partitivity of quantifiers is an instance of the discourse-linking of a noun phrase. Remember, however, that it was noted in Chapter 2 that monotone decreasing or non-monotone quantifiers in contrastive topic also satisfy the requirement of discourse linking, since they can only appear in this position felicitously if the same expression has already been mentioned in the preceding question. Thus, the expressions capable of introducing a discourse referent must satisfy some stronger requirement that ensures that they are always the ones which receive wide scope. I believe that this

⁸⁴ This means that whenever a contrastive topic DP is followed by a verb or a negative particle as associate, the sentence can only have the first type of interpretation.

requirement is that sentences, at least those which are non-initial members of a discourse, tend to be about some entity, that is, they tend to express a categorical judgment, i.e., they tend to have a logical subject of predication.

In the present section it was claimed that there are three strategies to the interpretation of sentences with contrastive topics in Hungarian. The question naturally arises whether there is any way to predict the scope of quantificational expressions in particular readings of sentences with contrastive topics on the basis of the strategy applied. In section 5.2 below a proposal will be put forward which relates the nine readings listed in (52) above, for example, and the three interpretational strategies above. In section 5.3, we discuss the formal representation of the meaning of sentences interpreted according to the first strategy in a detailed way, while in section 5.4 we turn to sentences which are interpreted according to the second strategy.

5.2 The interpretation procedure associated with sentences containing a contrastive topic

For reasons discussed in the previous section, I believe that when sentences with contrastive topic DPs are interpreted by speakers, they first have to make a decision as to whether the sentence predicates a property of an individual in the denotation of the contrastive topic, or a property about a specific individual in the denotation of the associate, or whether it states how many elements fall into the extension of a property, i.e., which of the three possible strategies discussed above they can follow. The choice depends on whether the contrastive topic is able to introduce a discourse referent, whether the associate can denote an individual about which a predication can be made (the circumstances under which the above conditions are fulfilled will be discussed in the next two sections), and whether the associate is an expression which is used purely to count the elements in the predicate extension.

The next question is how the above two strategies relate to the nine readings listed in (54) above. As far as the third strategy is concerned, this corresponds to reading 9, as stated above. I believe that it is the second strategy, on which the associate expression's denotation needs to be identifiable independently of the denotation of the rest of the sentence or those of the other DPs, lies behind readings 3 and 5, where the linearly second quantificational expression is assumed to take wide scope. I think that these readings can state a property of the independently identified DP denotation, namely, that this plural individual has the property of having participated in a (plural) event of the type described by the rest of the sentence.

The rest of the readings, i.e., readings, 1, 2, 4, 6, 7, and 8, require that the denotation of the contrastive topic be independently identifiable, thus, I believe, they are instantiations of the first type of strategy, which requires that the sentence should predicate a property of the individual corresponding to the contrastive topic denotation.

I claim that a plural individual can have a property of having participated in a plural event in three different ways: it can possess the property as a group, which corresponds to the so-called collective reading, it can possess the property due to the fact that all of its individual parts possess the property, which corresponds to the so-called distributive reading, or it can possess the property due to the fact that it is the sum of individuals (atoms or groups) which

possess the property. This third possibility corresponds to the so-called cumulative readings.⁸⁵ (Naturally, if the DP denotes a singular individual, there is only one reading.)

Note that if the property predicated of a plural individual in any of the above ways is such that it refers to the fact of having participated in an event which had another participant, expressed by a DP, then the property itself can be of three types, depending on whether the plural event connected to it is such that it involved the denotation of the other DP as a group, individually, or due to the fact that it constitutes the sum of the participants of the events in question. In what follows, we will illustrate the workings of the three strategies by means of an example, where the differences between the possible types of events which are compatible with the meaning of the sentence generated according to the three strategies introduced above (listed as *subcases* below) are described systematically.

- (83) [CT 'Három lányt] [F négynél `kevesebb fiú] hívott meg.
 three girl-ACC four-ADE fewer boy invited pfx
 ‘~Three girls were invited by fewer than FOUR boys.’

Strategy 1:

There are three girls which have the property of having participated as patients in a (plural) event of inviting by fewer than four boys.

Subcase 1: There are three girls which have the property of having participated as a group as patients in an event of inviting by fewer than four boys as a group. (→ reading 1 of (50))

Subcase 2: There are three girls which have the property of having participated as a group as patients in a plural event of inviting by fewer than four boys, which consists of subevents involving one boy each as agent. (→ reading 2 of (50))

Subcase 3: There are three girls which have the property of having participated as a group as patients in a plural event of inviting, such that it consists of atomic events with the following property: the sum of their patients is an individual in the denotation of *fewer than four boys*.

Subcase 4: There are three girls each of which have the property of having participated as patients in an event of inviting by fewer than four boys as a group. (→ reading 3 of (50))

Subcase 5: There are three girls each of which have the property of having participated as patients in a plural event of inviting by fewer than four boys, which consists of subevents involving one boy each as agent. (→ reading 5 of (50))

Subcase 6: There are three girls each of which have the property of having participated as patients in a plural event of inviting, such that it consists of atomic

⁸⁵ The case where the plural individual denoted by the DP is assumed to possess the property expressed by the rest of the sentence as a group could perhaps be considered an extreme case of the situation where the property is possessed by the plural individual due to the fact that it is the sum of individuals which possess the property. The reason why I am distinguishing the above three cases, however, is that the third possibility does not sound very natural with respect to certain examples, i.e., the one shown below:

- (i) Öt gyerek felemelte a zongorát.
 five kid pfx-lifted the piano-ACC
 There were five kids each of whom lifted the piano.
 There were five kids who lifted the piano as a group.
 ?There were five kids such that they constitute the sum of those groups which lifted the piano.

events with the following property: the sum of their patients is an individual in the denotation of *fewer than four boys*.

Subcase 7: There is a sum consisting of three girls such that it is the sum of patients of the subevents of a plural event of inviting, each of which has fewer than four boys as a group as patient.

Subcase 8: There is a sum consisting of three girls such that it is the sum of patients of the subevents of a plural event of inviting with a plural agent in the denotation of *fewer than four boy*, which has events involving one boy as agent as subevents.

Subcase 9: There is a sum consisting of three girls such that it is the sum of patients of the subevents of a plural event of inviting with the following property: it consists of subevents of inviting such that the sum of the agents of these subevents falls into the denotation of *fewer than four boy*.

Strategy 2:

There are fewer than four specific boys which have the property of having participated as agents in a (plural) event of inviting three girls.

Subcase 1: There are fewer than four specific boys which have the property of having participated as a group as agents in an event of inviting two girls as a group.

Subcase 2: There are fewer than four specific boys which have the property of having participated as a group as agents in a plural event of inviting two girls, which consists of subevents involving one girl each as patient.

Subcase 3: There are fewer than four specific boys which have the property of having participated as a group as agents in a plural event of inviting, such that it consists of atomic events with the following property: the sum of their patients is an individual in the denotation of *three girls*.

Subcase 4: There are fewer than four specific boys each of which have the property of having participated as agents in an event of inviting three girls as a group.

Subcase 5: There are fewer than four specific boys each of which have the property of having participated as agents in a plural event of inviting three girls, which consists of subevents involving one girl each as patient.

Subcase 6: There are fewer than four specific boys each of which have the property of having participated as agents in a plural event of inviting which has the following property: it consists of atomic events such that the sum of their patients is an individual in the denotation of *three girls*.

Subcase 7: There is a sum consisting of fewer than four specific boys such that it is the sum of agents of the subevents of a plural event of inviting each of which has three girls as a group as patient.

Subcase 8: There is a sum consisting of fewer than four specific boys such that it is the sum of agents of the subevents of a plural event of inviting with a plural agent in the denotation of *three girl*, which has as subevents events involving one boy as agent.

Subcase 9: There is a sum consisting of fewer than four specific boys such that it is the sum of agents of the subevents of a plural event of inviting such that it has subevents of inviting such that the sum of the patients of these subevents falls into the denotation of *three girls*.

Strategy 3:

Subcase 1: The number of boys for which there is an event of inviting three specific girls as a group is fewer than four.

Subcase 2: The number of boys for which there is an event of inviting three non-specific girls as a group is fewer than four.

Subcase 3: The number of boys for which there is an event of inviting three specific girls individually is fewer than four.

Subcase 4: The number of boys for which there is an event of inviting three non-specific girls individually is fewer than four.

The list of events which sentence (83) above is able to describe and that of the non-event-denoting readings serves as a good illustration of the problem which arises if we take seriously the idea that the specificity or the possibility of a distributive/collective/cumulative reading for a DP determine different readings of the sentences they appear in.⁸⁶ I believe that the number of how many different readings a sentence has depends on what we consider significant differences in the situations which these sentences can describe. With the threefold division above I wanted to illustrate that I consider the distinction as to whether the sentence predicates the property of participating in an event of an individual in the denotation of the contrastive topic or it predicates a similar property of a specific individual in the denotation of the associate, or that it counts the elements in the denotation of the predicate expressed by the VP and the contrastive topic together to be a significant one. However, it will be shown below that whether a property is assumed to hold of a collection of individuals as a group or of its atomic parts individually can influence the interpretability of a sentence containing a contrastive topic. For example, there are sentences with only one DP, playing the contrastive topic role, which can naturally denote a group but not a sum of groups. Also, there are DPs, for example, the universal DP *minden gyerek* ‘every child’ which cannot denote a group in contrastive topic, but it can denote a sum of atoms.

In the framework to be proposed here, in which the denotations of sentences are derived as a result of unifying the meanings of constituents, the role of the logical subject of predication will be the following: it is the meaning of this constituent which is incorporated last into the meaning of the sentence. The details of the derivations will be discussed in the next two sections.

Before turning to the actual examples, one more remark seems to be in order. The fact that a contrastive topic or an associate can denote the logical subject of the predication expressed by the sentence does not mean that all or even any of the readings correlated with the respective strategy above will be available for the sentence. The lack of certain, potentially available readings will be attributed below to the fact that these readings cannot introduce alternative propositions which are not entailed by or are not in contradiction to the proposition expressed by the sentence. The nature of the alternative propositions and the mechanism by which readings not satisfying the required implicature are filtered out are discussed in section 6 below.

⁸⁶ Note that while the readings generated according to the first two strategies have the structure of categorical judgments, discussed above, the proposition generated according to the third strategy corresponds neither to a categorical judgment (since it is not about an individual), nor to athetic one, since sentences expressing thetic judgments must have no presuppositions (pointed out by Márta Maleczki, p.c.), which is contradicted by the fact that sentences with contrastive topics always introduce certain presuppositions, as discussed in Chapter 2.

5.3 Contrastive topics denoting the logical subject of predication

The denotations of sentences with contrastive topics will be captured below in terms of Krifka's (1989) unification-based representation. Krifka's original representation language is enriched here with a distinction between singular events (which can only have atomic individuals or groups as participants) and plural events, and one between thematic roles and sum roles.

Here we discuss cases where the contrastive topic is able to express the logical subject of predication. In terms of the formal representation, this means that first the meaning of the predicate (the sentence denotation minus the contrastive topic denotation) has to be constructed, and only in the last step of the semantic computation does it combine with the contrastive topic denotation. For an example, consider again (80), repeated here as (84):

- (84) [CT 'Két fiú] `minden lányt meghívott.
 two boy every girl-ACC pfx-invited
 'Two boys invited EVERY girl.'
a. 'There are two boys who, either as a group or individually, have the property of
 having invited all girls as a group or individually.' (strategy 1)
b. 'All girls are such that they were invited, either as a group or individually by two
 boys, acting either as a group or alone.' (strategy 2)

(85) shows how one reading of (84) is derived, which corresponds to a subcase of strategy 1, which requires that both of the two DPs receive group readings. In the formula, ***invited** is a predicate on plural events denoted by the verb *invited*, ***girl** on plural objects denoted by *girl*, **max(*girl)** denotes the number of atomic parts of the maximal element of the above denotation, ***boy** is a predicate on plural objects denoted by *boy*.

(85)

meghívott [V/NP_s, NP_o]
 └ minden lányt [NP_o] (*group*)
 └ minden lányt meghívott [V/NP_s]
 └ [CT 'két fiú'] [NP_s] (*group*)
 [CT 'Két fiú'] `minden lányt
 meghívott. [V]
 └ DECL [S/V]
 [CT 'Két fiú'] `minden lányt
 meghívott. [S]

$$\begin{aligned} & \lambda e [*invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)] \\ & \quad \lambda P \lambda e \exists x \exists x_o [*girl(x) \wedge |x| = \max(*girl) \wedge \\ & \quad \quad \wedge x_o = \uparrow x \wedge P(e)] \\ & \lambda e \exists x \exists x_o [*invite(e) \wedge {}^sPAT(e, x_o) \wedge *girl(x) \wedge \\ & \quad \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge {}^sAG(e, x_s) \wedge P(e)] \\ & \quad \lambda P \lambda e \exists y \exists x_s [*boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge \\ & \quad \quad \wedge P(e)] \\ & \lambda e \exists x \exists x_o \exists y \exists x_s [*invite(e) \wedge {}^sPAT(e, x_o) \wedge \\ & \quad \wedge *girl(x) \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge \\ & \quad \wedge {}^sAG(e, x_s) \wedge *boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y] \\ & \quad \lambda P \exists e [P(e)] \\ & \exists e \exists x \exists x_o \exists y \exists x_s [*invite(e) \wedge {}^sPAT(e, x_o) \wedge \\ & \quad \wedge *girl(x) \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge \\ & \quad \wedge {}^sAG(e, x_s) \wedge *boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y] \end{aligned}$$

(85) means the following. There is a plural event of inviting with a group of two boys as sum agent and the group consisting of all girls as sum patient. In view of the fact that both the agent and the patient of this plural event are groups, the event itself counts as a singular one, and the last line of (85) is equivalent to (86):

(86) $\exists e \exists x \exists x_o \exists y \exists x_s [invite(e) \wedge PAT(e, x_o) \wedge *girl(x) \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge$
 $\wedge AG(e, x_s) \wedge *boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y]$

A reading corresponding to a different subcase of the above strategy is shown in (87) below, where the contrastive topic receives a sum denotation.

(87)

meghívott [V/NP_s, NP_o]
 └ minden lányt [NP_o] (*group*)
 └ minden lányt meghívott [V/NP_s]
 └ [CT 'két fiú'] [NP_s] (*sum*)
 [CT 'Két fiú'] `minden lányt
 meghívott. [V]
 └ DECL [S/V]
 [CT 'Két fiú'] `minden lányt
 meghívott. [S]

$$\begin{aligned} & \lambda e [*invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)] \\ & \quad \lambda P \lambda e \exists x \exists x_o [*girl(x) \wedge |x| = \max(*girl) \wedge \\ & \quad \quad \wedge x_o = \uparrow x \wedge P(e)] \\ & \lambda e \exists x \exists x_o [*invite(e) \wedge {}^sPAT(e, x_o) \wedge *girl(x) \wedge \\ & \quad \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge {}^sAG(e, x_s) \wedge P(e)] \\ & \quad \lambda P \lambda e \exists x_s [*boy(x_s) \wedge |x_s| \geq 2 \wedge P(e)] \\ & \lambda e \exists x \exists x_o \exists x_s [*invite(e) \wedge {}^sPAT(e, x_o) \wedge \\ & \quad \wedge *girl(x) \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge \\ & \quad \wedge {}^sAG(e, x_s) \wedge *boy(x_s) \wedge |x_s| \geq 2] \\ & \quad \lambda P \exists e [P(e)] \\ & \exists e \exists x \exists x_o \exists y \exists x_s [*invite(e) \wedge {}^sPAT(e, x_o) \wedge \\ & \quad \wedge *girl(x) \wedge |x| = \max(*girl) \wedge x_o = \uparrow x \wedge \\ & \quad \wedge {}^sAG(e, x_s) \wedge *boy(x_s) \wedge |x_s| \geq 2] \end{aligned}$$

According to a subcase of strategy 1, the contrastive topic DPs can denote sets of atoms. The formal derivation of this reading is shown in (88) below. The denotation of the contrastive topic itself is borrowed from Krifka (1989). Here the relation denoted by **ATP_o** is assumed to hold between atomic parts of an object and the object as well. Since the denotations of the verb and the associate are assumed to be the same in (88) as they were in (87), we leave out the first two lines of the derivation:

(88)

`minden lányt meghívott [V/NP_s]
$$\begin{array}{l} \swarrow \\ \text{[CT 'két fiú] [NP_s] (set of atoms)} \end{array}$$
[CT 'Két fiú] `minden lányt
meghívott. [V]
$$\begin{array}{l} \swarrow \\ \text{DECL [S/V]} \end{array}$$
[CT 'Két fiú] `minden lányt
meghívott. [S]
$$\begin{array}{l} \lambda e \exists x \exists x_o [* \text{invite}(e) \wedge {}^s \text{PAT}(e, x_o) \wedge * \text{girl}(x) \wedge \\ \wedge |x| = \text{max}(* \text{girl}) \wedge x_o = \uparrow x \wedge {}^s \text{AG}(e, x_s) \wedge P(e)] \\ \swarrow \\ \lambda P \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \\ \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \exists e' [P(e') \wedge e' \subseteq_{EE} e]]] \\ \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \\ \rightarrow \exists e' [\exists x \exists x_o [* \text{invite}(e') \wedge {}^s \text{PAT}(e', x_o) \wedge \\ \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge x_o = \uparrow x \wedge \\ \wedge {}^s \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]] \\ \swarrow \\ \lambda P \exists e [P(e)] \\ \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \\ \rightarrow \exists e' [\exists x \exists x_o [* \text{invite}(e') \wedge {}^s \text{PAT}(e', x_o) \wedge \\ \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge x_o = \uparrow x \wedge \\ \wedge {}^s \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]] \end{array}$$

In view of our assumptions about plural events and sum roles, the last line of (88) is equivalent to the following:

$$(89) \quad \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \exists e' [\exists x \exists x_o [\text{invite}(e') \wedge \text{PAT}(e', x_o) \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge x_o = \uparrow x \wedge \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]]$$

The next example illustrates a derivation which generates a reading where not only the contrastive topic but also its associate would receive a denotation as a set of atoms:

(90)

meghívott [V/NP_s, NP_o]
$$\begin{array}{l} \swarrow \\ \text{`minden lányt [NP_o] (set of atoms)} \end{array}$$
`minden lányt meghívott [V/NP_s]
$$\begin{array}{l} \swarrow \\ \text{[CT 'két fiú] [NP_s] (set of atoms)} \end{array}$$
[CT 'Két fiú] `minden lányt
meghívott. [V]
$$\begin{array}{l} \swarrow \\ \text{DECL [S/V]} \end{array}$$
[CT 'Két fiú] `minden lányt
meghívott. [S]
$$\begin{array}{l} \lambda e [* \text{invite}(e) \wedge {}^s \text{AG}(e, x_s) \wedge {}^s \text{PAT}(e, x_o)] \\ \swarrow \\ \lambda P \lambda e \exists x [* \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge \\ \wedge \forall x_o [\text{ATP}_o(x_o, x) \rightarrow \exists e' [P(e') \wedge e' \subseteq_{EE} e]]] \\ \lambda e \exists x [* \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge \\ \wedge \forall x_o [\text{ATP}_o(x_o, x) \rightarrow \exists e' [* \text{invite}(e') \wedge \\ \wedge {}^s \text{PAT}(e', x_o) \wedge {}^s \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]] \\ \swarrow \\ \lambda P \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \\ \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \exists e'' [P(e'') \wedge e'' \subseteq_{EE} e]]] \\ \lambda e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \\ \rightarrow \exists e'' \exists x [e'' \subseteq_{EE} e \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge \\ \wedge \forall x_o [\text{ATP}_o(x_o, x) \rightarrow \exists e' [* \text{invite}(e') \wedge \\ \wedge {}^s \text{PAT}(e', x_o) \wedge {}^s \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]]] \\ \swarrow \\ \lambda P \exists e [P(e)] \\ \exists e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \\ \rightarrow \exists e'' \exists x [e'' \subseteq_{EE} e \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge \\ \wedge \forall x_o [\text{ATP}_o(x_o, x) \rightarrow \exists e' [* \text{invite}(e') \wedge \\ \wedge {}^s \text{PAT}(e', x_o) \wedge {}^s \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]]] \end{array}$$

In view of the features of plural events, the last line of (90) is equivalent to the following:

$$(91) \quad \exists e \exists y [* \text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s [\text{ATP}_o(x_s, y) \rightarrow \exists e'' \exists x [e'' \subseteq_{EE} e \wedge * \text{girl}(x) \wedge |x| = \text{max}(* \text{girl}) \wedge \forall x_o [\text{ATP}_o(x_o, x) \rightarrow \exists e' [\text{invite}(e') \wedge \text{PAT}(e', x_o) \wedge \text{AG}(e', x_s) \wedge e' \subseteq_{EE} e]]]]]$$

Having considered the formal representation of the available readings of sentences where the contrastive topic DP is accompanied by another DP as its associate, we turn to sentences where the associate role is played by the verb or a negative particle, illustrated in (92) and (93):

(92) [CT 'Öt gyerek] `énekelt.
 five child sang
 ‘Five children DID sing.’

(93) [CT 'Öt gyerek] `nem énekelt.
 five child not sang
 ‘Five children DIDN’T sing.’

(92) above can only be interpreted according to the first strategy discussed above, namely, the one according to which the sentence is assumed to predicate a property about the individual introduced by the contrastive topic, since there is no second DP in the role of the associate or in postverbal position about which the sentence could make a predication. (93), which differs from (92) in that the associate role is played by a negative particle, denies the truth of the above statement, or, in other words, denies the occurrence of an event of the type described in (92).

DPs which are assumed to denote monotone increasing quantifiers in Generalized Quantifier Theory, i.e., those which appear in the quantifier position of Hungarian sentences, are able to introduce a discourse referent, and thus can appear as contrastive topics. An illustrative example is shown in (94) below:

(94) [CT Mindenlány] `nem énekelt.
 every girl not sang
 ‘Every girl DIDN’T sing.’

The positive counterpart of (94), shown in (95), does not appear to be well-formed in Hungarian. This, however, is not due to formal requirements of the construction but is a sign of its uninterpretability, which is due to the fact that the proposition expressed by this sentence entails all the possible alternative statements, and thus cannot give rise to the implicatures which are associated with the use of contrastive topics, discussed below in section 6.

(95) #[CT Mindenlány] `énekelt.
 every girl sang
 #‘Every girl DID sing.’

The formal derivation of the interpretation of (94), shown in (96), uses the predicate **MXE** on events, borrowed from Krifka (1989). In accordance with our observations made in section 1 above, the universal DP in contrastive topic receives an interpretation according to which it denotes a set of atoms:

(96)
 énekelt [V/NP_s] $\lambda e[*\text{sang}(e) \wedge {}^s\text{AG}(e, x_s)]$

\swarrow [CT 'minden lány] [NP _s] <i>(set of atoms)</i> [CT 'minden lány] énekelt [V]	\swarrow $\lambda P \lambda e \exists x [*girl(x) \wedge x = \mathbf{max}(*girl) \wedge$ $\wedge \forall x_s [ATP_o(x_s, x) \rightarrow \exists e' [P(e') \wedge e' \subseteq_E e]]]$ $\lambda P \lambda e \exists x [*girl(x) \wedge x = \mathbf{max}(*girl) \wedge \forall x_s [ATP_o(x_s, x) \rightarrow$ $\rightarrow \exists e' [*sang(e') \wedge {}^sAG(e', x_s) \wedge e' \subseteq_E e]]]$ \swarrow $\lambda P \lambda e [MXE(e) \wedge \neg \exists e'' [P(e'') \wedge e'' \subseteq_E e]]]$
\swarrow nem [V/V] [CT 'Minden lány] `nem énekelt [V]	\swarrow $\lambda e [MXE(e) \wedge \neg \exists e'' \exists x [*girl(x) \wedge x = \mathbf{max}(*girl) \wedge$ $\wedge \forall x_s [ATP_o(x_s, x) \rightarrow \exists e' [*sang(e') \wedge {}^sAG(e', x_s) \wedge$ $\wedge e' \subseteq_E e''] \wedge e'' \subseteq_E e]]]$ \swarrow $\lambda P \exists e [P(e)]$
\swarrow DECL [S/V] [CT 'Minden lány] `nem énekelt [S]	\swarrow $\exists e [MXE(e) \wedge \neg \exists e'' \exists x [*girl(x) \wedge x = \mathbf{max}(*girl) \wedge$ $\wedge \forall x_s [ATP_o(x_s, x) \rightarrow \exists e' [*sang(e') \wedge {}^sAG(e', x_s) \wedge$ $\wedge e' \subseteq_E e''] \wedge e'' \subseteq_E e]]]$

According to the bottom line of the semantic derivation tree in (96), sentence (94) means that there is no part of the maximal event which is constituted by the fusion of all events at the reference time of the sentence which is an event of singing by the maximal plural individual with the girl property, in other words, the set of all girls in the discourse. This, naturally, does not entail that there are no other events of singing with different participants, e.g., by set of girls with less than the maximal number of them.

Having discussed the outcome of the strategy according to which the contrastive topic is assumed to denote the logical subject of predication, in the next section we investigate the second type of strategy, according to which the contrastive topic contributes to the expression of a property of an individual denoted by the associate.

5.4 Contrastive topics contributing to the expression of a property

The contrastive topics investigated in this section will be assumed not to introduce a discourse referent but to contribute to the expression of a property of the individual denoted by the associate DP. This happens, for example, when the second strategy identified above is applied to the interpretation of (84) above, repeated here as (97):

- (97) [CT 'Két fiú] `minden lányt meghívott.
two boy every girl-ACC pfx-invited
‘~Two boys invited EVERY girl.’
- ‘There are two boys who, either as a group or individually, have the property of having invited all girls as a group or individually.’ (strategy 1)
 - ‘All girls are such that they were invited, either as a group or individually by two boys, acting either as a group or alone.’ (strategy 2)

Formal representations corresponding to subcases of the strategy in the interpretation of the above sentence are derived as shown in (98) and (100). What distinguishes these representations from those in the previous section is that it is the associate meaning which is last integrated into the meaning of the sentence. (98) shows the representation according to which the contrastive topic receives a group denotation, while (100) shows the one according to which the contrastive topic is interpreted as a set of atoms. The associate DP receives a denotation in terms of a set of atoms in both cases.

(98)

meghívott [V/NP_s, NP_o]
 └─ [CT két fiú] [NP_s] (*group*)
 [CT két fiú] meghívott. [V/NP_o]
 └─ minden lányt [NP_o]
 (*set of atoms*)
 [CT két fiú] minden lányt
 meghívott. [V]
 └─ DECL [S/V]
 [CT két fiú] minden lányt
 meghívott. [S]

$\lambda e[*invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)]$
 └─ $\lambda P \lambda e \exists y \exists x_s[*boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$
 $\wedge P(e)]$
 $\lambda e \exists y \exists x_s[*boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$
 $\wedge *invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)]$
 └─ $\lambda P \lambda e \exists x[*girl(x) \wedge |x| = \mathbf{max}(*girl) \wedge$
 $\wedge \forall x_o[ATP_o(x_s, x) \rightarrow \exists e'[P(e') \wedge e' \subseteq_E e]]]$
 $\lambda e \exists x[*girl(x) \wedge |x| = \mathbf{max}(*girl) \wedge$
 $\wedge \forall x_o[ATP_o(x_o, x) \rightarrow \exists e' \exists y \exists x_s[*boy(y) \wedge |y| \geq 2 \wedge$
 $\wedge x_s = \uparrow y \wedge *invite(e') \wedge {}^sAG(e', x_s) \wedge$
 $\wedge {}^sPAT(e', x_o) \wedge e' \subseteq_E e]]]$
 └─ $\lambda P \exists e [P(e)]$
 $\exists e \exists x[*girl(x) \wedge |x| = \mathbf{max}(*girl) \wedge$
 $\wedge \forall x_o[ATP_o(x_o, x) \rightarrow \exists e' \exists y \exists x_s[*boy(y) \wedge |y| \geq 2 \wedge$
 $\wedge x_s = \uparrow y \wedge *invite(e') \wedge {}^sAG(e', x_s) \wedge$
 $\wedge {}^sPAT(e', x_o) \wedge e' \subseteq_E e]]]$

In view of the fact that the participants of events e' in the above formula are either atomic individuals or groups, the last line of (98) is identical to the following formula:

(99) $\exists e \exists x[*girl(x) \wedge |x| = \mathbf{max}(*girl) \wedge \forall x_o[ATP_o(x_o, x) \rightarrow \exists e' \exists y \exists x_s[*boy(y) \wedge |y| \geq 2 \wedge$
 $\wedge x_s = \uparrow y \wedge invite(e') \wedge AG(e', x_s) \wedge PAT(e', x_o) \wedge e' \subseteq_E e]]]$

The representation of a different reading of the above sentence is shown in (100), where the denotations of both DPs are given in terms of sets of atoms:

(100)

meghívott [V/NP_s, NP_o]
 [CT 'Két fiú] [NP_s] (*set of atoms*)
 [CT 'Két fiú] meghívott. [V/ NP_o]
 [CT 'Két fiú] `minden lányt [NP_o]
 (*set of atoms*)
 [CT 'Két fiú] `minden lányt
 meghívott. [V]
 DECL [S/V]
 [CT 'Két fiú] `minden lányt
 meghívott. [S]

$\lambda e[{}^*\text{invite}(e) \wedge {}^s\text{AG}(e, x_s) \wedge {}^s\text{PAT}(e, x_o)]$
 $\lambda P\lambda e\exists y[{}^*\text{boy}(y) \wedge |y| \geq 2 \wedge$
 $\wedge \forall x_s[\text{ATP}_o(x_s, y) \rightarrow \exists e'[P(e') \wedge e' \subseteq_E e]]]$
 $\lambda e\exists y\exists x_s[{}^*\text{boy}(y) \wedge |y| \geq 2 \wedge \forall x_s[\text{ATP}_o(x_s, y) \rightarrow$
 $\rightarrow \exists e'[]^*\text{invite}(e') \wedge {}^s\text{AG}(e', x_s) \wedge {}^s\text{PAT}(e', x_o) \wedge$
 $\wedge e' \subseteq_E e]]]$
 $\lambda P\lambda e\exists x[{}^*\text{girl}(x) \wedge |x| = \text{max}({}^*\text{girl}) \wedge$
 $\wedge \forall x_o[\text{ATP}_o(x_o, x) \rightarrow \exists e''[P(e'') \wedge e'' \subseteq_E e]]]$
 $\lambda e\exists x[{}^*\text{girl}(x) \wedge |x| = \text{max}({}^*\text{girl}) \wedge$
 $\wedge \forall x_o[\text{ATP}_o(x_o, x) \rightarrow \exists e''\exists y\exists x_s[{}^*\text{boy}(y) \wedge |y| \geq 2 \wedge$
 $\wedge \forall x_s[\text{ATP}_o(x_s, y) \rightarrow \exists e'[]^*\text{invite}(e') \wedge$
 $\wedge {}^s\text{AG}(e', x_s) \wedge {}^s\text{PAT}(e', x_o) \wedge e' \subseteq_E e'']] \wedge$
 $\wedge e' \subseteq_E e]]]$
 $\lambda P\exists e [P(e)]$
 $\exists e\exists x[{}^*\text{girl}(x) \wedge |x| = \text{max}({}^*\text{girl}) \wedge$
 $\wedge \forall x_o[\text{ATP}_o(x_o, x) \rightarrow \exists e''\exists y\exists x_s[{}^*\text{boy}(y) \wedge |y| \geq 2 \wedge$
 $\wedge \forall x_s[\text{ATP}_o(x_s, y) \rightarrow \exists e'[]^*\text{invite}(e') \wedge$
 $\wedge {}^s\text{AG}(e', x_s) \wedge {}^s\text{PAT}(e', x_o) \wedge e' \subseteq_E e'']] \wedge$
 $\wedge e' \subseteq_E e]]]$

The last line of (100) is equivalent to the following:

(101) $\exists e\exists x[{}^*\text{girl}(x) \wedge |x| = \text{max}({}^*\text{girl}) \wedge \forall x_o[\text{ATP}_o(x_o, x) \rightarrow \exists e''\exists y\exists x_s[{}^*\text{boy}(y) \wedge |y| \geq 2 \wedge$
 $\wedge \forall x_s[\text{ATP}_o(x_s, y) \rightarrow \exists e'[]^*\text{invite}(e') \wedge {}^s\text{AG}(e', x_s) \wedge {}^s\text{PAT}(e', x_o) \wedge e' \subseteq_E e'']] \wedge$
 $\wedge e' \subseteq_E e]]]$

The following sentence illustrates a case where the associate role is played by a non-quantificational noun phrase in the focus position:

(102) [CT 'Két néző] [F a `filmet] látta.
 two viewer the movie-acc saw
 'It is the movie which was seen by TWO viewers.'

In accordance with traditional wisdom about the meaning of focus (according to which a focused sentence presupposes that the property expressed by the focus frame holds of at least one individual, property, etc.), (102) presupposes that there was an event of watching something by at least two viewers, and it asserts that it is an event of watching the movie. The above interpretation can be generated compositionally from the meanings of the constituents in the manner illustrated in (103). In this particular derivation, the contrastive topic DP is assigned a group interpretation in order to ease the computation. However, since events of seeing necessarily involve atomic individuals as agents, the truth conditions of the formula below would entail the truth of one where the contrastive topic denotation is given in terms of a set of atoms. The above entailment could be coded in the form of a meaning postulate which transforms a representation of a (plural) event with a sum or group participant into one with parts having atomic individuals as participants.

(103)

látta [V/NP _s , NP _o]	$\lambda e[*\text{watch}'(e) \wedge {}^s\text{AG}(e, x_s) \wedge {}^s\text{TH}(e, x_o)]$
└─ [CT 'Két néző] [NP _s] (<i>group</i>)	└─ $\lambda P \lambda e \exists y \exists x_s [*viewer(y) \wedge y \geq 2 \wedge x_s = \uparrow y \wedge$
└─ [CT 'Két néző] látta [V/NP _o]	└─ $\wedge P(e)]$
└─ [F a 'filmet] [NP _o]	$\lambda e \exists y \exists x_s [*viewer(y) \wedge y \geq 2 \wedge x_s = \uparrow y \wedge$
└─ [CT 'Két néző][F a 'filmet]	└─ $\wedge {}^s\text{watch}'(e) \wedge {}^s\text{AG}(e, x_s) \wedge {}^s\text{TH}(e, x_o)]$
└─ látta. [V]	└─ $\lambda P \lambda e \exists x_o [*movie(x_o) \wedge x_o = 1 \wedge$
└─ DECL [S/V]	└─ $\wedge P(e) \wedge \forall e' \forall x_o' [P(e') \rightarrow x_o' \subseteq_o x_o]]$
└─ [CT 'Két néző][F a 'filmet]	$\lambda e \exists x_o \exists y \exists x_s [*movie(x_o) \wedge x_o = 1 \wedge {}^s\text{viewer}(y) \wedge y \geq 2$
└─ látta. [S]	$\wedge x_s = \uparrow y \wedge {}^s\text{watch}'(e) \wedge {}^s\text{AG}(e, x_s) \wedge {}^s\text{TH}(e, x_o) \wedge$
	$\wedge \forall e' \forall x_o' [[*watch'(e') \wedge {}^s\text{AG}(e', x_s) \wedge$
	$\wedge {}^s\text{TH}(e', x_o')] \rightarrow x_o' \subseteq_o x_o]]$
	└─ $\lambda P \exists e [P(e)]$
	$\exists e \exists x_o \exists y \exists x_s [*movie(x_o) \wedge x_o = 1 \wedge {}^s\text{viewer}(y) \wedge y \geq 2$
	$\wedge x_s = \uparrow y \wedge {}^s\text{watch}'(e) \wedge {}^s\text{AG}(e, x_s) \wedge {}^s\text{TH}(e, x_o) \wedge$
	$\wedge \forall e' \forall x_o' [[*watch'(e') \wedge {}^s\text{AG}(e', x_s) \wedge$
	$\wedge {}^s\text{TH}(e', x_o')] \rightarrow x_o' \subseteq_o x_o]]$

Informally, (103) says that there was an event of watching by the movie by two viewers, and any (contextually relevant) plural event of watching, the (sum) agent of which is a group individual with the property of being a viewer with at least two atomic parts, is an event of watching the movie.

The next example shows that a similar strategy to the representation of the meaning of focus (shown in line 4 of (103) also works with respect to examples where the associate in focus position is a quantificational DP, as illustrated in (104):

- (104) [CT 'Három fiú] [F 'öt lányt] hívott meg.
 three boy five girl-ACC invited pfx
 a. 'There are three boys who have the property of having invited five girls.' (strategy 1)
 b. 'All girls are such that they were invited by two boys.' (strategy 2)

The a) reading of the sentence is derived formally as follows:

(105)

meghívott [V/NP_s, NP_o]
 [CT 'Három fiú] [NP_s] (*group*)
 [CT 'Három fiú] meghívott. [V/ NP_o]
 [F 'öt lányt] [NP_o]
 (*group*)
 [CT 'Három fiú] 'öt lányt
 hívott meg. [V]
 DECL [S/V]
 [CT 'Három fiú] 'öt lányt
 hívott meg. [S]

$$\begin{aligned} & \lambda e [* \text{invite}(e) \wedge {}^s \text{AG}(e, x_s) \wedge {}^s \text{PAT}(e, x_o)] \\ & \quad \lambda P \lambda e \exists y \exists x_s [* \text{boy}(y) \wedge |y| \geq 3 \wedge x_s = \uparrow y \wedge \\ & \quad \wedge P(e)] \\ & \lambda e \exists y \exists x_s [* \text{boy}(y) \wedge |y| \geq 3 \wedge x_s = \uparrow y \wedge \\ & \quad \wedge * \text{invite}(e) \wedge {}^s \text{AG}(e, x_s) \wedge {}^s \text{PAT}(e, x_o)] \\ & \quad \lambda P \lambda e \exists x \exists x_o [* \text{girl}(x) \wedge |x| = 5 \wedge x_o = \uparrow x \wedge \\ & \quad \wedge P(e) \wedge \forall e' \forall x_o' [P(e') \rightarrow x_o' \subseteq x_o]] \\ & \lambda e \exists x \exists x_o \exists y \exists x_s [* \text{girl}(x) \wedge |x| = 5 \wedge x_o = \uparrow x \wedge \\ & \quad \wedge * \text{boy}(y) \wedge |y| \geq 3 \wedge x_s = \uparrow y \wedge \\ & \quad \wedge * \text{invite}(e) \wedge {}^s \text{AG}(e, x_s) \wedge {}^s \text{PAT}(e, x_o) \wedge \\ & \quad \wedge \forall e' \forall x_o' [* \text{invite}(e') \wedge {}^s \text{AG}(e', x_s) \wedge \\ & \quad \wedge * \text{PAT}(e', x_o')] \rightarrow x_o' \subseteq x_o] \\ & \quad \lambda P \exists e [P(e)] \\ & \exists e \exists x \exists x_o \exists y \exists x_s [* \text{girl}(x) \wedge |x| = 5 \wedge x_o = \uparrow x \wedge \\ & \quad \wedge * \text{boy}(y) \wedge |y| \geq 3 \wedge x_s = \uparrow y \wedge \\ & \quad \wedge * \text{invite}(e) \wedge {}^s \text{AG}(e, x_s) \wedge {}^s \text{PAT}(e, x_o) \wedge \\ & \quad \wedge \forall e' \forall x_o' [* \text{invite}(e') \wedge {}^s \text{AG}(e', x_s) \wedge \\ & \quad \wedge * \text{PAT}(e', x_o')] \rightarrow x_o' \subseteq x_o] \end{aligned}$$

The next example to be discussed here has a DP in the role of the associate which is assumed to denote, in the framework of Generalized Quantifier Theory, a monotone decreasing quantifier. As discussed above, in this work I assume that these DPs are situated in the focus position of the Hungarian sentence, because their semantic behaviour is similar to that of focused expressions. This means that the truth of a sentence with a DP of the above type entails the falsity of any sentence where the DP is substituted for one whose determiner makes reference to a larger quantity. Thus, whenever (106) is true, then any sentence expressing that two boys invited at least four or more girls would prove to be false.

(106) [CT 'Két fiú] [F négynél 'kevesebb lányt] hívott meg.
 twoboy four-ADE fewer girl-ACC invited pfx

'Two boys invited less than FOUR girls.'

- a. 'There are two boys who have the property of having invited fewer than four girls.' (strategy 1)
- b. 'There are fewer than four specific girls who were invited by two boys.' (strategy 2)

A reading according to strategy 2, where the both DPs denote groups is generated formally as shown in (107) below:

(107)

meghívott [V/NP_s, NP_o]

└─ [CT 'Két fiú] [NP_s] (group)

[CT 'Két fiú] meghívott. [V/ NP_o]

└─ [F négyenél 'kevesebb lányt] [NP_o]
(set of atoms)

[CT 'Két fiú] [F négyenél 'kevesebb lányt]
hívott meg. [V]

└─ DECL [S/V]

[CT 'Két fiú] [F négyenél 'kevesebb lányt]
hívott meg. [S]

$\lambda e[*invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)]$

└─ $\lambda P \lambda e \exists y \exists x_s [*boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$
 $\wedge P(e)]$

$\lambda e \exists y \exists x_s [*boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$

$\wedge *invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o)]$

└─ $\lambda P \lambda e \exists x \exists x_o [*girl(x) \wedge |x| \leq 4 \wedge x_o = \uparrow x \wedge$
 $\wedge P(e) \wedge \forall e' \forall x_o' [P(e') \rightarrow x_o' \subseteq x_o]]$

$\lambda e \exists x \exists x_o \exists y \exists x_s [*girl(x) \wedge |x| \leq 4 \wedge x_o = \uparrow x \wedge$

$\wedge *boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$

$\wedge *invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o) \wedge$

$\wedge \forall e' \forall x_o' [[*invite(e') \wedge {}^sAG(e', x_s) \wedge$

$\wedge {}^sPAT(e', x_o')] \rightarrow x_o' \subseteq x_o]]$

└─ $\lambda P [P(e)]$

$\exists e \exists x \exists x_o \exists y \exists x_s [*girl(x) \wedge |x| \leq 4 \wedge x_o = \uparrow x \wedge$

$\wedge *boy(y) \wedge |y| \geq 2 \wedge x_s = \uparrow y \wedge$

$\wedge *invite(e) \wedge {}^sAG(e, x_s) \wedge {}^sPAT(e, x_o) \wedge$

$\wedge \forall e' \forall x_o' [[*invite(e') \wedge {}^sAG(e', x_s) \wedge$

$\wedge {}^sPAT(e', x_o')] \rightarrow x_o' \subseteq x_o]]$

The above representation says that there are fewer than four girls such that each of them were invited by a group of at least two boys and any event of inviting by groups of at least two boys is an inviting of some or all of these girls, which I believe, correctly reflects the truth-conditions of the above sentence on the particular interpretation

The contrast between the interpretability of the following pairs of examples can be accounted for on the basis of the specific semantic properties of focusing:

(108) [CT 'Két gyerek] több mint 'öt filmet megnézett.

two kid more than five movie-ACC pfx-watched

a. 'There are two kids who saw five plays.'

b. # 'There are more than five movies which were seen by two kids.'

(109) [CT 'Két gyerek] [F több mint 'öt filmet] nézett meg.

two kid more than five movie-ACC watched pfx

a. 'There are two kids who saw five plays.'

b. 'There are more than five movies which were seen by two kids.'

(110) # [CT 'Mindenki] [Q 'sok embert] meghívott.

everybody many person-ACC pfx-invited

a. # 'Each person invited many people.'

b. # 'There are many specific people who were invited by everybody.'

(111) [CT 'Mindenki] [F 'sok embert] hívott meg.

everybody many person-ACC invited pfx

a. # 'Each person invited many people.'

b. 'There are many specific people who were invited by everybody.'

In (108), the quantificational DP *több mint öt filmet* ‘more than five book-acc’, which plays the role of the associate is situated in the preverbal quantifier position, and thus it is unable to identify a particular referent. This is the reason why reading b) is out. In (109), the same expression is situated in focus position, thus, it is able to identify a particular referent, and thus can give rise to reading b). The same difference underlies the contrast in the availability of the b) readings for (110) and (111). In the case of these examples, however, the a) readings are also missing, which is due to the fact that on these interpretations the sentences would not give rise to ‘proper’ alternatives, discussed in section 6 below.

Note that a DP which denotes a monotone decreasing quantifier in the framework of Generalized Quantifier Theory cannot introduce a discourse referent when situated in contrastive topic. This is the reason why the following sentence can only have a reading according to which it is about five specific plays. Due to the specific features of events of watching plays, the fact that a particular event of watching five plays as a group occurs entails that atomic events of the same type where the patient role is played by one play each also occur.

- (112) [_{CT} *‘Kevés néző]* [_F *‘öt darabot]* látott.
 few viewer five play-ACC saw
 a. ‘There are five specific plays each of which were seen by few viewers.’
 b. #‘There are few viewers who saw five plays.’

In this and the previous chapter we proposed a mechanism, based in a large part on Krifka’s (1989) theory, by which the various readings of sentences with quantificational DPs in the contrastive topic and the associate roles can be derived systematically. There are, however, some readings of sentences with contrastive topic DPs which do not contradict the principles which underlie the strategies to the interpretation of these sentences identified above, but are still judged unavailable by native speakers. In the next section we investigate the reasons why these readings turn out to be impossible and connect them to the implicature carried by the contrastive topic.

6 Predicting well-formedness in an event-based framework

In this section we will look into the issue why some of the potential sentences, or some potential readings of sentences which have quantificational expressions in the role of contrastive topic, turn out to be unacceptable in Hungarian.

Following Büring (1997), we argued in Chapter 2 above that those potential sentences or potential readings of sentences with contrastive topics which are judged unacceptable by speakers should not be considered syntactically ill-formed but uninterpretable, and uninterpretability was attributed to a clash between the intended truth-conditional meaning of the sentence and its implicatures. The implicature was claimed to be the following: there is one alternative to the statement expressed by the sentence which is neither entailed nor contradicted by the original statement.

In view of the fact that the factual sentences with contrastive topics are considered event descriptions here, we will assume that the alternative statements also describe events. Those alternative propositions will be said to be neither entailed nor contradicted by the

proposition expressed by a factual sentence with a contrastive topic which describe an alternative type of event which meets the following requirements: none of its possible realizations in the actual world are such that they constitute a subevent of the particular event described in the sentence with the contrastive topic, and all of its possible realizations in the actual world are compatible with the truth of the latter sentence.

The descriptions of the possible alternative event types are derived in the following, systematic way from the event description in the sentence: in the proposition expressed by the sentence with the contrastive topic, the denotations of the stressed part of the contrastive topic (e.g., the determiner or the noun) and/or that of the constituent with the eradicating stress following the contrastive topic are replaced with their type-identical alternatives (in the sense of Rooth 1985). Whenever the associate role is played by a negative particle, then its denotation in all the possible alternative statements is replaced by that of an implicit affirmative operator. A further requirement on alternative event descriptions is that the descriptions of atomic events introduce descriptions of atomic event types as alternatives.

Whenever the truth-conditional meaning of the sentence entails that there is no available alternative event type which meets the above requirements, the sentence will be claimed to be uninterpretable. In the following sections, we examine some phenomena which are all explainable with the help of the above theoretical apparatus.

6.1 Sentences describing maximal events

Consider the following sentence:

- (113) [_{CT} ˈÖt gyerek] ˈénekelt.
 five child sang
 ‘Five children DID sing.’

(113) expresses that there was an event of singing by five children. The type of the alternative events depends on the stress pattern of the contrastive topic and on the interpretation of the associate. Since the main stress of the contrastive topic falls on the determiner, the denotation of this DP is contrasted to that of others which contain a different determiner. As discussed above, the main stress on the verb in a sentence can either signal verum focus or contrastive focus. In the first case, the alternative event types would be events of singing by a different number of children. In the second case, the alternative propositions would describe events of performing some alternative activity to singing (e.g., dancing) by a different number of children. The more likely reading is the first one, and, if the five children denoted by the contrastive topic in the original sentence are not assumed to constitute all the children present in the universe of discourse, then the event described in (113) could be compatible with all realizations of events of singing by a larger number of kids than five, even with those which take place at the same time and place. Since the truth-conditional meaning of the sentence is compatible with the required implicature, the sentence is considered interpretable.

Compare the above sentence to (114) below:

- (114) #_[CT] Minden gyerek] `megette az ebédet.
 every child pfx-ate the lunch-ACC
 #‘As for every child, they did eat their lunch.’

(114) describes a plural event in which the total number of children ate their lunch. However, there is no type of eating event involving less than the total number of kids as participants with the property that none of its realizations constitute a subevent of the event described in the sentence, since those among their realizations which take place at the same time and place where (114) is assumed to take part would not satisfy this requirement. Thus, the sentence becomes uninterpretable. (Naturally, the stress on the verb could also be the signal of a contrastive focus, which would mean that the alternative events are events of doing something else with the food, but I consider this interpretation less likely.)

The lesson taught by the above example can be generalized to all sentences which describe maximal events, i.e., in which the property of having participated in a particular type of event is attributed to the maximal plural individual in the lattice corresponding to the denotation of a noun. All events of the above type are bound to become uninterpretable.

The same phenomenon is illustrated by the lack of readings of (115) generated according to strategy 1, described above. (In contrastive topic the universal determiner *minden* ‘every’ forces an interpretation on the DP according to which it denotes a set of atoms, as observed in section 1 above):

- (115) _[CT] Minden fiú] _[F] két lányt] hívott meg.
 every boy two girl-ACC invited pfx
 a. #Each boy has the property of having invited two girls. (strategy 1)
 b. There are two specific girls who were invited by every boy. (strategy 2)

The reason why readings corresponding to strategy 1 are not available for (115) is that there is no alternative plural event type which is compatible with the event description in (115) but which does not have realizations which would stand in a subevent relation to the plural event described in the sentence. Note that, as opposed to the reading generated according to strategy 1, a reading generated according to strategy 2 is fine for (115). The latter reading can introduce alternative event types with the required specifications, e.g., types of events of some other girls (other than the two referred to by the focus) being invited by the total number of boys or less than the total number of them.

Compare the above sentence to (97), repeated here as (116), where the positions of the DPs are reversed. For example, the b) reading of (116), the mirror image of reading a) for (115), is fine for (116).

- (116) _[CT] Két fiú] `minden lányt meghívott.
 two boy every girl-ACC pfx-invited
 ‘Two boys invited EVERY girl.’
 a. ‘There are two boys who, either as a group or individually, have the property of having invited all girls as a group or individually.’ (strategy 1)
 b. ‘All girls are such that they were invited, either as a group or individually, by two boys, acting either as a group or alone.’ (strategy 2)

The above contrast in acceptability is due to the fact that in contrastive topic position the DP *két fiú* ‘two boys’ does not receive an ‘exactly’ interpretation, but an ‘at least’ reading, discussed above. Thus, sentence (116) can give rise to alternative event types which are invitings of a different number of girls by a different number of boys. The event type satisfying the description *Two particular girls were invited by five boys*, for example, is such that none of its realizations would constitute a subevent of the event described by (116), and they are also all compatible with the truth of this sentence.

Next consider examples (117) and (118) below, which do not have any available readings. The nature of the event described by the verbal predicate requires that all plural events of watching movies by individuals should be constituted of atomic events of watching one movie by the individuals:

- (117) #_[CT] [Pontosan három néző] `minden filmet látott.
 exactly three viewer every movie-ACC saw
 a. #‘There are exactly three viewers who have the property of having seen all movies.’ (strategy 1)
 b. #‘All movies are such that they were seen by exactly three viewers.’ (strategy 2)
- (118) #_[CT] [Kevés könyvet] `minden gyerek elolvasott.
 few book- ACC every kid pfx-read
 a. #‘There are few books which were read by all children.’ (strategy 1)
 b. #‘Each kid is such that he/she read few books.’ (strategy 2)

The lack of readings corresponding to the first strategy (according to which the contrastive topic introduces a discourse referent) can be attributed in both sentences to the inability of the contrastive topic DPs to introduce a discourse referent. As far as the second strategy is concerned, it would lead to interpretations which associate maximal events with these sentences. For example, according to strategy 2, (117) would have to mean that each movie was seen by exactly three viewers. Such a statement, however, excludes the possibility of there being an alternative event of watching which has the property that all of its possible realizations are compatible with the truth of the sentence, and none of them constitute a subevent of the event described in the sentence.

In this section we discussed one sentence type containing a contrastive topic which becomes uninterpretable due to the fact that it cannot introduce appropriate alternative events into the discourse. In the next section we turn to a different sentence type, negative sentences which describe atomic events.

6.2 Sentences describing atomic events

When the associate of the contrastive topic is the negative particle, i.e., the sentence denies the occurrence of an event of a particular type, then, intuitively, the use of the contrastive topic is aimed to convey that it is not true that the occurrence of all events of the type described by the verbal predicate is excluded. The alternative event types are generated in the same way as it is done for affirmative sentences. The only difference is that now the non-occurrence of the event of the type of event described in the sentence should be compatible with all realizations of the event types in question. Consider (93), repeated here as (119):

- (119) [_{CT} 'Öt gyerek] `nem énekelt.
 five child not sang
 ‘Five children DIDN’T sing.’

The above sentence denies the occurrence of an event of singing which involves at least five kids as sum agent. Alternative event types would be those which describe events of singing by a different number of kids. One alternative event type such that all its realizations are compatible with the meaning of the sentence would be the event of singing by four children.

Compare the above sentence to (120) below, which denies the occurrence of an atomic event of singing:

- (120) #[_{CT} 'Egy gyerek] `nem énekelt.
 one child not sang
 # ‘As for one child, that many didn’t sing.’

I believe that (120) becomes uninterpretable due to the fact that it denies the occurrence of any atomic event of singing which is performed by one kid. Since all plural events of singing by any number of children (i.e., potential alternative events) are such that they would necessarily have to have subevents of one child singing, the fact that the occurrence of any event of the latter type is denied entails that no ‘superevent’ of the former type can occur, either. Thus, (120) entails that no alternative events can take place, which leads to uninterpretability.

The above property, according to which the occurrence of a plural event with a sum individual as sum participant entails, for any individual-part of the latter individual, that plural events of the same type occur for any individual-part of the latter individual, will be referred to as divisibility, and would be defined formally as (121):

- (121) *Divisibility*

$$\forall^s R[\mathbf{DIV}^s(R) \leftrightarrow \forall^* P \forall e \forall x \forall x' [[*P(e) \wedge {}^s R(e, x) \wedge x' \subseteq_O x] \rightarrow \exists e' [e' \subseteq_E e \wedge *P(e') \wedge {}^s R(e', x')]]]$$

The property of divisibility does not apply to relations between events and group participants. For example, on the group reading of the contrastive topic DP in (122) below, the sentence does not entail that there are no alternative events in which a larger number of chairs were lifted together by Joe at the same time:

- (122) [_{CT} 'Két széket] `nem emelt fel Jóska.
 two chair-ACC not lifted pfx Joe
 a. ‘As for two chairs, that many weren’t lifted by Joe separately.’
 b. ‘As for two chairs, that many weren’t lifted by Joe together.’

Note that the a) reading is compatible with a situation in which Joe lifted one chair, while the b) reading is compatible with a situation in which Joe lifted three chairs on top of each other.

Consider now example (123) below:

- (123) [CT *‘Egy könyvet]* *‘nem* *mindenki* *olvasott* *el*.
 one book-ACC not everyone read pfx
 a. ‘It is not the case that there is one book which was read by all people.’ (denial, strategy 1)
 b. #‘It is not the case that each person read (at least) one book.’ (denial, strategy 2)

The above sentence can be interpreted according to the first strategy, which requires that the contrastive topic DP introduce a discourse referent, since the sentence on this reading is compatible with the realizations of events of everyone reading other books. The second strategy, however, does not lead to a viable reading, due to the fact that if the occurrence of an event of reading at least one book by all people is denied, then it automatically leads to the denial of the occurrence of any event of reading which does not stand in a subevent relation to the latter event, i.e., which involves the reading of one or more (i.e., all possible number of) books by all individuals.

In the next section we consider some further examples where certain potential sentences with a contrastive topic turn out to be uninterpretable, or otherwise interpretable sentences have certain readings which are not available.

6.3 Contrastive topics with *at least n*

In this section we will consider some further potential and actual sentences which contain contrastive topic DPs with determiners of the form *at least n*. It will be argued that their available readings can be derived with the help of the general requirement for the existence of alternative event types discussed above.

The sentences in (124) are uninterpretable, due to the fact that they do not introduce available alternative events which are such that none of their possible realizations stand in a subevent relation to those which fit the event descriptions in the sentences.

- (124) a. #[CT *‘Legalábbhárom lány]* *‘énekelt*.
 at least three girl sang
 #‘As for at least three girls, there are that many among those who sang.’
 b. #[CT *Több, mint ‘három lány]* *‘énekelt*.⁸⁷
 more than three girl sang
 #‘As for more than three girls, there are that many among those who sang.’

The possible alternative event types generated by (124a) and (124b) would be those which are events of singing by a number of girls which is not at least three, or more than three.

⁸⁷ The variant of this sentence shown in (i) below, which contains a determiner which patterns together with the determiners giving rise to monotone decreasing or non-monotone quantifiers in that among the preverbal operator positions (with the exception of the contrastive topic position) it can only appear in the immediately preverbal Focus/Predicate Operator position is bound to become uninterpretable due to reasons pointed out in Chapter 2 above:

(i) #[CT *Háromnál ‘több lány]* *‘énekelt*.
 three-ADE more girlsang

However, the truth of (124a,b) would entail for any number equal to or fewer than three that events of that many girls singing take place at the relevant time and place as well, which means that the above event types do not satisfy the requirement according to which no realizations of an alternative event type can be subevents of the event described by the sentence.

I believe that the uninterpretability of (125), which contains a determiner *sok* ‘many’, is due to the same principles as those which explain the uninterpretability of the examples in (124), since the interpretation of *many*, following the traditions of Generalized Quantifier Theory, can be captured as *at least n*, where *n* is a contextually determined number:

- (125) #_[CT] Sok lány] `énekelt.
 many girl sang
 #‘Many girls did sing.’

Consider now the negated version of (124b) above.

- (126) _[CT] Több, mint három lány] `nem énekelt.
 more than three girl not sang
 ‘It is not the case that more than three girls sang.’^{88, 89}

(126), as opposed to (124b) above, is well-formed, since the non-occurrence of an event of more than three girls singing does not entail anything about the occurrence of an event of singing by three or less than three girls. The latter would thus constitute available alternative event types.

Consider now the following sentence pair:

⁸⁸ Note that the negated counterpart of (124a), shown in (i) below, would also be expected to be acceptable on the basis of the above reasoning.

- (i) ?_[CT] Legalább három lány] `nem énekelt.
 at least three girl not sang
 ‘As for at least three girls, that many DIDN’T sing.’

As opposed to L. Kálmán (p.c.), I believe that the above sentence is not necessarily uninterpretable but that it is pragmatically odd instead, since its truth conditions do not differ from those of (ii) below. (i) could, however, be uttered as an echo-utterance, I believe.

- (ii) _[CT] Három lány] `nem énekelt.
 three girl not sang
 ‘As for three girls, that many DIDN’T sing.’

⁸⁹ According to Büring (1997: 143), the following German counterparts of (126) above and (i) in footnote 23 are grammatically well-formed and interpretable:

- (i) mehr als _[CT] ZWEI Männer sind _[F] NICHT gegangen.
 more than two men are not gone
 (ii) wenigstens _[CT] ZWEI Männer sind _[F] NICHT gegangen.
 at least two men are not gone

Büring claims that (i) and (ii) mean that more than two men stayed, or at least two men stayed, which, if correct, would not correspond to the interpretation of the Hungarian counterparts of the above sentences.

- (127) [CT 'Legalább három lány] [F két dalt] énekelt el.
 at least three girl every song-ACC sang pfx
 a. #‘There are at least three girls who sang two songs.’ (strategy 1)
 b. ‘There are two songs which were sung by at least three girls.’ (strategy 2)
- (128) [CT 'Legalább öt könyvet] [F kevés gyerek] olvasott el.
 at least five book- ACC few kid read pfx
 a. # ‘There are at least five books which were read by few kids.’ (strategy 1)
 b. ‘There are few kids who read at least five books.’ (strategy 2)

As the glosses above show, while both sentences can have readings where the associate expression is assumed to denote the logical subject of predication, they cannot have readings where the contrastive topic denotes the logical subject. I believe that this is also due to the fact that on these readings the sentence would not be able to introduce appropriate alternative statements. For example, according to strategy 1, sentence (127) would state that there are at least three girls which have the property of having sung two songs. For any number of girls which is less than at least three, which thus could constitute alternatives to the determiner denotation, the same property would hold, due to the divisibility of the relation between the event and its sum agent.

6.4 Collective versus distributive interpretations

In this section we consider an important semantic property of contrastive topic DPs, observed at the end of Chapter 3 above, which concerns the availability of their sum vs. group readings, i.e., the availability of distributive vs. collective readings for the sentences containing them. In certain sentences, plural DPs playing the role of the contrastive topic allow the sentence to have both collective and distributive readings, while in other sentences, the same contrastive topic DPs can only participate in a distributive reading.⁹⁰ The contrast is illustrated in (14), (15) and (9) above, repeated here as (129), (130), and (131):

- (129) [CT 'Öt gyerek] 'felemelte a zongorát tegnap ötkor.
 five child pfx-lifted the piano-ACC yesterday five-AT
 a. #‘There WAS an event of FIVE children lifting the piano collectively at five o’clock yesterday.’⁹¹
 b. ‘There WAS an event of FIVE children lifting the piano individually at five o’clock yesterday.’
 c. ‘There WAS an event of five specific children lifting the piano individually/collectively at five o’clock yesterday.’

⁹⁰ In view of the fact that the sentences under investigation here only involve one plural DP, we will assume that the group reading of contrastive topic DPs in sentences describing events give rise to a reading where the sentence describes an atomic event, whereas the sum interpretation gives rise to a reading where the sentence describes a sum of atomic events each involving one singular individual.

⁹¹ Note that here I have in mind the reading according to which at the relevant time and place there was a collective lifting and there was no other lifting of the piano by a different group of participants which was expected to take place. For example, in the context of a competition between groups, where the groups are identified by the number of their participants, the collective reading would be possible to express that only the group consisting of five children was capable of lifting the piano.

- (130) [_{CT} 'Öt gyerek] (volt, hogy) 'felemelte a zongorát.
 five child was that pfx-lifted the piano-ACC
 a. 'There WAS an event of FIVE children lifting the piano collectively (at one time or another).'
- b. 'There WAS an event of FIVE children lifting the piano individually (at one time or another).'
- c. 'There WAS an event of five specific children lifting the piano individually/collectively (at one time or another).'
- (131) [_{CT} 'Öt gyerek] [_F a 'zongorát] emelte fel.
 five child the piano-ACC lifted pfx
 a. 'As for five specific children, it was the piano that they lifted collectively/individually.'
- b. 'It was the piano that was lifted by FIVE children collectively/individually.'

The glosses show that when (129) is used to describe an event which takes place at a particular time, and its contrastive topic is not assumed to denote a specific individual, the DP *öt gyerek* 'five children' can only be interpreted as a collection of atoms, i.e., the sentence can only describe a plural event which consists of atomic events of lifting the piano by one child. (The sentence can have both collective and distributive interpretations when it is intended to refer to an ability, to be discussed in Chapter 5.) When the same sentence is used to make a generalization over occurrences of an event of a particular type, as shown in (130), or when a constituent in focus plays the role of the associate, as in (131), both readings become possible.

Note that whenever the contrastive topic is situated in the normal topic position of the sentence, as shown in (132) below, both of the readings again become possible.

- (132) [_T Öt gyerek] felemelte a zongorát tegnap ötkor.
 five child lifted the piano-ACC yesterday five-AT
 a. 'There was an event of five children lifting the piano collectively at five o'clock yesterday.'
- b. 'There was an event of five children lifting the piano individually at five o'clock yesterday.'
- c. There was an event of five specific children lifting the piano collectively/individually at five o'clock yesterday.

Thus, (132) can either mean that there was an event of five children lifting the piano individually, or that there was an event of this number of children lifting the piano collectively.

The following sentence, which contains a predicate which prefers a collective reading for its subject argument (i.e., tends to denote an event with a group as participant, that is, an atomic event), provides a further illustration of the tendency for contrastive topics in factual sentences to receive a distributive interpretation:

- (133) *_{[CT} 'Öt gyerek] 'kört alkotott.
 five child cicle-ACC formed
 #'Five children DID form a circle.'

Note that in (133) it is assumed here that the preverbal bare nominal is not focused, thus, it is not contrasted with other things which could be formed by the kids, but it is part of a complex predicate.

On the more readily available interpretation of (129) above, according to which the stress on the verb signals *verum focus*, the use of the contrastive topic implicates that there is at least one other type of lifting, which involves a different number of kids, such that all of its manifestations are compatible with the truth of the sentence and none of them is a subevent of it.

If the sentence is interpreted in a distributive sense, i.e., the VP refers to a sum of lifting events each involving one child as agent, then the truth of the sentence entails the occurrence of sums of fewer than five events of lifting the piano at the same time and place each of which involves one child as agent. These sum events would in fact constitute subevents of the one described in the sentence. The reading under consideration does not entail but is compatible with all occurrences of sum events with more than five subevents of one kid lifting the piano. In fact, one of these sum events would contain the sum event described by (129) on its intended reading as their subevent. These latter event types would thus qualify as acceptable alternative event types for the sentence according to the above definition, and ensure that the implicature carried by the contrastive topic does not contradict the truth-conditional meaning of the sentence.

If sentence (129) was intended to be interpreted in a collective sense, i.e., to describe a single atomic event satisfying the description, which took place on the particular location and at the particular time referred to, then the implicature introduced by the contrastive topic, i.e., that there are alternative event types such that all of their possible realizations are compatible with the truth of the sentence, would contradict the proposition expressed by the sentence. This result is due to the fact that sentence (129) in fact entails that no other atomic events of lifting can take place at the relevant time and location.

Consider now the negated variant of (129), shown in (134):

- (134) [CT *‘Öt gyerek] `nem emelte fel a zongorát (tegnap ötkor).*
 five child not lifted pfx the piano-ACC yesterday five-AT
 a. #‘Five children DIDN’T lift the piano collectively (at five o’clock yesterday).’
 b. ‘Five children DIDN’T lift the piano individually (at five o’clock yesterday).’

Since it is the negative particle preceding the verb which acts as the associate of the contrastive topic in this sentence, the alternative events introduced due to the implicature carried by the contrastive topic would be events satisfying the description in the VP, i.e., events of lifting the piano. Just like (129), this sentence cannot have a collective reading (which would deny the occurrence of a particular event at a certain time and place), paraphrased in (134a) which is explained on the basis of what we claimed about alternatives of atomic event descriptions in section 6.2 above. The b) reading of the sentence denies that there was an event which was the sum of five individual events of one child lifting the piano at the particular time and place. The truth of this sentence is naturally compatible with the occurrences of complex events which are the sums of individual liftings of the piano by one child each which are fewer than five in number (manifestations of alternative event types), which ensures that this latter reading is available for the sentence.

Consider now the variant of (129) shown in (130) above, which, as the parenthesized addition aims to emphasize, does not describe a particular event but expresses existential quantification over the possible realizations of the type of event described in the sentence, that is, it states that there was at least one realization of the event in question. I propose that the alternative statements introduced due to the contrastive topic in this case either express that there was at least one event of the type described by the VP in which a different number of kids acted as the agent, or deny it. I view of the fact that the realizations of different events of lifting are allowed to take place at various locations and at various times, I believe that the occurrence of distributive or collective events of lifting the piano by a particular number of participants on one occasion cannot influence whether events of lifting the piano which involve a larger number of children as participants take place on other occasions or not. (Note that the b) reading of (130) does entail the occurrence of manifestations of types of complex events consisting of fewer than five liftings of the piano by one child as subevents.)

The collective reading of (131) is licensed due to a property which distinguishes this sentence from (129), namely, the fact that in this sentence it is the focused NP which plays the role of the associate. Accordingly, the alternative event types would be events of lifting, which involve individuals which can be considered as alternatives to the contrastive topic and/or the focus denotation as participants. Thus, the available alternative events would be liftings of entities which can in some way be regarded as alternatives to the denotation of the focused expression (e.g., the table, the bed, etc.), and which involve a different number of kids as agents. Since, other things being equal, the occurrence of an event of lifting the piano does not seem to be able to influence whether other events of lifting different objects occur, the collectivity or distributivity of the event described by the sentence does not have any impact on the availability of alternative events, and thus both of the above interpretations are possible.

This closes our investigations related to the interpretability and possible interpretations for sentences describing actual events with DPs playing the role of contrastive topic. In the rest of the chapter we will consider the question of how the scope of adverbial quantifiers playing the contrastive topic role can be accounted for.

7 Contrastive topics and tripartite structures – adverbial quantifiers as contrastive topics

In this section we investigate what effects it has on the interpretation of sentences if adverbial quantifiers play the role of contrastive topic. We will adopt the basic assumptions of Generalized Quantifier Theory (Barwise and Cooper 1981, de Swart 1991), and will take adverbs of quantification to denote relations between two sets of events, and will assume that the truth-conditional meaning of a sentence containing an adverb of quantification can be adequately captured if the arguments of this relation can be identified. We will propose that by placing a contrastive intonation on the adverb of quantification the contents of the sets standing in the particular relation denoted by the adverb of quantification can be altered, which signals that the (contrastive) topicalization of the adverb of quantification changes the truth-conditions of the sentence. In the next subsection we will propose an interpretation procedure for sentences with (non-topic) adverbs of quantification, which can also be accompanied by focused constituents. We will consider how focusing a constituent or a whole subordinate clause changes the sets constituting the arguments of the adverb of quantification.

After that, we consider the meaning of sentences with adverbs of quantification which are pronounced with the contrastive intonation, and propose an explanation for a meaning equivalence of two types of structures which have so far eluded an explanation based on compositionality. This will be followed by a discussion of the differences between the meaning of ‘weak’ adverbs of quantification, and the ‘strong’, or ‘quantificational’ ones.

7.1 Adverbs of quantification in non-contrastive readings

7.1.1 Data

Some Hungarian sentences containing adverbs of quantification whose interpretation we will be concerned with in this section are illustrated below:

- (135) Mari mindig elvitte Jánost a moziba.
 Mary always pfx-took John-ACC the movies-ILL
 ‘Mary always took John to the movies.’
- (136) János mindig énekel, amikor zuhanyozik.
 John always sings when takes a shower
 ‘John always sings when he is in the shower.’
- (137) Péter mindigelment a moziba, amikor szabadnapos volt.
 Peter always pfx-went the movies-ILL when has a day off was
 ‘When he had a day off Peter always went to the movies.’
- (138) Mari mindig [_F Jánost] vitte el a moziba.
 Mary always John-ACC took pfx the movies-ILL
 ‘It was always John whom Mary took to the movies.’
- (139) János mindig [_F akkor] énekel, [_F amikor zuhanyozik.]
 John always then sings when takes a shower
 ‘John always sings when he is in the SHOWER.’
- (140) Péter mindig [_F akkor] ment el a moziba, [_F amikor szabadnapos volt.]
 Peter always then went pfx the movies-ILL when has a day off was
 ‘It was always when he had a day off that Peter went to the movies.’

The difference between sentences (135)–(137) and those in (138)–(140) is that the former has no constituents in the preverbal focus position, while the latter each have one. The focus position of (138) is filled by a DP, the ones in (139)–(140) are filled by the pronominal head of the adverbial clause, whereby the effect is produced that the whole subordinate clause is focused.

Intuitively, the interpretation of the above sentences can be captured as follows. (135) means that in all relevant situations it was the case that Mary took John to the movies. (136) means that all occasions when John takes a shower are such that he sings as well, (137) means that on all occasions when he had a day off, Peter went to the movies. (138) means that on all occasions when Mary took somebody to the movies it was John whom she took to the

movies. (139) means that all occasions when John sings are such that he is in the shower, and (140) means that whenever Peter went to the movies, it was always when he had a day off.

7.1.2 Rooth's (1985) theory on the meaning of adverbs of quantification

A formalization of the above intuitions about the meanings of (135)–(140) could be given along the lines of Rooth (1985), who proposes an account of the meaning of adverbs of quantification such as *always*, *never*, *sometimes* and *usually* in terms of relations between sets of time intervals, which correspond to the relations between sets associated with the determiner quantifiers *all*, *no*, *some* and *most* in the theory of generalized quantifiers.

To account for the meanings of sentences like (141) below (which have a syntactic structure parallel to that of (135)), Rooth (1985) adopts Stump's (1981) system, in which (141) is represented in terms of the scheme in (142), where *always'* stands for the subset relation between sets of time intervals, and I_2 is a free variable, representing a set of time intervals, the value of which is to be fixed by the context.

(141) John always danced.

(142) *always'* (I_2) (λt [past(t) & AT(t , dance'(j))])

Thus, (142) would mean that the set of contextually relevant time intervals is the subset of those past time intervals at which John danced, that is, all relevant time intervals are such that John dances at these intervals.

According to Stump (1981), in sentences which contain a temporal subordinate clause, like (143) below, the two set arguments of the relation denoted by the adverb of quantification are supplied by the sentence itself, therefore there is no need in the representation for a free variable whose value is to be filled from the context, shown in (144).

(143) When she figured her taxes Jane always used a calculator.

(144) *always'* (λt [past(t) & AT(t , she-figure-her-taxes')])
 (λt [past(t) & AT(t , Jane-use-a-calculator')])

Thus, (144) means that the set of time intervals when Jane figured her taxes is a subset of those time intervals when she used a calculator. Stump's above account reflects the claim, articulated in Lewis 1975, Farkas and Sugioka 1983, and Kratzer 1991b, etc., that a subset of *when* clauses, called restrictive *when* clauses, are devices restricting the domain of various quantifiers or a generic operator.

Rooth (1985) argues that in sentences with an adverb of quantification and a focused constituent, the adverb associates with the focus of the sentence, that is, the two arguments of the relation denoted by the adverb of quantification depend on the place of the focus in the sentence. Rooth claims that whenever there is a focused constituent in the sentence, the first argument, or *restrictor*, of the adverb of quantification is derivable from the p-set associated with the sentence minus the adverb. His proposal can be illustrated with the formal

representation of the meaning of (145) below, which contains the focused constituent *Mary*, shown in (146):

(143) MARY always took John to the movies.

(144) $\text{always}' \cup \{\lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{take-to-the-movies}'(y, j))] \mid y \in E\}$
 $(\lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{take-to-the-movies}'(m, j))])$

The p-set associated with the sentence minus the adverb is the set of sets of time intervals such that somebody took John to the movies at *t*. Rooth proposes that the union of these sets of intervals constitutes the first argument of the subset relation denoted by the adverb of quantification, and the second argument is the set of time intervals at which the proposition described by the sentence minus the adverb is true, that is, when Mary took John to the movies. Thus, according to this proposal, (143) expresses that the set of those time intervals when someone took John to the movies is a subset of those time intervals when Mary took John to the movies, that is, all intervals when someone took John to the movies were intervals when Mary took him to the movies, which is equivalent to the intended meaning of the sentence. The same strategy could be used for generating the meaning of the Hungarian counterpart of (143), (138) above, as well.

As far as sentences with an adverb of quantification and a *when* clause are concerned, Rooth assumes that the adverb of quantification associates with a broad focus on the VP of the main clause or on the whole main clause. Thus, the formal representation of the meaning of (147) would be the formula given in (148) below:

(147) When she figured her taxes Jane always used a calculator.

(148) $\text{always}' \quad \lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{figure-her-taxes}'(j)) \ \& \ \text{AT}(t, p_n)]$
 $\lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{figure-her-taxes}'(j)) \ \& \ \text{AT}(t, [\text{use-a-calculator}'(j)]_F)]$

(148) means that any interval in the past when Jane figured her taxes and some other proposition was also true was an interval when Jane figured her taxes and used a calculator at the same time. The formula in (148) above is constructed on the basis of the assumption that if the whole main clause is focused then the p-set corresponding to it would consist of a set of propositions. Rooth observes, however, that the proposition p_n could also be the necessarily true proposition, in which case (148) would be identical to (149):

(149) $\text{always}' \quad \lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{figure-her-taxes}'(j))]$
 $\lambda t [\text{past}(t) \ \& \ \text{AT}(t, \text{figure-her-taxes}'(j)) \ \& \ \text{AT}(t, [\text{use-a-calculator}'(j)]_F)]$

The formula in (149) confirms Partee's (1992) suggested correlation, referred to by Hajičová, Partee and Sgall (1998:113) as *principle F*, which seems to have the force of a 'default' strategy, according to which topic (or background, i.e., presupposed material) corresponds to the restrictive clause, and focus, or the combination of topic with focus, corresponds to the nuclear scope of adverbial quantifiers.

Although they reflect the intuitions of native speakers about the meaning of the particular examples discussed above, Stump's (1981) and Rooth's (1985) theories run into the following problem. They assume that the relationship between the events satisfying the event

description in the main versus the subordinate clauses is always that of temporal overlap. This might hold for sentences like (136) or (139), which contain atelic event descriptions in both of their clauses. I argued in Gyuris (1998), however, that there are many instances of complex sentences in Hungarian, containing the equivalent of *when* clauses, where the run times of the events satisfying the event descriptions in the two clauses do not overlap. (140a) below illustrates a case where the run time of an event in the main clause is assumed to be contained in the run time of the subordinate clause event, while in (140b) the two run times are assumed to be disjunct intervals, and the only requirement about their relation we can propose is that one (or more) event satisfying the description in the main clause always has to follow an event satisfying the description in the subordinate clause.

- (140)a. *Mindig elered az eső, amikor Péter sétál a parkban.*
 always pfx-starts the rain when Peter walk the park-INESS
 ‘It always starts raining when Peter is walking in the park.’
- b. *Éva mindig elmosogat, amikor megírja a leckéjét.*
 Eva always pfx-washes up when pfx-write the homework-ACC
 ‘Eva always does the washing up when she has finished her homework.’

It seems, however, that there are examples with two atelic event descriptions, like that in (146) above, that would not be characterized correctly along the lines of Rooth’s proposal, either. For example, (146) does not mean that each interval at which it is true that Jane is figuring her taxes is such that she is using a calculator then, but rather that each interval associated with a maximal interval satisfying the event description in the subordinate clause (Jane figuring her taxes) is such that there is a subinterval of it for which it is true that Jane is using a calculator. (Since not every moment of the activity of figuring taxes may involve the use of a calculator.) Consider (151) below:

- (151) *Péter mindigelment a moziba, amikor szabadnapos volt.*
 Peter always pfx-went the movies-ILL when has a day off was
 ‘When he had a day off Peter always went to the movies.’

(151) does not mean what Rooth’s scheme in (149) would associate with it, that is, that each interval at which John has a day off is such that he is on its way to the movies or is sitting at the movies then (since then the truth of the sentence would require that he spends his whole day off going to the movies), but rather that each maximal interval at which John has a day off is such that there is a movie-going event whose run time is included in it.

In view of the above data, I believe that the meaning of adverbs of quantification is captured more correctly if they are not assumed to denote relations between sets of times but between set of events. If, however, these sets of events are constituted by events of different types, it appears at first sight that the interpretation of adverbs of quantification cannot correspond to the subset relation or the relation of non-empty intersection any more. (A set of events of going to the movies does not overlap with the set of states of having a day off.) In the next subsection we will illustrate how the assumption that the meaning of adverbs of quantification can be captured in terms of generalized quantifiers which express relations between sets can be integrated with the idea that these constituents denote relations between (possibly) different types of events by showing how the interpretation of the Hungarian sentences in (136)-(140) could be captured formally.

7.1.3 A formal account of the meaning of Hungarian adverbs of quantification

It was argued above that *when* clauses are better seen as expressing that a particular number of events satisfying the description in the main clause of a complex sentence is associated with events satisfying the description in the subordinate clause than as expressing a subset relation between sets of time intervals. This association can be formalized in terms of a ‘matching function’ **M**, originating in Rothstein 1995, which maps the main clause events onto the set of subordinate clause events. This function makes sure that in the case of (151), for example, each day off has a movie-going associated with it, although more than one movie-going can belong to one particular day, which is exactly how speakers think about the meaning of this sentence. The representation of the meaning of (151) in terms of quantification over events is shown in (152) below. The representation follows Rooth’s (1985) proposal, according to which the restrictor set is determined by the subordinate clause, the nuclear scope by the combined meaning of the main and subordinate clauses, and that the adverbial quantifier *mindig* ‘always’ denotes the subset relation. The representation also presupposes that a subevent relation between events can be established, which is represented by \subseteq .

$$(152) \text{ always}_e \quad ((\lambda e \exists e_1 (*\text{have-a-day-off}(e_1) \wedge {}^s\text{TH}(e_1, \text{Peter}) \wedge e_1 \subseteq e)), \\ (\lambda e (\exists e_1 \exists e_2 (*\text{have-a-day-off}(e_1) \wedge {}^s\text{TH}(e_1, \text{Peter}') \wedge e_1 \subseteq e \wedge *go(e_2) \wedge \\ \wedge {}^s\text{AG}(e_2, \text{Peter}) \wedge {}^s\text{GOAL}(e_2, \text{the-movies}) \wedge e_2 \subseteq e \wedge \mathbf{M}(e_2) = e_1))))$$

The above formula is intended to mean that the set of those complex events *e* which have a subevent *e*₁ of Peter having a day off is such that it is a subset of the set of events which have subevents of Peter having a day off and Peter going to the movies and there is a function **M** which maps the set of the latter into the former. This seems to reflect correctly the meaning of the sentence.

The need for introducing complex events into the representation, like *e* above, which the events described by the clauses of the sentence are assumed to be part of, arises from the following facts. On the one hand, if we stick to the assumption that sentences are event descriptions, we would otherwise have no intuitively correct notion about what events the complex sentence as a whole should be taken to be the description of, since the two clauses describe disjunct events. On the other hand, without the superordinate events, the meaning of the adverb of quantification could not be described in terms of the subset relation, since the events described by the two clauses of the sentence are not of the same type, and thus the sets containing them are disjunct. The matching function is needed for the following reasons. If there was no matching function, a complex event consisting of two events of Peter having a day off, but only one event of him going to the movies could be a member of the set constituting the second argument of the relation. Naturally, the same complex event would satisfy the description characterizing the members of the first set as well, and thus, sentence (151) would have to be judged true in these circumstances, which would contradict native speakers’ intuitions. By integrating the matching function into the representation in (152), we achieve that in a complex event satisfying the description of events in the second argument of the relation each event of having a day off is connected to (at least one) different event of going to the movies.

The sentence in (140), repeated here as (153), contains a focused subordinate clause:

- (153) Péter mindig_[F akkor] ment el a moziba, _[F amikor] szabadnapos volt.]
 Peter always then went pfx the movies-ILL when has a day off was
 ‘It was always when he had a day off that Peter went to the movies.’

In order to express the meaning of (153) formally, the two arguments of the relation described by the adverb of quantification in (152) will be modified following the suggestion made in Rooth (1985) for the representation of the meaning of focused sentences. According to this, the domain of quantification (restrictor) would consist of events which have subevents of the type described in the main clause, while the nuclear scope would consist of events of the type constituting the nuclear scope in (152). The formula constructed in the above fashion, intended to correspond to the meaning of (153), is shown in (154):

- (154) **always**_e (($\lambda e \exists e_2 (*go(e_2) \wedge {}^sAG(e_2, \text{Peter}), {}^sTO(e_2, \text{the-movies}) \wedge e_2 \subseteq e)$),
 ($\lambda e (\exists e_1 \exists e_2 (*have-a-day-off(e_1) \wedge {}^sTH(e_1, \text{Peter}') \wedge e_1 \subseteq e \wedge *go(e_2) \wedge$
 $\wedge {}^sAG(e_2, \text{Peter}) \wedge {}^sGOAL(e_2, \text{the-movies}) \wedge e_2 \subseteq e \wedge M(e_2) = e_1)))$)

(154) means that the set of all events which have a subevent of John going to the movies constitute a subset of the set of those events which have events of John going to the movies and John having a day off as subevents, and the relation between the sets of these subevents is a function, called the matching function.

The fact that the representation of the two arguments of the relation denoted by *always* in (154) above corresponds to native speaker intuitions about the meaning of (153) is reflected by the fact that (155) constitutes an acceptable continuation of (153) (provided we assume that people do not go to the movies and to the theatre on the same day):

- (155) És mindig _[F akkor] ment színházba is, _[F amikor] szabadnapos volt].
 and always then went theatre-ILL too when has a day off was
 ‘And it was always when he had a day off that he went to the theatre, too.’

Having now established the general formula for representing the interpretation of Hungarian sentences with an adverbial quantifier and a temporal subordinate clause we will now consider how the utterance of the adverb of quantification with a contrastive topic intonation changes the above interpretations.

7.2 On the interpretation of adverbs of quantification in the role of contrastive topic

In sentence (153) above, the adverb of quantification can also be pronounced with the contrastive topic intonation. The labeled brackets and the intonation marks in (156) intend to represent this reading of the sentence:

- (156) Péter _[CT 'mindig] _[F `akkor] ment moziba, _[F amikor] szabadnapos volt].
 Peter always then went movies-ILL when has a day off was
 ‘It was when he had a day off that Peter always went to the movies.’

The above sentence is considered true if all events of Peter having a day off are such that he went to the movies then. The sentence, like all sentences with contrastive topics analyzed in

previous chapters, also gives rise to an implicature, namely, that the existence of a different relation which holds between events of Peter going to the movies and some other type of events is neither entailed nor contradicted by the proposition expressed by (156). The truth-conditional meaning of (156) seems to be identical to that of (152), repeated here as (157). This claim is supported by the fact that they both can be followed by (158):

(157) Péter mindigelment a moziba, amikor szabadnapos volt.
 Peter always pfx-went the movies-ILL when has a day off was
 ‘When he had a day off Peter always went to the movies.’

(158) De néha [F akkor] is elment, [F amikor hamar végzett a munkával.]
 but sometimes then too pfx-went when early finished the work-INSTR
 ‘But sometimes he also went there when he finished work early.’

Sentence (153) above, however, could not be followed by (158), since the former states that all movie-goings by Peter are associated with a day off, which contradicts the statement in (158), according to which some of the movie-goings are associated with occasions when Peter finishes work early, provided that it is assumed that the sets of those occasions when Peter finishes work early and those when he has a day off are disjunct.

It seems problematic for a compositional account of the meaning of (156) that, although its syntactic structure appears to be closest to that of (153), the first argument of the relation denoted by the adverb of quantification is constituted by movie-goings by Peter in (153), and by events of having a day off by Peter in (156). In what follows, we will try to provide an explanation how such a drastic difference between the quantificational structures of the two sentences could be derived from the fact that in (156) the adverb plays the role of contrastive topic but in (153) it does not.

There are two ways to overcome the above difficulty. One is to argue, as it was done in Gyuris (2000) that when they act as associates of the contrastive topic, focused pronominal heads of adverbial clauses do not play the same semantic role as in sentences where their only role is to signal the focusing of the subordinate clause. The problem with this solution seems to be that it contradicts compositionality, since it presupposes that two identical syntactic structures would receive different interpretations. The other way is to suppose that the fact that a constituent plays the role of contrastive topic can change the truth-conditions of sentences, as argued for focus by Rooth (1985).

Before implementing this latter solution, let us briefly consider the semantic properties of contrastive topic adverbs of quantification. First of all, they do not satisfy the aboutness property of contrastive topics, that is, the one that contrastive topic expressions denote the logical subject of predication in the sentence. For example, (156) cannot be said to state a property of the relation denoted by *mindig* ‘always’. It could be imagined, however, as stating a property of the contrastive topic plus the rest of the main clause, but I do not think this choice could be properly formalized. Thus, as far as I can see, the aboutness criterion of contrastive topics is not fulfilled by adverbs of quantification. (This is opposed to claims made in É. Kiss (2000), according to which all contrastive topics satisfy the aboutness criterion.)

Second, it was claimed in Chapter 2 that a version of the specificity requirement for referential topics holds for non-individual-denoting contrastive topics as well, namely, that

they have appear in the last question under discussion for the sentence containing the contrastive topic, which is either explicit (thus making the denotation of the contrastive topic discourse-old) or implicit (making the same denotation presupposed). This extended definition of specificity holds for adverbs of quantification in contrastive topic position, since the denotation of the sentence with the contrastive topic adverb (minus the denotation of the focus) has to be presupposed by the context. In other words, a sentence like (156) presupposes that there is a relation expressible by the adverbs *mindig* ‘always’ or *kétszer* ‘twice’ holding between an event of Peter going to the movies and some other type of event. Thus, it can only be uttered as a reaction to questions or statements, like (159) and (160):

- (159) Péter [_F mikor] ment mindig/kétszer moziba?
 Peter when went always/twice movies-ILL
 ‘When did Peter always go to the movies?/When did Peter go to the movies twice?’
- (160) Péter mindig/kétszer moziba ment, amikor hamar végzett a munkával.
 Peter always/twice movies-ILL went when early finished the work-INSTR
 ‘Always/twice when he finished work early Peter went to the movies.’

A third important feature of contrastive topics, discussed in Chapter 2, is that the relation between contrastive topic alternatives and focus alternatives in alternative statements logically independent of each other is a function. We will consider below how this fact contributes to the interpretation of the sentences under consideration.

Having enumerated what we take to be the most important characteristics of adverbs of quantification in contrastive topic in Hungarian, we turn now to the formal analysis of sentences containing them.

7.2.1 *Developing the formal apparatus 1 — simple sentences*

In this section we discuss the formal representation of the meaning of three simple sentences which contain the adverb of quantification *mindig* ‘always’, shown below:

- (161) Péter mindig vesz újságot.
 Peter always buys newspaper-ACC
 ‘Peter always buys a newspaper.’
- (162) Péter mindig [_F újságot] vesz.
 Peter always newspaper-ACC buys
 ‘Peter always buys a NEWSPAPER.’
- (163) Péter [_{CT} ‘mindig] [_F ‘újságot] vesz.
 Peter always newspaper-ACC buys
 ‘What Peter ALWAYS buys is a newspaper.’

The interpretations of the above sentences differ from each other in the following ways. (161) means that all relevant occasions are such that Peter buys a newspaper then. (162), where the object occupies the preverbal focus position, means that whenever Peter buys something or

something to read, etc., it is always a newspaper. The latter sentence, as opposed to (161), is thus not compatible with a continuation shown in (164):

- (164) De néha könyvet is vesz.
 but sometimes book-ACC too buys
 ‘But sometimes he also buys a book.’

The truth-conditional meaning of (163) seems to be equivalent to that of (161), which is supported by the fact that (163) can also be followed by (164). (163), however, has a richer array of presuppositions and implicatures associated with it. On the one hand, it presupposes, due to the focused constituent, that there is something (something to read, etc.) that Peter always buys. On the other hand, it implicates that there is at least one proposition which expresses that Peter buys a different thing with a different frequency, which is not entailed by and not contradicted by the proposition expressed by the sentence in question.

According to Stump’s (1981) method presented above, whenever it is not expressed explicitly, the first argument of the relation introduced by an adverb of quantification is constituted by contextually relevant intervals. We have argued above, however, that the domain of adverbs of quantification should rather be taken to consist of contextually relevant events. If the meaning of (161) is taken to be that all contextually relevant occasions are such that Peter buys a newspaper then, it could be represented as shown in (165), where the first argument of the relation denoted by *always* is a set of contextually relevant events, denoted by E_1 :

- (165) **always**_e (E_1 ,
 $(\lambda e \exists x_o (*\text{buy}(e) \wedge {}^s\text{AG}(e, \text{Peter}) \wedge {}^s\text{PAT}(e, x_o) \wedge \text{newspaper}(x_o))))$)

Note, however, that the above representation does not account for the fact that (164) is an acceptable continuation of (161). That is, an adequate representation should also reflect the fact that (161) is also considered true if, on certain contextually relevant occasions (e.g., when he buys something to read) Peter also buys a book. I thus believe that the meaning of (161) could more adequately be captured with the help of (166), which incorporates this latter possibility:

- (166) **always**_e (E_1 ,
 $(\lambda e \exists e_1 \exists x_o (*\text{buy}(e_1) \wedge {}^s\text{AG}(e_1, \text{Peter}) \wedge {}^s\text{PAT}(e_1, x_o) \wedge \text{newspaper}(x_o) \wedge e_1 \subseteq e))))$

The meaning of (162), repeated as (167) below, where the object DP is focused, can be captured by the formula in (168), where the first argument of the relation is constituted by the union of the p-sets associated with the sentence, that is, the set of events of Peter buying something. This formula follows the proposal by Rooth (1985), discussed and illustrated in (156) above:

- (167) Péter mindig [_F újságot] vesz.
 Peter always newspaper-ACC buys
 ‘Peter always buys a NEWSPAPER.’

- (168) **always_e** ($\cup(\lambda e\exists e_1\exists y(*\mathbf{buy}(e_1) \wedge {}^s\mathbf{AG}(e_1, \mathbf{Peter}) \wedge {}^s\mathbf{PAT}(e_1, y) \wedge e_1 \subseteq e)),$
 $(\lambda e\exists e_1\exists x_0(*\mathbf{buy}(e_1) \wedge {}^s\mathbf{AG}(e_1, \mathbf{Peter}) \wedge {}^s\mathbf{PAT}(e_1, x_0) \wedge \mathbf{newspaper}(x_0) \wedge$
 $\wedge e_1 \subseteq e)))$)

Cohen (1999a) argues against considering all members of the p-set introduced by the focused expression as members of the restrictor set (the first argument of the relation determined by the adverb of quantification). He claims that only an appropriate subset of this set, whose members share the presuppositions of the focused expression in the appropriate context, should be considered as alternatives of the focus. If the above reasoning is accepted, the variable y in (168) should stand, instead of anything that can be bought, for things to read, for example.⁹² Thus, (168) means that the set of events when Peter buys anything to read is the subset of the set of events of him buying a newspaper, which correctly captures the truth-conditional meaning of (167).

Next we consider (163), repeated here as (169), which differs from (167) in that the adverb of quantification receives a contrastive topic intonation:

- (169) Péter [_{CT} ´mindig] [_F `újságot] vesz.
Peter always newspaper-ACC buys
‘What Peter always buys is a newspaper.’

(169) is true if all relevant situations (e.g., those when he buys something to read) are such that Peter buys a newspaper, possibly among other things. Thus, its truth-conditional meaning is closer to that of (161) than to that of (167), since the latter is considered false if on some of the occasions when Peter buys a newspaper he buys a book as well. In such a situation, however, both (161) and (169) are considered true. Furthermore, (169) introduces the implicature that there is at least one proposition among those predicating that in a certain portion of occasions (other than what can be referred to by *always*, for example, *sometimes*) when he buys something to read, he buys something other than a newspaper (for example, a magazine), which is not entailed by and not contradicted by the proposition expressed by the sentence.

The puzzle about (169) is thus the following. On the one hand, we should somehow be able to explain why the truth-conditional meanings of (161) and (169) are felt similar. On the other hand, we would also need an explanation why the focus is associated with an exclusive interpretation in (167), but not in (169), that is, why (169) is compatible with a situation that Peter sometimes buys a book, but (167) is not.

I believe that the key to the solution lies in the fact that the main predication of (169) is what is expressed via focusing (similarly to sentences with focused DPs, discussed in the first three sections), that is, identification, and not the expression of a relation between two types of events, as expressed by (168). (169) presupposes that there is a type of object that Peter buys on all relevant occasions, and the sentence predicates that this is a newspaper. The sentence could thus be paraphrased as follows: ‘Any type of object that Peter always (on all

⁹² I believe that Cohen’s argumentation is on the right track, and therefore will assume in what follows that the variables standing for the alternatives of the focused expression run through an appropriately restricted domain, although I will not make any claims regarding the extension of this domain.

relevant occasions) buys is an object of type newspaper.’ The formal representation we thus associate with (169) is shown below:

$$(170) \quad \forall x [\text{always}_e (\mathbf{E}_1, (\lambda e \exists e_1 (\text{buy}'(e_1) \wedge \mathbf{AG}(e_1, \mathbf{Peter}) \wedge \mathbf{PAT}(e_1, x) \wedge e_1 \subseteq e))) \rightarrow \rightarrow \text{newspaper}(x)]$$

(170) means that any entity which is such that all contextually relevant events (i.e, events of Peter buying something) have a subevent of buying an entity of this type is a newspaper. Note that this formula allows the existence of some occasions when Peter buys a newspaper as well as a book at the same time, i.e., within the same minimal event. Thus, it correctly captures the truth conditions associated with (169) on intuitive grounds.

Having analyzed the meaning of simple sentences with adverbs of quantification as contrastive topics, in the next section we turn to the formalization of the meaning of complex sentences.

7.2.2 *Developing the formal apparatus 2 — complex sentences with focused when clauses and ‘strong’ adverbs of quantification*

Consider again the examples in (137) and (140), repeated here as (171) and (172), and that in (173):

(171) Péter mindigelment a moziba, amikor szabadnapos volt.
Peter always pfx-went the movies-ILL when has a day off was
‘When he had a day off Peter always went to the movies.’

(172) Péter mindig_[F]akkor ment el a moziba, _[F]amikor szabadnapos volt.]
Peter always then went pfx the movies-ILL when has a day off was
‘It was always when he had a day off that Peter went to the movies.’

(173) Péter _[CT]mindig_[F]akkor ment el a moziba, _[F]amikor szabadnapos volt.]
Peter always then went pfx the movies-ILL when has a day off was
‘It was when he had a day off that Peter ALWAYS went to the movies.’

(171) is a complex sentence with a *when* clause and a main clause which contains the adverb of quantification *mindig* ‘always’. In (172), the pronominal head of the temporal subordinate clause, *akkor* ‘then’, is sitting in the preverbal focus position of the main clause. In (173), the adverb of quantification plays the role of contrastive topic, and its associate is the pronoun *akkor* ‘then’. The meanings of (171) and (172) were formalized as shown in (152) and (154), repeated here as (174) and (175):

$$(174) \text{always}_e \quad ((\lambda e \exists e_1 (*\text{have-a-day-off}(e_1) \wedge {}^s\text{TH}(e_1, \mathbf{Peter}) \wedge e_1 \subseteq e)), \\ (\lambda e (\exists e_1 \exists e_2 (*\text{have-a-day-off}(e_1) \wedge {}^s\text{TH}(e_1, \mathbf{Peter}) \wedge e_1 \subseteq e \wedge *go(e_2) \wedge \\ \wedge {}^s\text{AG}(e_2, \mathbf{Peter}) \wedge {}^s\text{GOAL}(e_2, \text{the-movies}) \wedge e_2 \subseteq e \wedge \mathbf{M}(e_2) = e_1))))$$

$$(175) \text{always}_e \quad ((\lambda e \exists e_2 (*go(e_2) \wedge {}^s\text{AG}(e_2, \mathbf{Peter}), {}^s\text{TO}(e_2, \text{the-movies}) \wedge e_2 \subseteq e)), \\ (\lambda e (\exists e_1 \exists e_2 (*\text{have-a-day-off}(e_1) \wedge {}^s\text{TH}(e_1, \mathbf{Peter}) \wedge e_1 \subseteq e \wedge *go(e_2) \wedge \\ \wedge {}^s\text{AG}(e_2, \mathbf{Peter}) \wedge {}^s\text{GOAL}(e_2, \text{the-movies}) \wedge e_2 \subseteq e \wedge \mathbf{M}(e_2) = e_1))))$$

The representation we propose to account for the meaning of (173) is shown in (176) and is based on the following assumptions. It is presupposed by the sentence that there is a type of event such that every manifestation of it is associated with an event of going to the movies. The sentence states that the particular event type in question is an event of John having a day off. The sentence implicates that there is at least one proposition which expresses that there is a different relation between other events which could be considered alternatives to the events of having a day off, and the events of going to the movies which is not entailed by and not contradicted by the former one. In the formula, P is a variable standing for predicates over events.

- (176) $\forall P \forall e (\text{always}_e ((\lambda e \exists e_1 (*P(e_1) \wedge e_1 \subseteq e),$
 $(\lambda e \exists e_2 (*go(e_2) \wedge {}^sAG(e_2, \text{Peter}) \wedge {}^sTO(e_2, \text{the-movies}) \wedge e_2 \subseteq e \wedge *P(e_1) \wedge e_1 \subseteq e \wedge$
 $\wedge M(e_2) = e_1))) \rightarrow (*P(e) = \text{*have-a-day-off}(e) \wedge {}^sTH(e, \text{Peter})))$

It seems that no strong determiners other than *mindig* ‘always’ can appear in the sentence structure illustrated by (173) above, where the adverb of quantification receives a contrastive accent, and it is assumed to be contrasted with other adverbs of quantification. Note that in (173), the adverb of quantification refers to the number or ratio of events of the type described by the subordinate clause which are associated with events of the type referred to by the main clause. Consider, however, the following sentences:

- (177) *Mindkétszer* [_F `akkor] törté el a lábát, amikor elesett a jégén.
 both times then broke pfx the leg-POSS3SG-ACC when pfx-fell the ice-SUP
 ‘Both times when he broke his leg were when he fell on the ice.’
- (178) A *legtöbbször* [_F `akkor] késik el az iskolából, amikor dolgozatot írnak.
 the most times then be late pfx the school-ABL when test-ACC write-3PL
 ‘In most cases, he is late for school when they write a test.’

As opposed to (139), the strong adverbs of quantification in (177) and (178), when pronounced with a rising intonation, denote the number or ratio of events of the type satisfying the description in the main clause which are associated with events satisfying the event description in the subordinate clause. For example, (177) means that both times when he broke his leg were when he fell on the ice. (178) means that most occasions among those when he is late for school are such that his class is writing a test then. Thus, (177) and (178) are synonymous with sentences which are pronounced without the contrastive topic intonation. At the moment I do not have an explanation for this fact, but it may be the case that they are just prosodic variants of sentences without a contrastive topic. This suggestion is supported by the fact that they do not give rise to the implicature associated with contrastive topics.

Having proposed a formal procedure for representing the meaning of sentences where the adverb of quantification *mindig* ‘always’ plays the role of contrastive topic, and having suggested that no other strong quantifier can appear in the contrastive topic position, our next task is to consider the interpretation of those sentences where weak adverbs of quantification play the contrastive topic role.

7.2.3 Weak adverbs of quantification as contrastive topics

The following sentence has a weak adverb of quantification, *kétszer* ‘twice’, as its contrastive topic:

- (179) Jóska [_{CT} *kétszer*] [_F *`akkor*] hívta fel az anyját,
 Joe twice then calls pfx the mother-1SGPOSS-ACC
 [_F amikor a városban volt].
 when the town-INESS was
 ‘Joe called his mother twice when he was in TOWN.’

Sentence (179) is ambiguous. On the one hand, it means that there were two events of Joe calling his mother which are associated with (different) events of Joe being in town. This reading of the sentence presupposes that there is a relation expressible by the adverb *kétszer* ‘twice’ between events of Joe calling his mother and manifestations of events of a particular type. The sentence implicates that there is at least one proposition which expresses a different relation between events of Joe calling his mother and events of a different type, which is neither entailed nor contradicted by the original proposition. On the other interpretation, the sentence means that it was on a particular occasion when he was in town that Joe called her mother twice. This reading presupposes that there was an occasion when Joe called his mother twice. The sentence implicates that there is at least one proposition predicating that on a different occasion Joe called his mother a different number of times, which is neither entailed nor contradicted by the original proposition. Note that, due to the fact that the present tense does not sufficiently delimit the domain of events to be quantified over, only the second type of interpretation can be considered for the following sentence:

- (180) Jóska [_{CT} *kétszer*] [_F *`akkor*] hívja fel az anyját,
 Joe twice then calls pfx the mother-1SGPOSS-ACC
 [_F amikor a városban van].
 when the town-INESS is
 ‘It is when he has a day off that Joe calls his mother TWICE.’

(180) expresses, that, as a rule, Joe calls his mother twice on those days when he is in town. The sentence implicates that there is at least one proposition stating that different occasions are associated with Joe calling his mother a different number of times which is neither entailed nor contradicted by the original proposition.

In order to see how a formal representation of the meaning of (179) can be derived, we first consider the representation of (181), shown in (182):

- (181) Jóska kétszer felhívta az anyját, amikor a városban volt.
 Joe twice pfx-called the mother-1SGPOSS-ACC when the town-INESS was
 ‘Joe called his mother twice when he was in town.’

- (182) **twice_e** (($\lambda e \exists e_1 (*\text{be-in-town}(e_1) \wedge {}^s\text{TH}(e_1, \text{Joe}) \wedge e_1 \subseteq e)$),
 ($\lambda e \exists e_1 \exists e_2 (*\text{be-in-town}(e_1) \wedge {}^s\text{TH}(e_1, \text{Joe}') \wedge e_1 \subseteq e \wedge *call(e_2) \wedge$
 $\wedge {}^s\text{AG}(e_2, \text{Joe}) \wedge {}^s\text{PAT}(e_2, \text{Joe's mother}) \wedge e_2 \subseteq e \wedge M(e_2) = e_1 \wedge$
 $\wedge \neg \exists e' (e_1 \subseteq e' \wedge e_2 \subseteq e' \wedge e' \neq e)$)))

(182) means that two sets of events are connected by the relation denoted by *twice*, that is, the two sets have at least two elements in their intersection. One of these is the set of events which have subevents of the type that Joe is in town, the other is the set of the smallest events which have subevents of the type that Joe is in town, and subevents of the type that Joe calls his mother. This boils down to the fact that two events of Joe being in town are associated with Joe calling his mother, which is what (181) is intended to mean.

The formula reflecting the meaning of (179), which expresses the identification of the event-type having the property characterized by the focus frame of the sentence with the event-type of Joe being in town can now be given on the basis of the representations in (182) and (176) above:

$$(183) \quad \forall *P \forall e (\mathbf{twice}_e (\lambda e \exists e_1 (*P(e_1) \wedge e_1 \subseteq e)), \\ (\lambda e \exists e_1 \exists e_2 (*P(e_1) \wedge e_1 \subseteq e \wedge *call(e_2) \wedge {}^sAG(e_2, \mathbf{Joe}) \wedge {}^sPAT(e_2, \mathbf{Joe's\ mother}) \wedge \\ \wedge e_2 \subseteq e \wedge \mathbf{M}(e_2) = e_1 \wedge \neg \exists e' (e_1 \subseteq e' \wedge e_2 \subseteq e' \wedge e' \neq e))) \rightarrow *P(e) = (*\mathbf{be-in-town}(e) \wedge \\ \wedge {}^sTH(e, \mathbf{Joe})))$$

Consider now an adverb of quantification which could be considered the temporal variant of *many*, namely, *gyakran* ‘often’. *Gyakran* ‘often’ creates the same type of ambiguity in the following sentence as *kétszer* ‘twice’ does in (179):

$$(184) \quad \begin{array}{llll} \text{Jóska} & \text{gyakran} & \text{felhívja} & \text{az} & \text{anyját,} & & \text{amikor} & \text{a} & \text{városban} & \text{van.} \\ \text{Joe} & \text{often} & \text{pfx-calls} & \text{the} & \text{mother-1SGPOSS-ACC} & & \text{when} & \text{the} & \text{town-INESS} & \text{is} \\ & & \text{'When he has a day off} & \text{Joe often calls his mother.'} \end{array}$$

On one of its interpretations, (184) says that a large, and more or less evenly distributed number of occasions of Joe being in town are such that he calls his mother then. On the other interpretation, the sentence means that, as a rule, whenever Joe is in town, he calls his mother often. On this latter interpretation, the sentence behaves as a generic statement. The first reading of the sentence could be represented in the form of a tripartite structure consisting of the relation between events which is denoted by the adverb of quantification, and the two arguments of this relation, shown in (185). Two sets of events will be said to stand in the relation denoted by the adverb of quantification *gyakran* ‘often’ if the ratio of the number of elements in their intersection and the number of elements in the first set is larger than a contextually determined number, and the run times of the events in the intersection are evenly distributed on the temporal axis.

$$(185) \quad \mathbf{often}_e \quad (\lambda e \exists e_1 (*\mathbf{be-in-town}'(e_1) \wedge {}^sTH(e_1, \mathbf{Joe}) \wedge e_1 \subseteq e), \\ \lambda e \exists e_1 \exists e_2 (*\mathbf{be-in-town}(e_1) \wedge {}^sTH(e_1, \mathbf{Joe}) \wedge e_1 \subseteq e \wedge *call(e_2) \wedge \\ \wedge {}^sAG(e_2, \mathbf{Joe}) \wedge {}^sPAT(e_2, \mathbf{Joe's\ mother}') \wedge e_2 \subseteq e \wedge \mathbf{M}(e_2) = e_1))$$

If the subordinate clause of (184) is focused, as in (186) below, the preferred interpretation of the sentence is that among the events of Joe calling his mother, a large, and more or less evenly distributed number take place when he is in town. (I am not sure whether the other, generic reading is also possible for this sentence.)

- (186) Jóska gyakran_[Fakkor] hívja fel az anyját,
 Joe often then calls pfx the mother-1SGPOSS-ACC
 [_F amikor a városban van].
 when the town-INESS is
 ‘It is when he is in town that Joe often calls his mother.’

The following representation, a modified version of (185) above, captures the above mentioned features of the preferred reading of (186):

- (187) **often_e** $(\lambda e \exists e_2 (\text{call}'(e_2) \wedge \text{AG}(e_2, \text{Joe}') \wedge \text{PAT}(e_2, \text{his mother}')) \wedge e_2 \subseteq e),$
 $\lambda e \exists e_1 \exists e_2 (\text{be-in-town}'(e_1) \wedge \text{TH}(e_1, \text{Joe}') \wedge e_1 \subseteq e \wedge \text{call}'(e_2) \wedge$
 $\wedge \text{AG}(e_2, \text{Joe}') \wedge \text{PAT}(e_2, \text{his mother}')) \wedge e_2 \subseteq e \wedge \text{M}(e_2) = e_1))$

The formula above says that a large number of events which have subevents of Joe calling his mother, and which are more or less evenly distributed on the temporal axis, are such that they also have subevents of Joe being in town.

The variant of the sentence in (186) where the adverb is pronounced with the contrastive topic intonation is shown in (188).

- (188) Jóska [_{CT} 'gyakran] [_F `akkor] hívja fel az anyját,
 Joe often then calls pfx the mother-1SGPOSS-ACC
 [_F amikor a városban van].
 when the town-INESS is
 ‘It is when he is in town that Joe **OFTEN** calls his mother.’

(188) again can have two interpretations. According to the first one, it is presupposed that there is a type of event which often co-occurs with the event of Joe calling his mother, and the sentence states that this type of event is an event of Joe being in town. The sentence implicates that there is a proposition expressing that there is a different relation between events of Joe calling his mother and other types of events which is neither entailed nor contradicted by the proposition expressed by original sentence. According to the second reading, it is presupposed that on certain occasions Joe calls his mother often, and the sentence states that these occasions are days when Joe is in town. This reading implicates that there is at least one proposition stating that there are other days when Joe calls his mother with a different frequency which is neither entailed nor contradicted by the original proposition. The first interpretation of (188) could be represented as follows:

- (189) $\forall *P \forall e (\text{often}_e (\lambda e \exists e_1 (*P(e_1) \wedge e_1 \subseteq e),$
 $(\lambda e \exists e_1 \exists e_2 (*\text{call}(e_2) \wedge {}^s\text{AG}(e_2, \text{Joe}) \wedge {}^s\text{PAT}(e_2, \text{Joe's mother}) \wedge e_2 \subseteq e \wedge *P(e_1) \wedge$
 $\wedge e_1 \subseteq e \wedge \text{M}(e_2) = e_1 \wedge \neg \exists e' (e_1 \subseteq e \wedge e_2 \subseteq e \wedge e' \neq e)) \rightarrow *P(e) = (*\text{be-in-town}(e) \wedge$
 $\wedge {}^s\text{TH}(e, \text{Joe})))$

A comparison between the adverbs of quantification *kétszer* ‘twice’ and *gyakran* ‘often’, discussed above, shows that the latter, as opposed to (certain readings of) its counterpart in the nominal domain, *many*, does not predicate about the number of the joint occurrences of particular events. Instead, it is about the fact that a large number of events satisfying one type of event description, which are more or less evenly distributed on the time axis, are such that they are associated with events satisfying a different description. This makes the adverb *gyakran* ‘often’ be more like strong quantifiers than weak ones.

This ends the discussion about contrastive topic adverbs of quantification followed by associates playing the role of focus. In the next section the main results of the chapter are summarized.

8 Summary

In this chapter, a formal account of the semantic interpretation of factual sentences containing contrastive topics was proposed. First, the possible scopal interactions between the quantifiers playing the roles of the contrastive topic and that of the associate were studied, and it was established that the issue of how contrastive topics and associates interact scopally is completely determinable on the basis of their syntactic position, lexical properties and the implicature introduced by the contrastive topic, whereas the scopal interaction between the contrastive topic and quantificational expressions following the associate cannot always be predicted on the basis of the syntactic or semantic properties of the latter expression.

The possible readings of plural DPs in contrastive topic were characterized in terms of the collective/individual/cumulative trichotomy, and an overview of some previous approaches to explaining the differences between collective (group) and distributive readings of sentences and the sources of these differences was provided (Scha 1981, Roberts 1987, Link 1983 and Landman 1996). Landman (1996) was seen as a unified approach to the meaning of sentences with two DPs in which the scopes of (multiple) DPs and their collective/distributive interpretations are equally taken into consideration. It was established, however, that Hungarian sentences with quantificational DPs have readings which are not predicted on Landman's theory. Consequently, a new list of nine possible readings for sentences with two plural NPs was proposed, which was not intended to cover all their possible readings. It was established that the availability of a wide-scope or a group reading for a particular DP in Hungarian does not only depend on the lexical properties of its determiner but also on the DP's syntactic position in the sentence. In Landman's system, which treats all DPs with denotations playing thematic roles or plural roles in a sentence on a par, the above distinctions cannot be accounted for.

In view of the above difficulties, a different approach to the representation of sentence meaning in terms of event semantics was reviewed, the one proposed by Krifka (1989). In this theory, the denotation of a sentence is the result of the unification of denotations in a binary syntactic tree starting from the bottom up, so the scopes of quantifiers correspond to their linear order, and thus there is no possibility to represent the 'scope reversal' of contrastive topics.

Based on the insights of the theories proposed by Landman (1996) and Krifka (1989), an integrated method for providing the semantics of sentences with contrastive topics in Hungarian was proposed which was based on the empirical observation that Hungarian sentences with contrastive topics can have essentially three types of logical structure. According to the first one, the sentence predicates a property about an individual falling into the denotation of the contrastive topic. According to the second one, the sentence predicates a property about the unique individual which constitutes the referent of the associate expression. According to the third one, the sentence expresses that the number of individuals who have participated in an event of the type described by the rest of the sentence is

equivalent to what is given by the determiner of the associate DP. It was shown that the above interpretational strategies correspond to several actual event types, since the property of being a (sum) participant in a particular plural event can be predicated of collections of individuals either collectively, distributively, or due to the fact that they constitute the sum of individuals for which a corresponding property applies.

The above theoretical machinery was also put into practice: we proposed a unification-based mechanism for deriving the meaning of Hungarian sentences with a contrastive topic. It was assumed that the use of the first interpretation strategy (where the contrastive topic denotes the logical subject) means that it is the meaning of the contrastive topic which is integrated last into the meaning of the sentence, while the second strategy (where the associate denotes the logical subject) means that it is the meaning of the associate which is integrated last into the meaning of the sentence.

We looked into the issue why some potential sentences, or potential readings of sentences which have quantificational expressions in the role of contrastive topic, turn out to be unacceptable in Hungarian. We argued for a reformulation of the constraint proposed Büring (1997) on the readings available for sentences with contrastive topics in terms of event semantics, by saying that a factual sentence with a contrastive topic gives rise to the following implicature: there must be at least one alternative event type, which is generated systematically from the event description in the sentence such that all of its possible realizations are compatible with the meaning of the sentence. Whenever the existence of such alternative event type is contradicted by the truth-conditional meaning of the sentence, the sentence was said to be uninterpretable.

In the following sections, we examined some phenomena which are all explainable with the help of the above theoretical apparatus, like the uninterpretability of statements which describe maximal events, or of those denying the occurrence of atomic events, statements with a contrastive topic DP of the form *at least NP*, and the availability of collective and distributive interpretations of plural NPs in contrastive topic.

In the last section of this chapter, a compositional interpretational procedure was proposed for sentences containing adverbs of quantification as contrastive topic, which accounted for the observed truth-conditional equivalence between sentences with contrastive topic adverbs of quantification and a focused subordinate clause, and sentences with the same adverb of quantification outside the contrastive topic position and no focused subordinate clause.

CHAPTER 5

CONTRASTIVE TOPICS IN MODAL AND INTENSIONAL STATEMENTS

1 Data

In this chapter we investigate the interpretation of modal/intensional statements containing a contrastive topic. In these sentences, the verb, a negative particle followed by the verb, a preverbal quantificational expression (either in the focus or in the quantifier position of the sentence), a negative particle followed by the latter, as well as an expression in focus position or a negative particle followed by the latter can appear as associates. The data to be presented in this section will make it clear why this sentence type should be treated separately from factual statements, discussed in the previous chapter.

The sentences illustrated in (1)–(7) below share the property of not providing a description of actual events, but expressing modal/intensional generalizations about a range of events. (1) expresses circumstantial possibility, (2) expresses deontic possibility, (3) expresses deontic necessity, (4) contains an emotive predicate expressing a particular mental attitude towards a class of objects, the sentences in (5) express ability, conditionals expressing wishes are found in (6), while the examples in (7) are generic statements:

- (1) [CT *‘Kevés pénzből*] *‘nem lehet eltartani a családot.*
little money-ELA not possible support-INF the family-ACC
‘As for little money, that amount is NOT enough for the family to live on.’
- (2) [CT *Az ‘összes diák*] *‘eljöhet az előadásra.* (G. Alberti’s example)
the all student pfx-come-POSS the talk-SUPERESS
‘~ All the students CAN come to the talk.’
- (3) [CT *‘Kevés beteget*] *‘el kell látnia a tanulónővérnek.*
few patient-ACC pfx must treat-INF3SG the trainee nurse-DAT
‘As for FEW patients, a trainee nurse has to take care of that number of them.’
- (4) [CT *‘Pontosan öt emberrel*] *‘szeretek együtt vacsorázni.*
exactly five person-INSTR like-1SG together dine-INF
‘With exactly FIVE persons, I DO like having dinner together.’
- (5) a. [CT *‘Ötnél ‘kevesebb vendéget*] *‘el tudna Mari szórakoztatni.*
five-ADE fewer guest-ACC prefix could Mary entertain-INF
‘As for fewer than five guests, Mary COULD entertain that number of them.’

- b. [_{CT} 'Több, mintöt vendéget] / [_{CT} Ötnél 'több vendéget] `el tudna Mari szórakoztatni.⁹³
 more than five guest-ACC five-ADE more guest-ACC pfx could Mary entertain-INF
 'As for more than five guests, Mary COULD entertain that number of them.'
- (6) a. [_{CT} Pontosán három könyvet] `minden diák elolvasna. (G. Alberti, p.c.)
 exactly three book-ACC every student PFX-read-COND3SG
 'As for exactly three books, every student would read that many.'
- b. [_{CT} 'Mindhárom fiúnak] `bemutatóm Marit. (Alberti and Medve 2000)
 all three boy-DAT introduce-COND1SG Mary-ACC
 'To all three boys I WOULD introduce Mary.'
- (7) a. [_{CT} 'Sok vendég] `nem fér be a terembe.
 many guest not fits pfx the room-ILL
 'Many guests DON'T fit in the room.'
- b. [_{CT} 'Kevés vendég] `befér a terembe.
 few guest pfx-fits the room-ILL
 'Few guests DO fit in the room.'

The contrastive topic DPs in the above sentences do not identify particular sum individuals, they do not even entail that there is a sum individual with the property described by the DP in the actual world. Rather, they express that some property, ability, etc., can be attributed to a particular class of entities which can be identified with the help of the contrastive topic expression.

The above examples can be contrasted to their hypothetical 'factual' variants, intended to describe factual events, which all turn out to be ill-formed, and which are listed in (8)–(14) below:

- (8) # [_{CT} 'Kevés pénzből] `nem tartotta el a családot.
 little money-ELA not supported pfx the family-ACC
 # 'As for little money, he did not support the family out of that amount.'
- (9) # [_{CT} Az 'összes diák] `eljött az előadásra.
 the all student pfx-came the talk-SUPERESS
 # 'All the students DID come to the talk.'
- (10) # [_{CT} 'Kevés beteget] `ellátott tegnap a tanulónővér.
 few patient-ACC pfx-treated yesterday the trainee nurse
 # 'As for FEW patients, a trainee nurse DID take care of that number of them.'
- (11) # [_{CT} 'Pontosan öt emberrel] `vacsoráztam együtt.
 exactly five person-INSTR dined-1SG together
 # 'With exactly FIVE persons, I DID have dinner together.'

⁹³ The two contrastive topic DPs differ from each other in the following respect: while *ötnél kevesebb vendéget* is a DP which can appear preverbally only in the Focus/Predicate Operator and the contrastive topic positions, *több, mint öt vendéget* is also allowed to appear in the Quantifier position. (Szabolcsi 1997b:121)

- (12) #_[CT] Ötnél kevesebb vendéget] `elszórakoztatott Mari.
 five-ADE fewer guest-ACC pfx-entertained Mary
 # 'As for less than five guests, Mary DID entertain that number of them.'
- (13)a. #_[CT] Pontosan három könyvet] `minden diák elolvasott.
 exactly three book-ACC every student pfx-read
 # 'As for exactly three books, every student would read that many.'
- b. #_[CT] Mindhárom fiúnak] `bemutattam Marit.
 all three boy-DAT introduced-1SG Mary-ACC
 # 'To all three boys I WOULD introduce Mary.'
- (14)a. #_[CT] Sok vendég] `nem ülte körül az asztalt.
 many guest not sat round the table-ACC
 # 'As for many guests, that number of them didn't sit round the table.'
- b. #_[CT] Kevés vendég] `körülülte az asztalt.
 few guest pfx-sat the table-ACC
 # 'As for few guests, that number of them didn't sit round the table.'

I believe that the contrast between the acceptability of examples (1)–(7) and (8)–(14) cannot be accounted for within syntax, since there is no significant difference between the syntactic structure of the corresponding sentences. Instead, the acceptability of the examples in (1)–(7) is due to the fact that the intended truth-conditional meaning of the former sentences and the implicature introduced by the contrastive topic does not lead to a clash, but it does in the case of (8)–(14). In order to prove the above hypothesis, we will show in the rest of this chapter how the truth-conditional meaning of sentences expressing modal/intensional statements can be determined, and how the alternative propositions introduced due to the contrastive topic can be derived from these in a systematic way.

Besides the contrast in interpretability observed between the two sets of examples above, there is a further contrast between the interpretation of modal statements (atemporal generalizations) and those predicating the occurrence of particular events which necessitates a separate treatment, which is illustrated by (15) and (16) below, where the contrastive topic DP is assumed to receive a non-specific interpretation:

- (15) [_{CT} Öt gyerek] `felemelné a zongorát.
 five child pfx-lift-COND the piano-ACC
 a. '˘Five children COULD/WOULD lift the piano together.'
 b. '˘Five children COULD/WOULD lift the piano individually.'
- (16) [_{CT} Öt gyerek] `felemelte a zongorát.
 five child pfx-lifted the piano-ACC
 a. #˘Five children DID lift the piano together.'
 b. ˘Five children DID lift the piano individually.'

(15) shows that in sentences expressing modal statements, the contrastive topic can equally receive a collective and a distributive reading, as opposed to its factual counterpart in (16),

which tends to have only a distributive interpretation, unless the contrastive topic is assumed to have a specific reading, as discussed in the previous chapter. A comparison between (17) and (18) shows that the same contrast is present between those sentences where the associate role is played by a DP which is situated in a preverbal quantifier position:

- (17) [CT 'Öt gyerek] `minden zongorát fel tud emelni.
 five child every piano-ACC pfx can-3SG lift-INF
 a. 'As for five children, that many together can lift every piano.'
 b. 'As for five children, that many can lift every piano by themselves.'
- (18) [CT 'Öt gyerek] `minden zongorát felemelt.
 five child every piano-ACC pfx-lifted
 a. # 'As for five children, that many together lifted every piano.'
 b. 'As for five children, that many lifted every piano by themselves.'

Having listed some of the data we are going to be concerned with in this chapter, in the next section we consider the interpretation of modal assertions as proposed by Kratzer (1991), which will be adopted in this work.

2 The semantics of modals

In the rest of the chapter we will rely on Kratzer's (1991) theory about the semantic interpretation of modals, the major points of which will be summarized below. Kratzer proposes that the interpretation of modality in natural language relies on distinctions made with respect to three dimensions. On the one hand, modality is graded, which means that in natural language we do not only talk about possibility and necessity, but also about good possibility, slight possibility, weak necessity, and the existence of some state of affairs being a better possibility than the existence of others, which needs to be formalized somehow. Thus, the distinction made in modal logic in terms of the necessity and possibility operators is not sufficient for representing the distinctions made in natural language. On the other hand, there is no absolute modality in language, modal statements are always evaluated with respect to what the facts are or what we perceive to be the facts in the actual world, and how these facts relate to what the law provides, what is good for a person, what is moral, what we aim at, what we hope, what we want, what is normal, etc. The above distinctions can be captured by interpreting sentences like (19a–b) (Kratzer's (19a) and (6)) in the following way:

- (19) a. Michl must be the murderer.
 b. Jockl must go to jail.

(19a), where the modal auxiliary is assumed to express epistemic necessity, is true in the actual world w , according to Kratzer (1991), if among the possible worlds which correspond to the available evidence in w , those which best reflect what is considered to be the normal course of events in w are such that Michl is the murderer. (19b), where the same auxiliary expresses deontic necessity, is true in w if among the possible worlds which correspond to what the facts are in w , those which best reflect what the law provides in w are such that Jockl goes to jail.

The above paraphrases illustrate the nature of the other two dimensions with respect to which the differences between modal assertions can be captured, which Kratzer refers to as conversational backgrounds. The two conversational backgrounds are sets of propositions considered true in the interpretation procedure. The first conversational background consists of propositions describing facts or evidence available in the actual world. Each of these propositions determines a set of possible worlds, the intersection of which constitutes the *modal base* of the assertion, which thus corresponds to possible worlds which in traditional accounts were claimed to be epistemically or circumstantially accessible from the actual world. The second conversational background, which is referred to as the *ordering source* by Kratzer, and consists of propositions relating to what the law provides, what is normal, what is wanted, etc., induces an ordering on the set of these possible worlds according to how many among the above sets of propositions are true in them. Thus, the closeness of particular possible worlds among the ones constituting the modal base to the ideal determined by the ordering source depends on how many of the propositions constituting the ordering source are true in the given possible world.

On the basis of the above three dimensions with respect to which modal notions in natural language are interpreted, Kratzer (1991:644) provides the following definition for necessity:

- (20) A proposition p is a **necessity** in a world w with respect to a modal base f and an ordering source g iff the following condition is satisfied:
 For all $u \in \cap f(w)$ there is a $v \in \cap f(w)$ such that $v \leq_{g(w)} u$ and for all $z \in \cap f(w)$: if $z \leq_{g(w)} v$, then $z \in p$.

According to Kratzer, that above definition says that “a proposition is a necessity if and only if it is true in all accessible worlds which come closest to the ideal established by the ordering source” (p. 644). Her definition of possibility (Kratzer 1991: 644) is built on the above definition of necessity:

- (21) A proposition p is a **possibility** in a world w with respect to a modal base f and an ordering source g iff $\neg p$ is not a necessity in w with respect to f and g .

Informally speaking, the above definition of possibility amounts to claiming that the proposition in question is true in at least one possible world closest to the ideal established by the ordering source.

Having discussed Kratzer’s (1991) theory on the interpretation of modals, in the next section we consider how her claims can be integrated into an account of the semantics of the contrastive topic.

3 Integrating the semantics of modals with that of the contrastive topic

3.1 Truth-conditional meaning and alternative propositions

In this section we will prove the hypothesis that the interpretability of sentences expressing modal/intensional statements, as opposed to the uninterpretability of their factual counterparts, illustrated in section 1, can be accounted for within the approach to the semantic interpretation of sentences containing a contrastive topic which is adopted in this dissertation. Thus, I will prove that the interpretability of modal assertions with a contrastive topic is due to the fact that the proposition expressed by these sentences does not entail or contradict all the alternative propositions which are introduced as part of the implicature due to the contrastive topic. The propositions expressed by the sentences under discussion will be captured within the framework proposed by Kratzer (1991) aiming account for the interpretation of modal assertions reviewed above. Accordingly, sentences predicating a possibility will be assumed to express that there is at least one possible world among the ones in the modal base closest to the ideal determined by the ordering source in which a type of event described by the sentence occurs, while those predicating the impossibility of some state of affairs will be assumed to deny this. Also, sentences predicating a necessity will be assumed to express that all possible worlds among those closest to the ideal are such that an event of the type described by the sentence takes place in them, while those expressing lack of necessity are assumed to deny this.

We assume that the alternative propositions introduced by modal statements are also modal statements, which express the necessity or the possibility that an event of the same type as that described by the original sentence takes place, or the lack of this necessity or possibility, with the only difference that the participants of these latter events which play the same thematic role as played by the contrastive topic denotation and by the associate denotation (where applicable) in the original sentence correspond to alternatives of the original contrastive topic denotation and to alternatives of the associate denotation (where applicable). The modality of the alternative propositions varies in the following way. Whenever the original sentence expresses a possibility or the lack of it then the alternative propositions assigned to these also express a possibility or the lack of a possibility. Whenever the original sentence expresses a necessity or the lack of it, then the alternative propositions also express necessity or the lack of necessity. For an illustration, consider again (1) and (3) above, repeated here as (22) and (23):

- (22) [CT Kevés pénzből] `nem lehet eltartani a családot.
little money-ELA not possible support-INF the family-ACC
'As for little money, that amount is NOT enough for the family to live on.'

- (23) [CT Kevés beteget] `el kell látnia a tanulóővérnek.
few patient-ACC pfx must treat-INF3SG the trainee nurse-DAT
'As for FEW patients, a trainee nurse has to be able to take care of that number of them.'

According to the above assumption, the alternative propositions introduced by (22) are those expressing the possibility or the lack of the possibility of the state of the family living on an amount of money different from what can be referred to by 'little'. The alternative

propositions generated by (23) are those expressing the necessity or the lack of necessity of the occurrence of an event where the trainee nurse takes care of a different number of patients. Support for the assumption that the alternative propositions introduced by the contrastive topic for the sentence type under discussion are generated in the manner described above comes from two sources. On the one hand, these sentences are implicitly contrasted to other modal statements, one of which is spelled out in the legitimate continuations of (22) and (23) in (24) and (25), respectively:

(24) De [CT 'sokból] `el lehet.
but much-ELA pfx possible
'But a lot of money IS enough.'

(25) De [CT 'sokat] `nem kell.
but many-ACC not must
'But she does not have to able to take care of MANY of them.'

On the other hand, the generation of alternatives in the manner described above corresponds to Büring's (1997, 1999) method, according to which in alternative propositions the denotation of verum focus is exchanged for its negated counterpart (which in turn corresponds to sentence negation in Hungarian, as discussed in Chapter 4), or left unchanged, and the denotation of the negative particle as associate can be exchanged for an invisible assertion operator. The set of propositions listed in (26) contains possible alternatives to the proposition expressed by (23), which are generated in the manner described above:

(26) *A trainee nurse must take care of few patients, A trainee nurse does not have to take care of few patients, A trainee nurse must take care of more than five patients, A trainee nurse does not have to take care of more than five patients, A trainee nurse must take care of an average number of patients, A trainee nurse does not have to take care of an average number of patients, A trainee nurse must take care of many patients, A trainee nurse does not have to take care of many patients, ...*

I propose that for sentences expressing other types of intensional statements, like those expressing ability, genericity, attitudes towards a class of entities, or the generation of alternative propositions takes place in a similar manner. Thus, the alternative propositions express the same type of atemporal generalization with respect to an alternative of the contrastive topic denotation (identified on the basis of the stress pattern of the contrastive topic) as the one expressed in the original sentence or its negation. For example, the alternative propositions generated for the one expressed by (4), repeated here as (27), express either that I like or that I do not like having dinner with groups of people with other than *exactly five* members.

(27) [CT 'Pontosan öt emberrel] `szeretek együtt vacsorázni.
 exactly five person-INSTR like-1SG together dine-INF
'With exactly FIVE persons, I DO like having dinner together.'

Thus, the alternative propositions include the following: *I like having dinner with exactly two people, I don't like having dinner with more than seven people, I like having dinner with an even number of people, etc.*⁹⁴

⁹⁴ Naturally, the range of alternatives to the contrastive topic denotation might already be given contextually.

Having illustrated how the truth-conditional meanings and the range of alternative statements are generated for the modal assertions under consideration, in the next section we will show how the above framework ensures that the sentences in (1)–(7) turn out to be interpretable.

3.2 Calculating the implicature

In this section we will illustrate, by analysing some of the examples listed above, how the interpretability of modal and intensional statements with a contrastive topic is guaranteed in the framework proposed here. First consider the sentences in (5), repeated here as (28):

- (28)a. [_{CT} Ötnél kevesebb vendéget] `el tudna Mari szórakoztatni.
 five-ADE fewer guest-ACC prefix could Mary entertain-INF
 ‘As for fewer than five guests, Mary COULD entertain that number of them.’
- b. [_{CT} Több, mintöt vendéget] / [_{CT} Ötnél több vendéget] `el tudna Mari szórakoztatni.
 more than five guest-ACC five-ADE more guest-ACC pfx could Mary entertain-INF
 ‘As for more than five guests, Mary COULD entertain that number of them.’

These sentences express certain abilities of Mary’s. In an extension of Kratzer’s (1991) framework, (28a) would mean that there is at least one world in the set of possible worlds which are closest to the actual one as far as Mary’s abilities are concerned among those where the facts are the same as in the actual world (that is, the sentence is interpreted against a circumstantial modal base), in which Mary entertains fewer than five guests. (28b) means that in the same set of worlds, there is at least one in which Mary entertains more than five guests. These sentences can only be considered interpretable if the above propositions do not entail or contradict all the alternative propositions. The set of alternative propositions generated for each sentence includes those which assert that there is a possible world in the above set where Mary entertains a different number of guests than the one specified by the sentence, and the negations of such propositions. Naturally, the truth of all positive alternative propositions (and the falsity of the negative ones) would be entailed by the truth of the sentences in (28a,b) if the occurrence of the events described in them entailed the occurrence of all events of inviting an alternative number of guests in the same possible world. The fact that (28a,b) are considered interpretable by native speakers indicates, however, that this cannot be the case.

Compare the above sentences to the following one, which contains the same verb as those in (28), and which describes an actually occurring event.

- (29) Mari `elszórakoztatott öt vendéget.
 Mary pfx-entertained five guest-ACC
 ‘Mary did entertain five guests.’

I claim that the thematic relation between the event type denoted by the verb *elszórakoztat* ‘entertain’, as it appears in the above sentence, and its patient has the property of divisibility, defined in Chapter 4, repeated here as (30):

- (30) *Divisibility*
 $\forall^s R[\mathbf{DIV}({}^s R) \leftrightarrow \forall^* P \forall e \forall x \forall x' [(*P(e) \wedge {}^s R(e, x) \wedge x' \subseteq_O x] \rightarrow \exists e' [e' \subseteq_E e \wedge *P(e')] \wedge$

$$\wedge {}^sR(e',x')]]]$$

As explained above, the property of divisibility intends to express the following: if there is an individual which plays a particular sum role in a (plural) event, then for any individual part of it there is an event of the same type in which the latter individual plays the same sum role. In the present case it would mean that if there is an event of Mary entertaining a sum individual which falls into the denotation of the noun *guest*, then for any individual part of this individual (thus, for any atomic part of it), there are corresponding events of Mary entertaining them.

The above assumptions, however, lead to the following problem. If the thematic relation between the event described by the verb *elszórakoztat* ‘entertain’ and its patient argument has the property of divisibility, then the occurrence of an event of Mary entertaining more than five guests in a possible world would have to entail the truth or falsity of all alternative statements. This is due to the fact that the alternative statements would be those which express the possibility or the impossibility of an event of entertaining an individual in the denotation of *guest* by Mary which has a different number of atoms than what is denoted by *more than five*, i.e., fewer than five or five. This fact, however, would have to make (28b) uninterpretable, which it is not.

Since sentence (28b) is judged acceptable by speakers, one of the assumptions about its semantic interpretation which are used in the above reasoning must be mistaken. Since the assumption that the interpretability of sentences with contrastive topics depends on the fact that the propositions expressed by these should not entail or contradict the alternative propositions has proved useful in the preceding discussion, I do not want to abandon this. Neither do I want to abandon Kratzer’s (1991) proposal about the interpretation of modal assertions, and its extension to sentences expressing other atemporal generalizations. Consequently, I believe that the problematic assumption in the above reasoning must be the one according to which the thematic relation between the event described in (28b) and its patient argument satisfies the property of divisibility. Although this choice might appear at first sight to lead to an unnecessary distinction between the type of event described in (28a,b) and the one in (29), note that this distinction is motivated by intuitions. In (28), for example, the crucial property of the event of entertaining is that the atomic individuals constituting the denotation of the contrastive topic are assumed to participate in it at the same time and place, as a group. In other words, I claim that the contrastive topic DP receives a group denotation in (28b), as do the other contrastive topics in the other sentences listed in (1)–(7). This means that the truth of these sentences, where a particular property is predicated of an individual denoted by the contrastive topic, does not entail the truth of those where the same property is predicated of atomic parts of the contrastive topic denotation. The requirement that the contrastive topic DPs in (1)–(7) must receive a group reading eventually entails that the interpretation of the verbs in the modal/intensional statements and in their factual counterparts must be different.

To see some additional motivation for the above claim, consider again example (2) above, repeated here as (31), and one of its legitimate continuations shown in (32):

- (31) [CT Az összes diák] `eljöhet az előadásra.
the all student pfx-come-POSS the talk-SUPERESS
‘~All students CAN come to the talk.’

- (32) De [_{CT} 'kevesebben] `nem jöhetnek.
 but fewer not come-POSS-3PL
 'But a fewer number of them CANNOT come.'

The fact that (31) is interpretable and can be continued with (32) indicates that the property of divisibility must not be assumed to hold between the event type denoted by the verb *jön* 'comes' in (31) and its agent. Otherwise, the truth of (31), i.e., the occurrence of all students coming to the talk in one of the possible worlds which best correspond to what the law provides (deontic ordering source) among those where the facts are the same as in the actual world (circumstantial modal base), would entail the truth of all alternative statements stating the occurrence of events of coming by different numbers of students (and the falsity of those denying the occurrence of such events) in the same possible worlds. I do not want to claim that the event type denoted by the verb *jön* 'comes' in its 'normal' uses does not satisfy divisibility with respect to its agent argument, I only propose that in (31) the verb receives a special interpretation, which requires that the DP expressing their agent argument has a group denotation.

Note that the interpretation of (28a) does not run into the same problems as that of (28b) if we assume that there is a kind of 'maximality condition' built into the meaning of DPs denoting monotone decreasing or non-monotone quantifiers, like the one in (28a). The maximality condition means that if an event is described as one which is an entertaining of fewer than five guests then it cannot be part of an event of entertaining a larger number of guests. (33) below illustrates that this assumption corresponds to the data, since the use of a DP denoting a monotone decreasing or non-monotone quantifier to express a proposition that a particular number of entities individually possess a particular property entails that a corresponding proposition with a DP referring to a larger number of entities would not be true:

- (33) Ötnél kevesebb fiú emelte fel a zongorát.
 five-ADE fewer boy lifted pfx the piano-ACC
 'Fewer than five boys lifted the table individually.'

The truth of (33) contradicts the truth of propositions which express that five or more boys lifted the table.

Note that (32a) entails for any number of guests equal to or larger than five that they cannot be patients of entertaining events whose agent is Mary in the same possible world. However, since statements expressing a possibility make generalizations about a set of possible worlds, the truth of (32a) does not entail that there cannot be entertaining events performed by Mary such that the patients of it are larger groups of guests.

Consider now the interpretation of a statement expressing (deontic) necessity, shown in (3) above, repeated here as (34):

- (34) [_{CT} 'Kevés beteget] `el kell látnia a tanulóővérnek.
 few patient-ACC pfx must treat-INF-3SG the trainee nurse-DAT
 'As for FEW patients, a trainee nurse has to be able to take care of that number of them.'

(35) a. [CT Átlagos számú beteget] `el kell látnia a tanulóővérnek.
average number patient-ACC pfx must treat-INF3SG the trainee nurse-DAT
'As for an AVERAGE number of patients, the trainee nurse must take care of that
number of them.'

b. [CT Átlagos számú beteget] `nem kell ellátnia a
tanulóővérnek.
average number patient-ACC not must pfx-treat-INF3SG the trainee nurse-
DAT
'As for an AVERAGE number of patients, a trainee nurse does not have to take care of
that number of them.'

Note that, naturally, exactly one of the statements (35a–b) can be true in the actual world, but in order to be able to determine which, we would also have to know what propositions constitute the ordering source for the sentence, which is identical to knowing what the rules regarding the work of a trainee nurse are.

(36) a. _{[CT} Kevés adatból] _{le} kell tudnod vezetni egy általánosítást.
 few data-ELA PFX must know-INF-2SG derive-INF a generalization-ACC
 ‘From few pieces of data you must be able to derive a generalization.’

- b. [CT 'Sok adatból] 'le kell tudnod vezetni egy általánosítást.
 many data-ELA PFX must know-INF-2SG derive-INF a generalization-ACC
 'From many pieces of data you must be able to derive a generalization.'

Note that, given a particular context, it is not assumed that both members of the pair of sentences in (36a,b) are interpretable, since the contrastive topic is used to convey the idea that there is a certain number of pieces of data from which the listener is not expected to derive a generalization. Without a context, however, it is not evident for any speaker of the language what the relevant number is, but it is expected that this will be either the minimal or the maximal number.⁹⁵

The interpretability of the rest of the examples in (1)–(7) can be accounted for on the basis of the same assumptions. The examples in (7), which express, I believe, generic statements, will be discussed more thoroughly in section 5. Here we will analyze the examples in (6) and (4), repeated here as (37) and (38):

- (37)a. [CT 'Pontosan három könyvet] 'minden diák elolvasna.
 exactly three book-ACC every student PFX-read-COND3SG
 'As for exactly three books, every student would read that many.'
- b. [CT 'Mindhárom fiúnak] 'bemutatóm Marit.
 all three boy-DAT introduce-COND1SG Mary-ACC
 'To all three boys I WOULD introduce Mary.'
- (38) [CT 'Pontosan öt emberrel] 'szeretek együtt vacsorázni.
 exactly five person-INSTR like-1SG together dine-INF
 'With exactly FIVE persons, I DO like having dinner together.'

Sentences (37a–b) are interpreted against a circumstantial modal base and an ordering source which ranks possible worlds according to the preferences of the agent participant. The fact that both sentences are judged semantically appropriate suggests that the occurrence of the type of event described by the sentences in the possible worlds closest to the ideal does not entail that the same type of event does take place with a different participant or a different type of participant in the place of the contrastive topic denotation in the same possible world or its negation. Observe the following variants of (37a–b).

⁹⁵ It is not very unlikely to utter both of (36a, b) to implicate that the listener is not expected to derive a generalization from a medium number of pieces of data.

(39)a. [CT 'Sok könyvet] 'minden diák elolvasna.
 many book-ACC every student pfx-read-COND
 'Every student would read MANY books.'

b. [CT 'Kevés könyvet] 'minden diák elolvasna.
 few book-ACC every student pfx-read-COND
 'Every student would read FEW books.'

(40)a. [CT 'Sok fiúnak] 'bemutatnám Marit.
 many boy-DAT introduce-COND1SG Mary-ACC
 'To many boys I WOULD introduce Mary.'

b. [CT 'Kevés fiúnak] 'bemutatnám Marit.
 few boy-DAT introduce-COND1SG Mary-ACC
 'To few boys I WOULD introduce Mary.'

The fact that none of (39a–b) and (40a–b) are considered unacceptable in isolation (without having information about the system of wishes characterizing the agent participants of the events), although the assumed acceptability of one member of the pair automatically leads to the unacceptability of the other member, suggests again that the acceptability of examples containing contrastive topics cannot be accounted for in terms of syntax.

Sentence (38) is interpreted against an ordering source which ranks those possible worlds high which correspond to my preferences. Again, the fact that it is found semantically appropriate by speakers suggests that the events in the possible worlds whose occurrence makes the proposition true are assumed to be atomic ones, i.e., independent of events of the same type having a different number of participants. This means that the intended interpretation of the embedded verb is different from its counterpart which appears in descriptions of factual events, which effect is also enforced by the presence of the adverb *együtt* 'together'. The pair in (41) shows the same phenomenon as (39) and (40): uttered in isolation, and without knowing my preferences, both members of the pair appear fine, although they cannot still be uttered in the same context at the same time.

(41)a. [CT 'Sok emberrel] 'szeretek együtt vacsorázni.
 many person-INSTR like-1SG together dine-INF
 'Many people, I do like having dinner with.'

b. [CT 'Kevés emberrel] 'szeretek együtt vacsorázni.
 few person-INSTR like-1SG together dine-INF
 'Few people, I do like having dinner with.'

In the discussion so far, we have been concentrating on cases where the contrastive topic was followed by an associate identical to (some part of) the verbal predicate or a negative particle which was assumed to denote sentence negation. Naturally, those sentences expressing modal generalizations where the associate is a constituent in focus position, as illustrated in (42) below, also introduce alternative propositions as part of the implicature carried by the contrastive topic. These alternative propositions predicate the possibility, necessity, etc., of the occurrence of some alternative type of event, depending on the modality of the original proposition.

(42) [CT Ötnél 'kevesebb vendéget] [F 'Mari] tudna elszórakoztatni.

five-ADE fewer guest-ACC Mary could pfx-entertain-INF
 ‘It is Mary who could entertain fewer than FIVE persons.’

The alternative propositions introduced by (42), for example, state the abilities of individuals who could be considered alternatives to Mary to entertain a different number of guests. In other words, the sentence expresses that there is a possible world closest to the ideal (where people’s abilities are the same as in the actual world) in which Mary entertains a group of guests with fewer than five members. Supposing that there are individuals in the universe of discourse other than Mary and that the total number of guests is not fewer than five, it is easy to see that the occurrence of an event of the above type in one of the relevant possible worlds does not entail the occurrence or the non-occurrence of the possible alternative events in the same or different possible worlds. Thus, the interpretability of (42) is guaranteed.

We have observed in the previous chapter that focusing the associate can by itself guarantee that the alternative events introduced by a sentence with a contrastive topic will be distinct from that described by the original sentence. This is the reason why modal statements with a focused associate will not be our main concern in the rest of this chapter, since there is normally no question about their interpretability.

In this section we have claimed that modal, atemporal generalizations expressing possibility, ability, someone’s wishes, preferences, etc., state the occurrence of an event in one of the possible worlds closest to the ideal established by the ordering source associated with the predication. In the sentences investigated above, one participant of the event was denoted by the contrastive topic. The alternative statements introduced due to the contrastive topic were assumed to express the same type of atemporal generalization about a similar type of event with different participants in a possible world among those closest to the ideal or the negation of one. Statements expressing necessity were claimed to state the occurrence of an event in all possible worlds closest to the ideal. It was argued that in modal, atemporal generalizations of the above kind, the participant denoted by the contrastive topic is assumed to receive a group reading, i.e., the thematic relation between the event and its participant denoted by the contrastive topic was not assumed to satisfy the property of divisibility.

Before turning to the formal representation of the truth conditional meaning of the above examples and to cases which appear to constitute exceptions to the above generalizations, in the next section we will show how the data illustrated in section 1 on the possibility of collective/distributive readings of contrastive topic DPs in modal versus factual sentences can be derived from the generalizations made in this section.

3.3 Distributive versus group readings of contrastive topic DPs

In view of the fact that even contrastive topic DPs which receive a distributive interpretation when they are assumed to denote participants of ‘factual’ events are forced to have a group reading in sentences expressing modal generalizations, it is not surprising that those modal assertions and other modal/intensional statements which do allow the distributive reading of these DPs will also allow their group interpretation, as illustrated by (15) above, repeated here as (43). (Note that here we consider those readings where the contrastive topic DP does not have a specific interpretation.)

(43) [CT ‘Öt gyerek] `felemelné a zongorát.

- five child pfx-lift-COND the piano-ACC
- a. ‘ \sim Five children COULD/WOULD lift the piano together.’
- b. ‘ \sim Five children COULD/WOULD lift the piano individually.’

The group reading of the quantificational DP in (43) is fine since the fact that there is an event of five kids lifting the piano together in one of the relevant possible worlds does not entail that liftings of the piano by a different number of kids do or do not take place in the same or other possible worlds.

Having proposed a mechanism for accounting for the interpretability of sentences with contrastive topics in modal/intensional statements, in the next section we discuss how the intended truth conditional meanings of these sentences can be formally represented.

4 Formal representation of the truth-conditional meaning of modal assertions

Consider again sentence (5), repeated here as (44):

- (44) [CT Ötnél kevesebb vendéget] `el tudna Mari szórakoztatni.
 five-ADE fewer guest-ACC prefix could Mary entertain-INF
 ‘As for fewer than five guests, Mary COULD entertain that number of them.’

A formal representation of the truth conditional meaning of (44) is given in (45) below, in a system which can be considered an ‘intensionalized version’ of Krifka’s (1989) model. This means that predicates of events, predicates of objects and the thematic relations between events and their participants are made sensitive to possible worlds. The auxiliary *tudna* ‘could’ is interpreted as a sentence mood operator. As opposed to the declarative operator, however, proposed by Krifka (1989), which binds the event variable with the existential variable, the conditional operator denoted by *tudna* will be assumed to bind the world variable as well. The contrastive topic DP is assumed to denote a group, the representation of its meaning follows the pattern established for such DPs (i.e., those which are taken to denote a monotone decreasing quantifier in Generalized Quantifier Theory) in Chapter 4.

(45)

elszórakoztatni [V/NP_s, NP_o]
 [CT 'ötnél kevesebb
 vendéget] [NP_o] (*group*)

[CT 'ötnél kevesebb vendéget]
 elszórakoztatni [V/NP_s]

^

— Mari [NP_s]

[CT 'ötnél kevesebb vendéget] Mari
 elszórakoztatni [V]

— tudna [S/V] (COND)
 [CT 'Ötnél kevesebb vendéget] `el
 tudna Mari szórakoztatni. [S]

$\lambda w \lambda e [*entertain(w, e) \wedge {}^sAG(w, e, x_s) \wedge {}^sPAT(w, e, x_o)]$
 $\lambda P \lambda w \lambda e \exists x \exists x_o \exists n [*guest'(w, x) \wedge |x| < 5 \wedge$
 $\wedge x_o = \uparrow x \wedge P(w, e) \wedge [\forall e' \forall x_o' [P(w, e') \rightarrow$
 $\rightarrow x_o' \subseteq_w x_o]]]$

$\lambda w \lambda e \exists x \exists x_o [*entertain(w, e) \wedge {}^sAG(w, e, x_s) \wedge$
 $\wedge {}^sPAT(w, e, x_o) \wedge *guest(w, x) \wedge |x| < 5 \wedge x_o = \uparrow x \wedge$
 $\wedge [\forall e' \forall x_o' [*guest(w, x_o') \wedge |x_o'| < 5 \wedge *entertain'(w, e)$

$\wedge {}^sAG(w, e, x_s) \wedge {}^sPAT(w, e, x_o')] \rightarrow x_o' \subseteq_w x_o]]$

— $\lambda P \lambda w \lambda e \exists x_s [x_s = \mathbf{Mary} \wedge P(w, e)]$

$\lambda w \lambda e \exists x \exists x_o [*entertain(w, e) \wedge {}^sAG(w, e, x_s) \wedge$
 $\wedge {}^sPAT(w, e, x_o) \wedge *guest(w, x_o) \wedge |x| < 5 \wedge x_o = \uparrow x \wedge$
 $\wedge x_s = \mathbf{Mary} \wedge [\forall e' \forall x_o' [guest'(w, x_o') \wedge |x_o'| < 5 \wedge$
 $\wedge *entertain'(w, e) \wedge {}^sAG(w, e, x_s) \wedge {}^sPAT(w, e, x_o')] \rightarrow$
 $\rightarrow x_o' \subseteq_w x_o]]$

— $\lambda P \exists w \exists e [P(w, e)]$

$\exists w \exists e \exists x \exists x_o [*entertain(w, e) \wedge {}^sAG(w, e, x_s) \wedge$
 $\wedge {}^sPAT(w, e, x_o) \wedge *guest(w, x_o) \wedge |x| < 5 \wedge x_o = \uparrow x \wedge$
 $\wedge x_s = \mathbf{Mary} \wedge [\forall e' \forall x_o' [guest'(w, x_o') \wedge |x_o'| < 5 \wedge$
 $\wedge *entertain'(w, e) \wedge {}^sAG(w, e, x_s) \wedge {}^sPAT(w, e, x_o')] \rightarrow$
 $\rightarrow x_o' \subseteq_w x_o]]$

According to (45), (44) means that there is a possible world among the ones which are closest to the ideal determined by the ordering source (i.e., Mary's abilities are similar to those in the actual world) in which there is an event of entertaining, the agent of which is Mary and the patient of which is a plural individual with the property of being a guest such that it has fewer than five atomic parts.

The next representation, in (47), illustrates how to capture in the above framework the meaning of a statement expressing necessity, namely, (3) above, repeated here as (46).

(46) [CT 'Kevés beteget] `el kell látnia a tanulóővérnek.

few patient-ACC pfx must treat-INF3SG the trainee nurse-DAT

'As for FEW patients, a trainee nurse has to take care of that number of them.'

In the following representation it is assumed that the auxiliary *kell* 'must' contributes the necessity operator, which expresses universal quantification over the set of the possible worlds which are closest to the ideal determined by what the law provides among the ones where the facts are the same as in the actual world. The contrastive topic DP receives a group interpretation, just as it did in the previous sentence, and *k* denotes a small number, which is contextually determined :

(47)

ellátni [V/NP_s, NP_o]

└ [CT 'kevés
beteget] [NP_o] (*group*)

[CT 'kevés beteget]

ellátni [V/NP_s]

└ a tanulóővérnek [NP_s]

[CT 'kevés beteget] ellátni a
a tanulóővérnek [V]

└ kell [S/V] (NEC)

[CT 'Kevés beteget] `el

kell látnia a

tanulóővérnek. [S]

$\lambda w \lambda e [* \text{treat}(w, e) \wedge {}^s \text{AG}(w, e, x_s) \wedge {}^s \text{PAT}(w, e, x_o)]$

└ $\lambda P \lambda w \lambda e \exists x \exists x_o [* \text{patient}'(w, x) \wedge |x| \leq k \wedge$
 $\wedge x_o = \uparrow x \wedge P(w, e) \wedge [\forall e' \forall x_o' [P(w, e') \rightarrow$
 $\rightarrow x_o' \subseteq_w x_o]]]$

$\lambda w \lambda e \exists x \exists x_o [* \text{treat}(w, e) \wedge {}^s \text{AG}(w, e, x_s) \wedge$

$\wedge {}^s \text{PAT}(w, e, x_o) \wedge * \text{patient}(w, x) \wedge |x| \leq k \wedge x_o = \uparrow x \wedge$

$\wedge [\forall e' \forall x_o' [* \text{patient}(w, x_o') \wedge |x_o'| < k \wedge * \text{treat}'(w, e) \wedge$
 $\wedge {}^s \text{AG}(w, e, x_s) \wedge {}^s \text{PAT}(w, e, x_o')] \rightarrow x_o' \subseteq_w x_o]]$

└ $\lambda P \lambda w \lambda e \exists x_s [x_s = \text{the trainee nurse} \wedge P(w, e)]$

$\lambda w \lambda e \exists x \exists x_o [* \text{treat}(w, e) \wedge {}^s \text{AG}(w, e, x_s) \wedge$

$\wedge {}^s \text{PAT}(w, e, x_o) \wedge * \text{patient}(w, x) \wedge |x| \leq k \wedge x_o = \uparrow x \wedge$

$\wedge x_s = \text{the trainee nurse} \wedge$

$\wedge [\forall e' \forall x_o' [* \text{patient}'(w, x_o') \wedge |x_o'| < k \wedge * \text{treat}'(w, e) \wedge$

$\wedge {}^s \text{AG}(w, e, x_s) \wedge {}^s \text{PAT}(w, e, x_o')] \rightarrow x_o' \subseteq_w x_o]]$

└ $\lambda P \forall w \exists e [P(w, e)]$

$\forall w \exists e \exists x \exists x_o [* \text{treat}(w, e) \wedge {}^s \text{AG}(w, e, x_s) \wedge$

$\wedge {}^s \text{PAT}(w, e, x_o) \wedge * \text{patient}(w, x) \wedge |x| \leq k \wedge x_o = \uparrow x \wedge$

$\wedge x_s = \text{the trainee nurse} \wedge$

$\wedge [\forall e' \forall x_o' [* \text{patient}'(w, x_o') \wedge |x_o'| < k \wedge$

$\wedge * \text{treat}'(w, e) \wedge {}^s \text{AG}(w, e, x_s) \wedge$

$\wedge {}^s \text{PAT}(w, e, x_o')] \rightarrow x_o' \subseteq_w x_o]]$

According to the above formula, (46) means that all relevant possible worlds are such that there is an event of the trainee nurse taking care of few patients as a group in them, such that it is not part of an event of the trainee nurse taking care of a larger number of patients. This interpretation, I believe, corresponds to native speaker intuitions. Naturally, this interpretation does not entail that there cannot be other events of a trainee nurse taking care of a larger number of students in the relevant possible worlds.

Having proposed a formal procedure for representing the meaning of statements expressing possibility and necessity, in the next section we turn to some data which at first sight appear to call into question the validity of our explanations proposed in previous sections.

5 Some exceptions

The approach to the interpretation of modal/intensional statements with contrastive topics, presented in section 3 above, appears to entail that all sentences with a modal/intensional predicate and a contrastive topic should be considered interpretable in Hungarian, for the following reason. The theory proposed that statements expressing a possibility are true if there is a possible world in the relevant set in which an event of the type described in the 'factual' variant of the sentence takes place, where the thematic relation between the event and the participant denoted by the contrastive topic does not satisfy divisibility, i.e., where the contrastive topic DP receives a group denotation. The assumption that in the alternative propositions generated by sentences of the above kind the alternatives of the contrastive topic denotation also receive a group denotation entails that the occurrence of events in the relevant

possible worlds which make the alternative propositions true is independent of the occurrence of events which make the original proposition true. Thus, the truth of a sentence with a contrastive topic expressing a possibility is not expected to entail or contradict its alternative propositions. In other words, all Hungarian sentences with a contrastive topic which express a possibility or some other atemporal generalization are expected to be interpretable.

The theory summarized above appears to be contradicted by the following data (where (48b) is identical to (7a) above):

(48)a. #_{[CT} 'Sok vendég]'befér a terembe.
 few guest pfx-fits the room-ILL
 #‘~Many guests DO fit in the room.’

b. _{[CT} 'Sok vendég]'nem fér be a terembe.
 many guest not fits pfx the room-ILL
 ‘~Many guests DON’T fit in the room.’

(49)a. #_{[CT} 'Kevés pénzből]'megvehető a ház.
 little money-ELA payable the house
 #‘As for little money, the house IS payable out of that amount.’

b. _{[CT} 'Kevés pénzből]'nem vehető meg a ház.
 little money-ELA not payable pfx the house
 ‘As for little money, the house ISN’T payable out of that amount.’

The contrasts in the well-formedness of the above examples were observed first by É. Kiss (2000). As mentioned in Chapter 1, she assumes that non-referential DPs in contrastive topic, like the ones in (48)–(49), denote properties of sets, and proposes some constraints on these property denotations to rule out sentences which are judged unacceptable by speakers. For example, she sets up a constraint on so-called downward-entailing predicates like the one in (48a–b) (i.e., those which hold for any subset or subpart of the set or individual in their extension), saying that they cannot apply to a property (the denotation of the contrastive topic) which is intended to be contrasted to another property which characterizes a smaller quantity.⁹⁶ A mirror constraint on so-called upward-entailing predicates is applied to rule out sentences like (49a).

Intuitively, É. Kiss’s constraint makes perfect sense. On the one hand, if the predicate *befér a terembe* ‘can fit into the room’ applies to a set of guests with many members or any individual with many atomic parts, then it needs to apply to any set or any individual which has fewer than many, e.g., few, members or atomic parts. On the other hand, there is no determiner in the language which would refer to an amount which is more than *many*, which means that if *many guests* appears as the contrastive topic, its denotation can only be contrasted to a property of sets with fewer members or of individuals with fewer atomic parts than *many*. Sets and individuals of the latter kind, however, would automatically fall into the denotation of the original predicate, thus, the truth or falsity of all possible alternative statements is entailed. The problem in É. Kiss’s system is that since contrastive topic DPs denote properties here (and the predicates are assumed to apply to these), it is difficult to

⁹⁶ „Ha az A tulajdonságot a B tulajdonsággal állítjuk szembe, és A és B képviselői között monoton csökkenő viszony van, akkor az a predikátum, amely A-ra igaz (de B-re nem), nem lehet monoton csökkenő.” (p. 94)

derive formally how the fact that all manifestations of a particular property of sets fall into the extension of a predicate entails that all manifestations of a different property of sets also fall into the extension of the same predicate.

In what follows, I will propose a new explanation for the differences in the acceptability of the pairs in (48) and (49). The sentences in (48), as it was claimed in section 1, are generic statements. Since the interpretation of generics is based on some specific interpretational principles which have not been discussed so far, I will first concentrate on the interpretation of their counterparts expressing circumstantial modality, shown in (50):

- (50) a. #_[CT] 'Sok vendég]`be kell, hogy férjen a terembe.
 many guest pfx must that fit-IMP the room-ILL
 #'(Given the present circumstances,) ~many guests MUST fit in the room.'
- b. _[CT] 'Sok vendég]`nem lehet, hogy beférjen a terembe.
 many guest not possible that pfx-fit-IMP the room-ILL
 '(Given the present circumstances,) ~many guests CAN'T fit in the room.'

The counterparts of (50a, b) and (49a, b), are shown in (51) and (52), where the determiners of the contrastive topic DPs are substituted for those expressing a minimal or a maximal quantity, respectively:⁹⁷

- (51) a. _[CT] 'Kéves vendég]`be kell, hogy férjen a terembe.
 few guest pfx must that fit-IMP the room-ILL
 '(Given the present circumstances,) ~few guests MUST fit in the room.'
- b. #_[CT] 'Kéves vendég]`nem lehet, hogy beférjen a terembe.
 few guest not possible that pfx-fit-IMP the room-ILL
 '(Given the present circumstances,) ~many guests CAN'T fit in the room.'
- (52) a. _[CT] 'Sok pénzből]`megvehető a ház.
 much money-ELA payable the house
 'As for a lot of money, the house IS payable out of that amount.'
- b. #_[CT] 'Sok pénzből]`nem vehető meg a ház.
 much money-ELA not payable pfx the house
 #'As for a lot of money, the house ISN'T payable out of that amount.'

In Kratzer's (1991) framework, adopted above, (50a) would express that all possible worlds in the set where the facts are the same as in the actual world closest to the ideal are such that there is a state of many guests being able to fit in the room in them. On the basis of what was said so far about the interpretation of modal statements, the above state of affairs would not have to entail about all possible number of guests (expressible by a determiner) whether there is a world in which a state where they fit into the room obtains or not. Thus, the

⁹⁷ It is pointed out by Anna Szabolcsi (p.c.), that the use of the determiners *many* and *few* (which are both context-sensitive and ambiguous between a 'strictly numerical' and a proportional reading) in the present examples might lead to unnecessary complications. The reason why still stick to these determiners is because I want to explain É. Kiss's original examples. I will assume throughout (just like É. Kiss does implicitly) that the above determiners are used in a 'strictly numerical' sense, to mean *more than n* and *fewer than n*, respectively.

uninterpretability of (50a) is not expected. Similarly, (51b) expresses that no possible world among the relevant ones is such that there is a state of few guests and not more than that being able to fit in the room. The truth of the above state of affairs, by itself, does not seem to entail the truth or falsity of all other statements which predicate the possibility or impossibility of a state of more than few guests being able to fit into the room.

I claim that, contrary to appearances, the sentences in (49) and (52) are statements expressing necessity and impossibility. Thus, (49a) expresses that in all possible worlds among those closest to the ideal (where the facts are the same as in the actual world) a state of the house being payable out of little money, but not more than that, obtains. This, naturally, excludes the possibility of there being a possible world in which the state of the house being payable out of more money obtains. (49b) expresses that there is no possible world among the relevant ones in which a state of the house being payable out of little money and not more than that obtains. This state of affairs, naturally, does not exclude the possibility of there being a possible world in which there is a state of the house being payable out of more money. (52a), however, means that all possible worlds among the relevant ones are such that there is a state in them in which the house is payable out of a lot of money. The claim that this sentence has the above interpretation can be supported by the fact that it can be paraphrased as follows: ‘if you have a lot of money, you can by all means buy this house’ (and not as ‘if you have a lot of money, you may be able to buy the house’). Assuming that the contrastive topic DP has a group interpretation as above, the non-interpretability of the above proposition is not expected. Neither is it expected that its negated version, (52b), will come out as uninterpretable. (52b) expresses that there is no possible world among the relevant ones such that the house is payable out of a lot of money in it.

One possible strategy to solve the above problem would be to claim that in sentences (49)–(52), as opposed to those investigated in section 3 above, the contrastive topic DPs are not given group readings but distributive ones, in other words, if the property of divisibility is assumed to hold between the event type and its participant expressed by the contrastive topic. Thus, the occurrence of a state in a relevant possible world where many guests are in the room would entail for any possible number of guests (expressible by a different determiner) the occurrence of sub-states in the same possible world where that number of guests are in the room. Since there is no determiner in the language which could refer to a larger quantity than what is denoted by *many*, the truth of all positive alternative propositions and the falsity of all negated ones for (50a) would follow. There are two problems with this approach. On the one hand, we claimed above that there is a maximality condition built into the meaning of determiners which contribute to the expression of monotone decreasing or non-monotone quantifiers. Thus, the truth of (50a) would not entail that there is a possible world in which few guests are able to fit into the room, since such a statement would in turn entail that in that world no more than few guests are able to fit into the room. Also, this approach would lead to an unmotivated asymmetry within the class of modal statements with contrastive topics as regards the strategies for their interpretation, and will thus be abandoned.

The approach which I consider more successful is based on the observation that the interpretation of modal/intensional statements crucially depends on the choice of the ordering source. Consider again sentence (2) above, repeated here as (53), and its negated counterpart, shown in (54):

- (53) [CT Az összes diák] `eljöhet az előadásra.
 the all student pfx-come-POSS the talk-SUPERESS
 ‘~ All the students CAN come to the talk.’

- (54) [CT Az 'összes diák] `nem jöhet el az előadásra.
 the all student not come-POSS pfx the talk-SUPERESS
 '˘All students CAN'T come to the talk.'

Note that both members of the above pair of sentences, as opposed to the members of the pairs in (49)–(52), are interpretable in isolation, although they cannot both be uttered by a speaker to whom a consistent set of preferences is attributed. The ordering set underlying the interpretation of (53) and (54) consists of possible worlds (among those where the facts are the same as in the actual world) which best correspond to the speakers' preferences. (53) states that there is a world among these in which all students come to the talk, while (54) denies this. Thus, it is clear that both of these sentences cannot be true at the same time. Moreover, if the system according to which the possible worlds closest to the ideal are ordered (i.e., whether those count as good in which a large number of students come to the talk or those in which a small number of them do) is known to the hearer, he/she will be able to decide immediately which member of the pair is to be considered uninterpretable, i.e., which is the one which entails the truth or falsity of all alternative propositions.

I propose that the reason why speakers can decide which member of the pairs in (49)–(52) is to be considered interpretable and which is not is due to the fact that they are interpreted against a circumstantial modal base (i.e., the set of worlds where the facts are the same as in the actual world) and an empty ordering source, that is, the possible worlds in which the facts are the same as in the actual world are not ordered. The worlds in the above set share the property, naturally, that the observable physical, temporal, etc. regularities which hold in the actual world, and which are part of the common knowledge of speakers, hold in them as well.

For an illustration of the method, consider the interpretation procedure associated with (51a, b). (51a) expresses the following proposition: all possible worlds where the facts are the same as in the actual one are such that there is a state of few guests and not more than that as a group being able to fit in the room. (51b), however, conveys that there is no world among these in which the above type of state occurs. I assume that those worlds where the facts are the same as in the actual one satisfy the following property: if there is a state in them in which a group consisting of a particular number of individuals is able to fit in the room then for any smaller number there must be states of that number of participants being able to fit in the room in the same possible world. Since the contrastive topic expression in (51a) refers to a minimal number of guests, the sentence does not entail the truth (or falsity) of alternative propositions which express that there are states in all the relevant possible worlds in which a different (i.e., larger) group of guests is able to fit into the room. This is why the sentence is interpretable. (51b), however, which expresses that there is no possible world among the ones in which there is a state of a minimal number of guests being able to fit in the room, is out. This result is due to the fact that (56b) entails that there cannot be any possible world in the set under consideration where a larger number of guests are able to fit in the room, since if there was, this would entail, due to the above property, the existence of one world (i.e., the same one), in which a minimal number of guests are able to fit in the room. In the case of (50), the reasoning goes in the opposite direction. The fact that all relevant possible worlds are such that there is a state in them in which a maximal number of guests as a group are able to fit in the room entails for any possible smaller number of guests that all possible worlds have a state of that number of guests being able to fit in the room. This result leads to the uninterpretability of (50a). (50b) states that there is no relevant possible world in which a

maximal number of guests fit in the room. This, however, does not entail that there cannot be possible worlds among the accessible ones in which a smaller number of guests fit in the room, thus, the sentence becomes interpretable.

We rely on a different property regarding the observable facts in the actual world in the interpretation of examples (52a,b) (their counterparts in (49a, b) were explained above). The property is the following: if a particular amount of money, materials, etc. are enough for a purpose, then any larger amount of them is also enough. Thus, (52a) is fine since the fact that all possible worlds are such that the house is payable out of a lot of money does not entail or contradict the possibility that there are possible worlds in which the house is payable out of less money. (52b), however, is out, since the fact that there is no possible world in which the house is payable out of a lot of money entails that there cannot be any in which the house is payable out of a smaller amount of money. The existence of a possible world in which the house is payable out of a smaller amount would entail that the house is payable out of a lot of money as well in the same possible world, which would contradict the proposition expressed by (52b).

Let us now turn to the generic sentences in (48), repeated here as (55) which those in (50) and (51) were assumed to be variants of, and their counterparts with a DP referring to a minimal number of guests in the role of contrastive topic in (56):

- (55)a. #_{[CT} 'Sok vendég]' befér a terembe.
 few guest pfx-fits the room-ILL
 #‘~Many guests DO fit in the room.’
- b. _{[CT} 'Sok vendég]' nem fér be a terembe.
 many guest not fits pfx the room-ILL
 ‘~Many guests DON’T fit in the room.’
- (56)a. _{[CT} 'Kevés vendég]' befér a terembe.
 few guest pfx-fits the room-ILL
 ‘~Few guests DO fit in the room.’
- b. #_{[CT} 'Kevés vendég]' nem fér be a terembe.
 few guest not fits pfx the room-ILL
 #‘~Few guests DON’T fit in the room.’

According to Cohen (1999a), generic sentences express probability judgments instead of explicit or implicit quantification. They normally predicate that a particular property, rather than an alternative property, characterizes a significant proportion of some class of entities (or a larger proportion of these than entities belonging to some alternative class). For example, the generic statement *Mammals bear live young* is judged true in spite of the fact that for the majority of mammals, i.e., the male and young ones, the property described in the sentence does not apply. The reason for this is that the sentence is assumed to be about mammals for which one of the alternative properties of procreation (e.g., laying eggs, etc.) could apply, that is, adult fertile females.

If the proposals made in Cohen (1999a) for the interpretation of generic sentences is followed here, then (55) and (56) will be assigned different interpretations from what is associated with (50) and (51) above, with which they were claimed to be quasi-synonymous.

In Cohen's (1999a) framework, (55b) would have to mean that a significant proportion of groups of guests with many members are such that they have the property of not being able to fit in the room. (This, naturally, does not entail that there cannot be groups of particularly thin guests which do not fit into the room, either.) Naturally, the above statement neither entails that a significant proportion of smaller groups of guests does nor that it does not fit into the room. (55a), however, expresses that a significant proportion of guests with many members does have the ability to fit into the room, which means that for any number n , where n is fewer than what is denoted by *many*, at least the above portion of groups with n members is such that they have the ability to fit into the room. This means that the truth of all possible generic alternative statements would follow from the truth of (55a), which makes this sentence uninterpretable. (56a) expresses that a considerable proportion of guests with few members but not more than that have the ability to fit into the room. This does not entail the truth or falsity of a corresponding generic statement for a different number of guests, however. As opposed to this, the truth of (56b), which expresses that a significant proportion of groups of guests with few members is such that they do not fit into the room entails that at least that proportion of groups of guests of any cardinality larger than what is denoted by *few* has the property of not being able to fit in the room. This means that the falsity of alternative generic statements would follow from the truth of (56b), which leads to the uninterpretability of this sentence.

In this section I proposed a mechanism which accounts for the interpretability and non-interpretability of sentences with contrastive topics which express modal or atemporal generalizations about particular types of states, and which differ from those investigated in previous sections in that not all of them are considered interpretable. The sentences investigated here included possibility judgments and generic statements. The differences in the interpretability between particular instantiations of the above categories were attributed to the fact that, in view of particular temporal, spatial, etc. regularities of the actual world, the truth of the propositions expressed by them entailed the truth or falsity of all possible alternative propositions. In the next section the main results of this chapter are summarized.

6 Summary

In this chapter we have investigated the interpretation of modal/intensional statements with contrastive topics which express modality or some other type of atemporal generalization. We proposed a mechanism to the interpretation of these sentences which is based on Kratzer's (1991) theory of modals, which assumes that these modal/intensional statements (with the exception of generics) express some existential or universal statements about a class of possible worlds. We also showed that in most cases the denotations of the verbs used in these atemporal generalizations differ from those used in their 'factual counterparts', which leads to the fact that the propositions expressed by the sentences containing a contrastive topic do not entail the truth or falsity of their alternatives. We have formalized the interpretation of the sentences under consideration using an 'intensionalized' version of Krifka's (1989) theory. We have also shown that there are some modal/intensional statements (i.e., those which are interpreted against a circumstantial modal base and an empty ordering source), where the relation between the proposition expressed and its alternatives is determined by some spatial, physical, etc. regularities of the actual world.

CONCLUSION

In this dissertation, issues regarding the semantic interpretation of contrastive topics were investigated with particular reference to Hungarian.

In Chapter 1 it was investigated how contrastive topics can be identified in Hungarian. On the basis of a wide range of examples which contained constituents which have been referred to as contrastive topics in the literature, it was concluded that a constituent has to satisfy the following properties in order to be considered a contrastive topic: it has to be situated in one of the preverbal positions in the sentence where ordinary topics can also be situated (i.e., in the so-called topic position), has to be followed by a constituent bearing an eradicating stress, pronounced with a falling intonation, which was referred to as its *associate*, and it should either be pronounced with a rising intonation and bear an eradicating stress, or its utterance has to give rise to a contrast between denotations of the same type. It was also proposed that, in line with the above, syntactic requirement of identifying contrastive topics, not only the accented constituent with the rising intonation, or the one evoking the contrast, but the smallest maximal projection containing this constituent should be considered the contrastive topic of the sentence.

In view the fact that the name ‘contrastive topic’ suggests that these constituents are closely related to topics, we gave an overview of traditional as well as contemporary theories on topics. It was established that the concept of topic, as a unit of information structuring, has been associated with several interpretations, the most widespread among them being the one according to which it denotes what the sentence is about and the one according to which it connects the sentence to the previous discourse. Next we turned to the empirical investigation of constituents which are normally referred to as contrastive topics in Hungarian. We established that Hungarian contrastive topics are prototypically associated with a cluster of syntactic, semantic and prosodic properties, although there are individual realizations of contrastive topics which may lack one of these features. We have shown that there are types of constituents, e.g., universal DPs, DPs denoting monotone decreasing or non-monotone quantifiers, adjectives, infinitival verb forms, verbal prefixes, which cannot function as topics in the Hungarian sentence in the above sense, but they can appear as contrastive topics, since they possess the same cluster of features. These empirical considerations prepared the way for a more theoretical issue, discussed in section 5, namely, whether contrastive topics are instances of topics or related to them, or whether they are more closely related to foci. Having discussed the arguments which have been proposed in the literature to support any of the above opinions, it was concluded that contrastive topics should instead be considered a type of construction, with a particular interpretation.

In Chapter 2, the presuppositions, implicatures, and the discourse structure required by contrastive topics were discussed. First, it was argued that, as opposed to some theorists, according to whom reference to alternative propositions is built into the truth conditions of sentences with contrastive topics, the existence of alternative propositions which differ in particular respects from the one expressed by the sentence with the contrastive topic is part of the implicatures introduced by the contrastive topic. We reviewed von Stechow’s (1994) theory on the requirements imposed by the contrastive topic on the structure of the preceding discourse, as well as Büring’s (1997, 1999) theory, which makes use of so-called topic semantic values to account for the congruence of questions and answers with contrastive

topics, derives the implicature associated with contrastive topics, and the possible scopes of quantifiers and negation playing the roles of contrastive topic and that of the associate. The implicature introduced by contrastive topics was defined as follows: any sentence with a contrastive topic implicates that there is at least one alternative proposition generated from the one expressed by the sentence with a contrastive topic in a systematic way (by exchanging the contrastive topic and/or the focus denotations for one of their possible type-identical alternatives) which is neither entailed nor contradicted by the proposition expressed by the original sentence. It was argued that the whole point of using a contrastive topic is to convey the above implicature, since there is no truth-conditional aspect of meaning which could only be expressed by means of the contrastive topic.

It was shown how the alternatives to the denotation of the contrastive topic and to that of the associate are to be derived compositionally. It was argued that due to the fact that Büring (1997, 1999) does not give an adequate specification of how to derive the topic values for each sentence containing a contrastive topic, his theory cannot rule out a wide range of uninterpretable sentences (particularly those where contrastive topics and associates are expressions capable of scope-taking).

A summary of Kadmon's (2001) theory on the congruence of discourses containing contrastive topics was provided and matched against a wide range of Hungarian data. It was found that Kadmon's theory is able to predict for contrastive topic DPs with various monotonicity properties what their preceding contexts should be like to make the sentences containing them count as felicitous.

In Chapter 3, we turned to the investigation of the problem of why quantificational expressions in the Hungarian contrastive topic position can (and sometimes must) take narrow scope with respect to a negative particle or quantificational expressions following them in the sentence. We examined some solutions which were proposed to account for the possibility of scope reversal between subject quantifiers and sentential negation in English (Ladd 1980, Horn 1989, and de Swart 1998). It was concluded that although these theories could account for the narrow scope reading of contrastive topics with respect to sentential negation, they could not be extended to cases where the contrastive topic takes narrow scope with respect to another quantificational expression in the sentence. Alberti and Medve's (2000) and É. Kiss's (2000) proposals to solve the above problem were discussed next, which both assume that contrastive topic DPs are perceived to have a narrow scope reading because they have a property-denotation. Since the idea of accounting for the narrow scope readings of contrastive topics seemed empirically convincing, the rest of the chapter was devoted to proposing a formal interpretation procedure for sentences with contrastive topics which was based on the idea that contrastive topics can denote properties.

It was argued that the claim according to which full DPs are capable of denoting properties does not contradict previous assumptions about the interpretation of such constituents, and that it is possible to derive the meaning of sentences with property-denoting contrastive topics compositionally, since the verb phrases complementing contrastive topic DPs could denote second order properties. (In the literature, various classes of verb phrases have been claimed to denote second-order properties, both Hungarian and other languages (e.g., Komlósy 1992, Piñón 2001, and van Geenhoven 1996), which can combine by means of function-application with first-order properties.) It was also claimed that the contrastive topic DPs which appear to take narrow scope share certain semantic features with argument types which have previously been assumed to denote properties, for example, the property

that they cannot be definite or partitive, i.e., that they cannot be anaphoric to some salient object. In the rest of the chapter it was demonstrated on a wide range of examples how the observed narrow scope readings of contrastive topics can be generated compositionally on the basis of the above assumptions. It turned out, however, that the theory has one serious drawback. Although it works for those examples where the contrastive topic is followed by one preverbal operator, it necessarily assigns minimal scope to contrastive topics, and thus it cannot account for the intermediate scope of contrastive topics where they are followed by a narrow-scope postverbal quantifier.

In view of the above difficulties, in Chapter 4, a new formal account of the semantic interpretation of factual sentences containing contrastive topics was proposed. First, the possible scopal interactions between the quantifiers playing the roles of the contrastive topic and that of the associate were studied, and it was suggested that the issue of how contrastive topics and associates interact scopally is completely determinable on the basis of their syntactic position, lexical properties and the implicature introduced by the contrastive topic.

Next, the possible readings of sentences plural DPs in the contrastive topic position were characterized in terms of the collective/individual/cumulative trichotomy. The distinction was claimed to be important since certain sentences with plural DPs as contrastive topics can receive a distributive reading but not a collective one. In order to find an appropriate way to encode interpretational differences of the above type, an overview of some previous approaches to explaining the differences between collective and distributive readings of sentences and the sources of these differences was provided, e.g. that of Scha (1981), Roberts (1987), Link (1983) and Landman (1996).

Landman (1996) was seen as a unified approach to the meaning of sentences as event descriptions in which the scopes of (multiple) DPs and their collective/distributive interpretations are equally taken into consideration. Landman argues that sentences with two plural DPs have eight primary readings, which differ in how many and what kind of subevents the event described in the sentence consists of. Following a review of English and Hungarian data, a new list of nine possible readings for sentences with two plural NPs was proposed, which was not intended to cover the ‘primary’ readings of such sentences, but their only readings. It was established that the data do not support Landman’s division of available readings into ‘primary’ and non-primary ones, and that Hungarian sentences with two quantificational DPs have readings which are not predicted on Landman’s theory.

Next a different approach to the representation of sentence meaning in terms of event semantics was reviewed, the one proposed by Krifka (1989), where the denotation of a sentence is the result of the unification of denotations in a binary syntactic tree.

Based on the insights of the theories proposed by Landman (1996) and Krifka (1989), an integrated method to the semantics of sentences with contrastive topic DPs in Hungarian was proposed, which was based on the observation that Hungarian sentences with such contrastive topics can have essentially three types of logical structure. According to the first one, the sentence predicates a property about an individual (the property of being a participant in an event) falling into the denotation of the contrastive topic. This interpretational strategy is available for sentences in which the contrastive topic is an expression capable of introducing a discourse referent. According to the second strategy, the sentence predicates a property about the unique individual (property, etc.) which constitutes the referent of the associate expression. An associate expression is capable of identifying a unique referent if it

is situated in the focus position, or if it is a universal quantifier situated in a preverbal quantifier position. The third interpretational strategy is available for sentences where the associate role is played by a quantificational expression which can normally only occupy the focus position of the sentence, i.e., which cannot introduce a discourse referent. It was argued that whenever a factual sentence with a contrastive topic DP is interpreted by a speaker of the language, the sentence is matched against these three possible construction types. It was shown that these three interpretational strategies correspond to several actual event types, since the property of being a (sum) participant in a particular plural event can be predicated of collections of individuals either collectively, distributively, or due to the fact that they constitute the sum of individuals of which a corresponding property holds. In the next stage, the above theoretical machinery was put into practice: we proposed a unification-based mechanism for deriving the meaning of Hungarian sentences with contrastive topic DPs.

In section 6 of this chapter we looked into the issue why some of the potential sentences, or some potential readings of sentences which have quantificational expressions in the role of contrastive topic, turn out to be unacceptable in Hungarian. We proposed a reformulation of Büring's (1997) proposal concerning the requirements for a sentence with a contrastive topic to have an interpretation for factual sentences. Since factual sentences are treated as event descriptions here, we assumed that the alternative statements introduced due to the contrastive topic also describe events. Those alternative propositions were said to be neither entailed nor contradicted by the proposition expressed by a factual sentence with a contrastive topic which describe a type of event which meets the following requirements: none of its possible realizations in the actual world are such that they constitute a subevent of the particular event described in the sentence with the contrastive topic, and all of its possible realizations in the actual world are compatible with the truth of the latter sentence. The descriptions of atomic events were required to introduce descriptions of atomic event types as alternatives. The descriptions of the possible alternative event types were derived in a systematic way from the event description in the sentence. It was argued that whenever the truth-conditional meaning of the sentence entails that there is no available alternative event type which meets the above requirements, the sentence becomes uninterpretable.

In the last section of Chapter 4, a compositional interpretational procedure was proposed for sentences containing adverbs of quantification as contrastive topics, which accounted for the observed truth-conditional equivalence between sentences with contrastive topic adverbs of quantification and a focused subordinate clause and sentences with the same adverb of quantification outside the contrastive topic position and no focused subordinate clause.

In Chapter 5, a proposal for deriving the interpretation of modal/intensional statements containing a contrastive topic was presented. Following Kratzer (1991), sentences predicating a possibility were assumed to express that there is at least one possible world among the ones in the modal base closest to the ideal determined by the ordering source in which a type of event described by the sentence occurs, and sentences predicating a necessity were assumed to express that all possible worlds among those closest to the ideal are such that an event of the type described by the sentence takes place in them. It was proposed that modal/intensional statements with a contrastive topic are interpretable if there is at least one alternative modal/intensional statement (generated in a systematic way from the original proposition) which is neither entailed nor contradicted by the truth of the sentence with the contrastive topic. It was argued that in certain statements of the above kind, the predicates have a special

interpretation: they require that a DP denoting an individual playing a particular sum role in the event described by the sentence be given a group denotation.

The denotations of the modal/intensional statements under consideration were formalized using an ‘intensionalized’ version of Krifka’s (1989) theory. We have also shown that there are some modal/intensional statements which are interpreted against a circumstantial modal base and an empty ordering source, where the relation between the proposition expressed and its alternatives is determined by some spatial, physical, etc. regularities of the actual world.

This work was intended as a study of the semantic/pragmatic behaviour of Hungarian contrastive topics. In view of the fact that the requirements for the interpretability of sentences containing contrastive topics and the structures of the propositions they denote were assumed to be based partly on logical and general pragmatic principles, it is expected that parallel phenomena in other languages, in particular, German, could be handled with the help of the principles of the approach presented here. Due to time and space limitations, however, a more systematic investigation of the cross-linguistic applications of this theory will have to be left for a different occasion.

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