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STRATEGIES FOR SCOPE TAKING*

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1 OVERVIEW

Standard theories of scope are semantically blind. They employ a single logico-syntactic rule of scope assignment (quantifying in, Quantifier Raising, storage, or type change, etc.) which roughly speaking “prefixes” an expression α to a domain D and thereby assigns scope to it over D , irrespective of what α means, and irrespective of what operator β may occur in D :

- (1) The semantically blind rule of scope assignment:

$$\alpha[D \dots \beta \dots] \Rightarrow \alpha \text{ scopes over } \beta$$

There are two basic ways in which (1) turns out to be incorrect: the resulting interpretation may be incoherent, or the resulting interpretation may be coherent but not available for the string it is assigned to.

Szabolcsi and Zwarts (1993) focus on the first case. Take a version of (1) that is assumed to operate in surface syntax: *wh*-fronting. In a sizable class of cases, called “weak island violations,” this rule yields unacceptable results. For instance:

- (2) a. Who do you think that I mentioned this rumor to?
b. Who do you regret that I mentioned this rumor to?
c. Who didn't you mention this rumor to?
- (3) a. How do you think that I solved this problem?

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- b. * How do you regret that I solved this problem?
 - c. * How didn't you solve this problem?
- (4)
- a. Who do you think that I got the ring I am wearing from?
 - b. * Who do you regret that I got the ring I am wearing from?
 - c. * Who didn't you get the ring that you are wearing from?

Szabolcsi and Zwarts submit that the violation is semantic in nature. *How* in (3b, c) and *who* in (4b, c) ought to scope over domains D that they are unable to. The reason is that manners and collectives are elements of proper join semi-lattices. Szabolcsi and Zwarts argue that the computation of the denotation of a factive context requires taking meets, and that of the negative context, complements. Since these operations are not defined in join semi-lattices, manners and collectives cannot scope over such contexts. For the moment, let it suffice that the $\alpha > \beta$ scope relation, pace (1), is not semantically unconstrained.

To illustrate the second case, which the present paper is concerned with, consider the fact that quantifiers in English often scope over operators that are higher in the surface syntactic hierarchy. These cases are attributed to the covert operation of (1). This account predicts that all quantifiers α interact uniformly with all operators β . But they do not. E.g., some but not all direct objects can scope over the subject (5), and some but not all direct objects can scope over negation (6):¹

- (5)
- a. Three referees read every abstract.
“every $N > \text{three } N$ ”
 - b. Three referees read few abstracts.
*“few $N > \text{three } N$ ”
- (6)
- a. John didn't read many abstracts.
“many $N > \text{not}$ ”
 - b. John didn't read few abstracts.
*“few $N > \text{not}$ ”

It turns out that these contrasts have to do with semantics, too; however, they pertain to the syntax/semantics interface, rather than pure semantics. That is, the starred examples are not incoherent; simply, the given form cannot carry

¹The scope interpretation that matches surface hierarchy often outshines the one that does not. Y. Winter (p.c.) suggests that in checking whether the latter, inverse reading is possible, it is useful to test examples where the primary reading is pragmatically dispreferred. This procedure lets real inverse readings shine without creating the false impression that all inverse readings are possible: some examples will just end up nonsensical.

the intended meaning. Proof is that the same α 's are able to scope over the same β 's in English when they are originally higher in syntactic structure (7) or when they acquire such a higher position via overt fronting (8):

- (7) a. Few referees read three abstracts.
 “few $N >$ three N ”
 b. Few women didn't like John.
 “few $N >$ not”
- (8) Few men did no one/every woman/two women like.
 “few $N >$ no $N /$ every $N /$ two N ”

Examples comparable to (8) are in fact standard in Hungarian, a language that disambiguates scope in surface structure (see below).

It does not seem desirable to develop a theory that maintains the omnivorous rule (1) and supplements it with a variety of filters on its overt or covert application. Such a strategy would simply not be explanatory. Instead, I argue for an approach that is as constructive as possible. This constructive methodology is in the same spirit as the combinatorial categorial approach to syntax in Szabolcsi (1992) and references cited therein, although the results to be discussed in this chapter are entirely independent of categorial grammar.

The assumption is that “quantification” involves a variety of distinct, semantically conditioned processes. Each kind of expression participates in those processes that suit its particular semantic properties. Thus the heuristic principle is this:

- (9) What range of quantifiers actually participates in a given process is suggestive of exactly what that process consists in.

Based on data in Liu (1990, 1992), proposals how to devise semantically conditioned specialized scopal mechanisms were first made in Ben-Shalom (1993) and Beghelli (1993). A both empirically and theoretically more fully developed version of the latter is Beghelli and Stowell (1994, 1996) and Beghelli (1995).

In this paper I first summarize those features of Ben-Shalom's semantic proposal that will be important in the core discussion. I proceed to reviewing certain aspects of Beghelli and Stowell's syntactic theory, and suggest that data from Hungarian, a language that “wears its LF on its sleeve,” provide specific empirical support for them. Then I propose that Beghelli and Stowell's LF, especially in the light of some of the Hungarian data, can be quite directly mapped onto somewhat modified Kamp and Reyle (1993) style Discourse Representations.² The main concrete modification to be proposed pertains to

²Potentially, other dynamic theories could be used, too. Kamp and Reyle's is special in that it happens to include significant work on plurals, as opposed to Heim's (1982) File

widening the class of discourse referents. Finally, the Hungarian data will be shown to provide evidence that the denotational semantics of the noun phrase delimits, but does not determine, whether it introduces a discourse referent.

2 CONSTRUCTIVE APPROACHES TO DIFFERENTIAL SCOPE TAKING

2.1 Ben-Shalom (1993)

Ben-Shalom restricts her attention to a representative subset of the data in Liu (1990) that do not involve partitives.³ Some features of her proposal that are directly relevant to the present paper are as follows. Consider (10) and (11):

(10) Three referees read every abstract.

(11) Three referees read fewer than five abstracts.

The standard way to calculate the object wide scope, $O > S$ reading of (10) is to form the set of things read by three referees and check whether every abstract is in that set. But if the formation of this set, which is not the denotation of a surface syntactic constituent of the sentence, is a freely available option, then it can be used in calculating an $O > S$ reading for (11), too. This is the standard assumption in the literature. However, (11) does not readily admit an $O > S$ reading. This suggests that the $O > S$ reading of (10) is not calculated in the above mentioned way, either. Rather, it must be calculated in some alternative way that is available when the intended wide scope quantifier is, say, *every abstract* but not when it is, say, *fewer than five abstracts*.

Ben-Shalom proposes that inverse scope is effected by a specific binary quantifier $[O > S]$.

(12) If S and O are generalized quantifiers and R is the relation denoted by a transitive verb, the binary quantifier $[O > S]$ is defined to operate as follows:

For every $a \in A$, $S(R(a))$,
where A is some set determined by O .

Change semantics. The intuition my analysis is based on relies on the representational character of DRT; it remains to be seen whether DPL-style reincarnations of DRT would be equally suited to this purpose.

³Liu's generalizations are reviewed in Section 2.2 of Beghelli, Ben-Shalom, and Szabolcsi (1996).

$\lambda x[S(R(x))]$ is the property denoted by the subject+verb segment of the sentence; in the examples at hand, it is the property of being read by three referees. Informally, (12) says, “Grab a set A determined by the quantifier denoted by the object and check, for every element a of this set, whether it has the property that three referees read it.” (The fact that Ben-Shalom formulates her proposal using a binary quantifier is immaterial for our present concerns, so it will not be dwelt on.)

Let us underline the procedural difference between the standard calculation of scope and the one encoded by $[O > S]$. The difference is twofold. On the standard account, we construct the set denoted by $\lambda x[S(R(x))]$ and let O operate on it. Using $[O > S]$, this set does not need to be constructed and O is not a predicate operator. Instead, O contributes a domain of entities, each of which is checked for the property $\lambda x[S(R(x))]$.⁴

The binary quantifier $[O > S]$ works most straightforwardly when O is a principal filter, because a principal filter determines a unique set, called its generator, within its restrictor. The unique set $[[\textit{every man}]]$ determines is the set of men; the unique set $[[\textit{John and Bill}]]$ determines is the set $\{\textit{john, bill}\}$, etc. When O is just monotone increasing, it determines several suitable sets (in a big enough model), called its witnesses, so the operation of $[O > S]$ is less simple but still perfectly viable. But when O is monotone decreasing or non-monotonic, it does not determine any suitable set on its own. As is explained in detail in Chapter 1, the truth conditions of *Fewer than six men walk* or *Exactly six men walk* cannot be specified as “There is a set A consisting of fewer than/exactly six men such that each $a \in A$ walks.” Hence $[O > S]$ is inapplicable to non-increasing quantifiers.

According to Ben-Shalom, $[O > S]$ captures the empirical facts correctly because the best inverse scope takers in English are indeed principal filters. In the discussion below I will consider a wider range of quantifiers in a wider range of contexts, and propose a somewhat similar account of them, exploiting the fact that the strategy “Grab a witness set and check its elements for property P ” generalizes exactly to the increasing quantifiers.

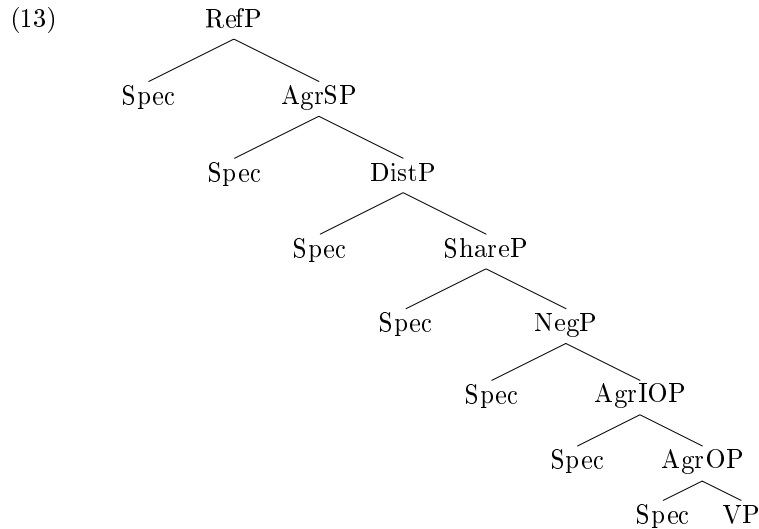
The discussion of Beghelli and Stowell’s proposal will make clear that, however insightful Ben-Shalom’s proposal is, the overall picture of scope interaction is more complex than Liu’s pioneering work suggested. Two important factors are (i) the need to factor out the contribution of distributivity and (ii) the fact that the possibility of inverse scope depends, not only on the choice of the wide

⁴It might be objected that checking whether an entity has property $\lambda x[S(R(x))]$ involves checking whether it is in the corresponding set, but this is not really so. To use a mathematical example, we may not be able to construct the set of prime numbers, but we may well be able to determine whether a given number is a prime, by examining what its divisors are. This example also reveals that the checking procedure may be intensional and/or invoke inferential processes. I thank Ed Keenan for discussion on this issue.

scope taker but, sometimes, also on the choice of the narrow scope taker. Thus the account requires a more complex set of assumptions.

2.2 Beghelli and Stowell (1994, 1996)⁵

Like Ben-Shalom, Beghelli and Stowell dispense with Quantifier Raising, an omnivorous movement rule without a specific landing site, and propose that Logical Form in English includes, among others, the following hierarchy of functional projections. Abbreviations: RefP = Referential Phrase, AgrSP = Subject Agreement Phrase, DistP = Distributive Phrase, ShareP = Distributed Share Phrase, NegP = Negative Phrase, AgrIOP = Indirect Object Agreement Phrase, AgrOP = Direct Object Agreement Phrase, VP = Verb Phrase.



Each type of quantifier acquires its scope by moving into the specifier of that functional projection which suits its semantic and/or morphological properties. When the sentence contains more than one quantifier that needs to land in a particular specifier, that position is filled multiply and its content undergoes absorption. Some important options are as follows.

Definites (*the two men*) move to the specifier of RefP, and distributive universals (*every man*) to the specifier of DistP. The head of DistP, a distributive operator, selects for a ShareP complement, which can accommodate either an indefinite (*two (of the) men*) or an existential quantifier over events. Indefinites may alternatively move to the specifier of RefP.

⁵See Stabler (1996) for a reformulation of Beghelli and Stowell's syntax in computationally preferable terms.

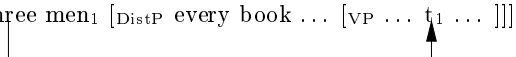
Modified numerals (*more than six men, fewer than six men, exactly six men*, and indefinites whose noun is destressed) do not move to either RefP, DistP, or ShareP. They just move to the appropriate agreement specifier positions to receive Case. The fact that modified numeral subjects easily take widest scope follows from the fact that AgrSP in English happens to be higher than DistP and ShareP. On the other hand, indirect and direct object modified numerals happen to have their agreement positions quite low in the structure, and they scope accordingly.⁶

Scope relations arise in two ways. They may simply follow from the hierarchy specified in (13). For instance, an indefinite direct object may scope above a universal subject by moving into RefP, which happens to be above DistP:

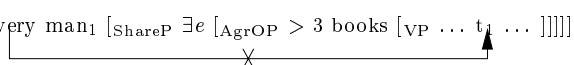
- (14) a. Every man read two of the books
 b. [RefP two of the books [DistP every man ...]]

Or, the inverse reading of *Two of the men read every book* comes about by moving *every book* to DistP and *two of the men* to ShareP.

Inverse scope may also be due to reconstruction: a phrase can be lowered into the position(s) of its trace, typically, into its VP-internal position.⁷ The simplest assumption is that any kind of lowering is restricted to undoing semantically insignificant movement, i.e. an expression can be lowered from its Case position but not from RefP, DistP, or ShareP. For instance,

- (15) a. More than three men read every book
 b. [AgrSP more than three men₁ [DistP every book ... [VP ... t₁ ...]]]
- 

The converse is not possible: *Every man read more than three books* does not receive an inverse scope interpretation. *Every man* cannot undo its presence in DistP and reconstruct into a VP-internal position below AgrOP:

- (16) a. Every man read more than three books
 b. [AgrSP t₁ [DistP every man₁ [ShareP ∃e [AgrOP > 3 books [VP ... t₁ ...]]]]]
- 

There is a slight difference between (16) and *More than three men read more than six books*.

⁶Definites, universals, and bare indefinites also pass through their own agreement positions for Case reasons. Since DistP and ShareP are lower than AgrSP, subjects must undergo some kind of lowering when targeting these positions. Various ways to execute this are discussed in Beghelli (1995).

⁷I base this part of the overview on Beghelli (1995), who considers the modified numerals data in greater detail than Beghelli and Stowell.

- (17) a. More than three men read more than six books
 b. $[_{AgrSP} > 3 \text{ men}_1 [_{AgrOP} > 6 \text{ books} \dots [_{VP} \dots t_1 \dots]]]$
-

Here inverse scope is very difficult but, in contrast to (16), can be forced by context. Since *more than three men* as a subject can in general reconstruct into its VP-internal position, this is predicted. (The marginality of reconstruction when the object is also a modified numeral calls for an independent account.)

Definites and bare indefinites do not move to DistP even when they are interpreted distributively; instead, their distributive interpretation is due to a silent operator comparable to floated *each*. Beghelli and Stowell call this “pseudo-distributivity.” Silent *each* can apparently occur below AgrSP, ShareP, AgrIOP, and AgrOP, but not below RefP. This captures the fact that even when direct object *three books* moves to RefP and is therefore referentially independent of subject *two of the men*, it cannot make the latter referentially dependent, since there is no distributive operator between the two positions.

- (18) a. Two of the men read three books
 b. $[_{RefP} \text{ three books} [_{AgrSP} \text{ two of the men}_1 [_{ShareP} t_1 [\dots]]]]$

On the other hand, in the structure below the property of having read three of the books can be distributed over *two men*, because the latter has a trace in AgrSP associated with silent *each*:

- (19) a. Two men read three of the books
 b. $[_{RefP} \text{ two men}_1 [_{AgrSP} t_1 \text{ EACH} [_{ShareP} \text{ three of the books} [\dots]]]]$

Similarly, the direct object in RefP can distribute over a subject that reconstructs into VP, because it has a trace in AgrOP and AgrOP may have silent *each* associated with it.

In sum, the distributivity of universals is due to a separate distributive operator (Dist) and, similarly, the distributivity of definites and bare indefinites is due to a separate distributive operator (silent *each*). Once the distributive key and the distributive operator are separated, they can move separately. This possibility is made crucial use of. *Every man* and (*the*) *two men* are allowed to move upward unboundedly to a higher RefP, but the corresponding distributive operators, being heads or adverbs, stay put. Thus it is predicted that (20) has a *de re* reading, where every woman or two particular women have the property of there being more than six men who think that the women will fall in love with them; but the men cannot vary with the women, as this property does not distribute:

- (20) More than six men imagine that every woman/two women will fall in love with them.

The fact that *Dist* and *each* do not move up, together with the fact that the QP's landing site in the higher clause, *RefP*, is itself not associated with a distributive operator, underlies the traditional observation that "QR is clause-bounded."

3 CLAIMS TO BE MADE

Below I will examine Hungarian data in the light of Beghelli and Stowell and make the following main claims:

- (21) Hungarian distinguishes scope positions in its surface syntax that are highly reminiscent of those postulated by Beghelli and Stowell for Logical Form in English.
- (22) Some noun phrases can occur in only one of the above scope positions, but others can occur in more than one, and their interpretations vary accordingly.
- (23) It is known that the presuppositional versus existential interpretation of noun phrases may be a function of their position. Hungarian is shown to exhibit similar positional distinctions in a new dimension, distributivity.
- (24) Scope taking mechanisms fall into two broad categories. In the one case, the noun phrase introduces a "logical" subject of predication (not identical to a grammatical subject, i.e. a nominative). In the other, it performs a counting operation on an independently defined predicate denotation.
- (25) The above distinction is not a purely denotational one, instead, it is representational/procedural. It is reminiscent of the basic insight of DRT. Introducing a logical subject of predication can be assimilated to introducing a discourse referent. Anaphora facts will motivate a revision of what items introduce discourse referents and the distinction of two kinds of referents: individuals (atomic or plural) and sets.
- (26) In general, the logical forms Beghelli and Stowell derive for English sentences can be seen as direct instructions for constructing DRS's.

4 SCOPE POSITIONS IN HUNGARIAN

4.1 Hungarian surface structure disambiguates scope

Hungarian has come to be known as a language that “wears its LF on its sleeve.” A substantial body of work by Hunyadi, Kenesei, É. Kiss, Szabolcsi, and others since the early eighties has established that surface order and intonation disambiguate scope.⁸ For instance, the following sentences are unambiguous; the scopal order of quantifiers matches their left-to-right order.⁹

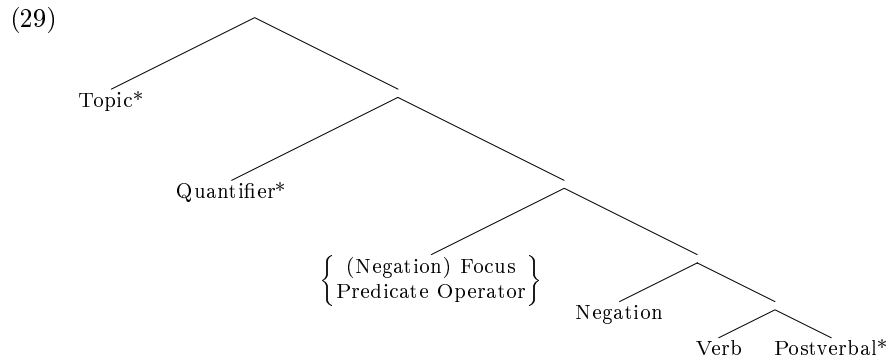
- (27) a. Sok ember mindenkit felhívott.
 many man everyone-acc up-called
 ‘Many men phoned everyone’
 = many men > everyone
- b. Mindenkit sok ember felhívott.
 everyone-acc many man up-called
 ‘Many men phoned everyone’
 = everyone > many men
- (28) a. Hatnál több ember hívott fel mindenkit.
 six-than more man called up everyone-acc
 ‘More than six men phoned everyone’
 = more than 6 men > everyone
- b. Mindenkit hatnál több ember hívott fel.
 everyone-acc six-than more man called up
 ‘More than six men phoned everyone’
 = everyone > more than 6 men

More precisely, it is their occurrence in specific syntactic positions that defines the quantifiers’ scope. Simple syntactic tests distinguish the positions in (29), which I label with the pretheoretical names that have by now become more or less traditional; I coined the speaking name Predicate Operator for one subtype of what is traditionally called Focus. As usual, the * indicates that the given position may be filled multiply:¹⁰

⁸The Appendix will show that there are in fact significant exceptions in the postverbal field. But this does not affect the argument in the bulk of the paper, which pertains to preverbal DPs.

⁹For simplicity’s sake, in this paper I will only consider cases in which the postverbal universal is unstressed. It is agreed, following É. Kiss (1987), that the alternative, heavy stressed option involves stylistic postposing in Phonetic Form.

¹⁰Topics are flatly intoned and not contrastive; contrastive topics (paraphrasable by “as for . . .”) have a scooped intonation, must be followed by some operator, and are analyzed by É. Kiss (1987) as instances of Left Dislocation. In this paper I am not concerned with Left Dislocation, so even the position is omitted from the diagram.



The fact that left-to-right order determines scopal order follows from (30). For recent discussions, see É. Kiss (1991, 1994).

- (30) In Hungarian, operators c-command their scope at S-structure (where c-command is defined in terms of first branching node).

Typically, a Hungarian sentence with n scope-bearing DPs will have n or $n - 1$ in the preverbal field, so that their scopes are indeed disambiguated by surface order. The postverbal field is assumed to have a flat structure. It is rare but possible to have more than one scope-bearing DP postverbally; what their relative interpretation is is an interesting question which I will return to in the Appendix.

Some of the diagnostics of which position a DP occupies in the preverbal field are as follows:

- (31)
- a. Topics, but not other preverbal items, can be followed by sentential adverbials like *tegnap* ‘yesterday.’
 - b. When a Topic or Quantifier precedes a non-negated finite verb that has a prefix, the prefix is in proclitic position.
 - c. When a Focus or Predicate Operator precedes a non-negated finite verb that has a prefix, the prefix occurs postverbally.¹¹
 - d. A sequence of Quantifiers cannot be broken by a non-Quantifier.
 - e. A DP in Focus receives an exclusion-by-identification interpretation; a DP in Predicate Operator does not.

4.2 A parallelism with Beghelli and Stowell’s LF

I argue that the extent to which Hungarian surface structure reveals the syntax of scope is even greater than has been thought. In general, it demonstrates that QPs are not simply lined up in the desired scopal order but occupy

¹¹That is to say, the finite V moves into a functional head that is higher than the position of the prefix.

specific positions. And in particular, the traditionally distinguished positions correspond quite closely to the specifier positions of the functional categories in Beghelli and Stowell's (13). For the time being, I ignore the postverbal field.

(32) Hungarian	Topic	≈	Spec, RefP
	Quantifier	≈	Spec, DistP
	Focus (with indefs.)	≈	Spec, ShareP
	Predicate Operator	≈	Spec, AgrP/VP

This parallelism is supported by data that pertain to (i) exactly what noun phrases occur in each position, and (ii) what kind of interpretation they receive there.

Some restrictions on the occurrence of DPs in these positions are well-known. E.g. a Topic must be specific, and universals do not occur in Topic or Focus (this latter fact was first observed in Szabolcsi 1980, p. 66). However, no systematic investigation of these matters has been carried out to date. In what follows I examine a representative sample. The data are summarized in (33) on the next page. Note that many DPs occur in more than one position; as we shall see, their interpretations vary accordingly.

Let us see how the distribution of DPs supports the parallelism in (32).

Proper names, definites, and those indefinites that take widest scope in their own clause are placed into [Spec, RefP] in Beghelli and Stowell. The Hungarian counterparts, when preverbal, occur in Topic.

Distributive universals are placed into [Spec, DistP] in Beghelli and Stowell. The Hungarian counterparts, when preverbal, occur in Quantifier position.

Bare indefinites that scope under distributive universals are placed into [Spec, ShareP] in Beghelli and Stowell. The Hungarian counterparts can occur in Focus with a comparable scope interpretation.

Modified numerals, which do not readily take inverse scope in English are placed into [Spec, AgrP] or [Spec, VP] in Beghelli and Stowell. The same holds for indefinites whose N is destressed and whose numeral is interpreted as “exactly *n*.” The (relevant) Hungarian counterparts cannot occur higher than the Predicate Operator position.¹²

¹²If a constituent of DP is set into contrast, the whole DP is pied piped to Focus. This option is irrelevant to us and is not indicated in the table.

(33)	Topic	Quantifier	Focus	PredOp	Post-V
<i>a legtöbb fiú</i> 'most of the boys'	+				+
<i>valamely fiú/bizonyos fiúk</i> 'some boy(s)'	+				+
<i>Péter, Péter és Mária</i> 'Peter,' 'P and M'	+		+		+
<i>a fiú(k)</i> 'the boy(s)'	+		+		+
<i>hat fiú</i> 'six boys'	+		+	+@@	+
<i>sok fiú</i> 'many boys'	+	+		+@@	+
<i>minden fiú</i> 'every boy'		+			+
<i>valamennyi fiú</i> 'each boy'		+			+
<i>még Péter is</i> 'even Peter'		+			+
<i>hat fiú is</i> 'even/as many as six boys'		+			+
<i>Péter is</i> 'Peter, too'		+			+
<i>semelyik fiú</i> (neg. concord) 'none of the boys'		+			+
<i>legalább hat fiú</i> 'at least six boys'		+			+
<i>több, mint hat fiú</i> 'more than six boys(1)'		+		+	+
<i>hatnál több fiú</i> 'more than six boys(2)'				+	+#
<i>pontosan hat fiú</i> 'exactly six boys'				+	+#
<i>kevés fiú</i> 'few boys'				+	+#
<i>kevesebb, mint hat fiú</i>				+	+#
<i>hatnál kevesebb fiú</i> 'less than six boys(1,2)'				+	+#
<i>legfeljebb hat fiú</i> 'at most six boys'				+	+#
<i>fiú(k)</i> 'boy(s), existential'				+	+#

@@ With the noun distressed

Only if PredOp/Focus is filled or V is negated

In view of the above data as well as in anticipation of the discussion below, it seems justified to refer at least to Hungarian Topic as (spec of) HRefP and Hungarian Quantifier as (spec of) HDistP. On the other hand, I will retain the labels Focus and PredOp since here, it seems, the pertinent similarities are

functional and the residual differences are significant. ShareP, unlike Focus, does not host definites; PredOp, unlike AgrP, is not Case-related, etc.

Apart from the fact that scopal movement can be visible, the crucial respect in which Hungarian differs from English is that Hungarian has no agreement (Case) positions mixed with the scope positions in the preverbal field, whence scope relations are independent of the argument hierarchy. In the Appendix I outline an analysis of Hungarian sentence structure that, among other things, captures the observations above.

5 OUTLINE OF THE ANALYSIS

In what follows, I will focus on the positions HRefP, HDistP, and PredOp, and argue that their inhabitants contribute to the interpretation of the sentence as summarized in (34) through (36). (Focus is omitted, because it has an obvious additional semantic function that is irrelevant to the present concerns.) I formulate my claims with respect to Hungarian and will argue for them using Hungarian data, but recall that I believe that, modulo the obvious cross-linguistic differences, these data are supportive of Beghelli and Stowell's approach and my claims are intended to hold of their logical forms, too. In fact, some of these claims are incorporated into Beghelli and Stowell (1994, 1996).¹³

- (34) DPs that occur both in HRefP and Focus, as well as *valamily/bizonyos N* 'some N(s)' that only occur in HRefP, contribute an individual to the interpretation of the sentence, i.e., an atomic or a plural individual (the atoms of) which correspond(s) to the element(s) of a minimal witness set of the DP.¹⁴ This individual serves as a logical subject of predication. Predication may be distributive or collective, depending on the nature of the predicate.
- (35) A DP in HDistP contributes a set to the interpretation of the sentence, i.e., a witness set. This set serves as a logical subject of predication mediated by a distributive operator.
- (36) A DP in PredOp does not contribute an entity to the interpretation of the sentence and does not serve as a logical subject of predication. It performs a counting operation on the property denoted by the rest of the sentence. If that predicate is distributive and thus denotes a set, the DP

¹³A *legtöbb fiú* 'most (of the) boys' and *fiú(k)* 'boy(s), existential' are not included in my three categories. Their analysis goes beyond the scope of this paper.

¹⁴A witness set of a generalized quantifier GQ is a set that is (i) an element of GQ, and (ii) a subset of the smallest set GQ lives on. E.g. a witness set of [*two men*] is a set containing two men and no non-men. See Chapter 1 for discussion.

counts its elements. If that predicate is collective and thus has plural individuals in its denotation, the DP counts the atoms. The result of counting may even be compared to the cardinality of the common noun set, i.e. the DP's determiner need not be intersective.

The basic distinction that I wish to make is between DP denotations that contribute an entity as a target of predication and DP denotations that operate on the denotation of the predicate in the manner of generalized quantifiers. Such a distinction seems straightforward between names, definites and bare indefinites on the one hand and modified numerals on the other.¹⁵ Distributive quantifiers might seem to side naturally with the latter group, but I claim they indeed side with the former and end up as one subspecies in the “subject of predication” category. This is what the proposals in (34) through (36) attempt to capture.

It seems to me that a natural framework for expressing these proposals is a version of the Discourse Representation Theory expounded in Kamp and Reyle (1993). The claim that some DPs serve as logical subjects of predication should translate as the claim that they introduce discourse referents. Following Kamp and Reyle (1993, p. 168), by “introduces a discourse referent” I mean that the rule processing the DP introduces a referent either into the universe of the very DRS to which it is applied or into the universe of a superordinate DRS. Thanks to such referents, these noun phrases support non-maximal reference anaphora. This contrasts with rules that take care of quantifiers; these place a discourse referent into a newly created subordinate DRS (introduce duplex conditions). These latter noun phrases only support maximal reference anaphora (constructing an antecedent for a subsequent pronoun involves the abstraction operation that intersects the denotations of the first and the second arguments of the determiner).¹⁶

Kamp and Reyle stipulate that when a DP “introduces a discourse referent” then, at the point of introduction, it is associated with all and only the conditions that come from material inside the DP. That is, even if a referent is introduced into a superordinate DRS, it will never be divorced from its DP-internal conditions. This needs to be stipulated, because Kamp and Reyle's discourse referents are plain variables ranging over the whole universe, and DP-internal conditions are represented as predicated of them. In contrast, in (34) and (35) I assume that a referent is a sorted variable that is *ab ovo* restricted to ranging over (plural individuals formed from minimal) witness sets

¹⁵The claim that HRefP serves as a logical subject of predication squares entirely with É. Kiss's (1992, 1994) analysis of Hungarian, although she makes no comparable claims about the other positions.

¹⁶The distinction between maximal and non-maximal reference anaphora is illustrated and examined in Problems (69)–(72) of Chapter 1.

of the generalized quantifier denoted by the DP. E.g., the discourse referent introduced by *two men* is a variable over plural individuals made up of two men. Since a witness set, by definition, is of the right “size” and contains only entities drawn from the determiner’s restriction, the inseparability of the referent from the information that comes from the DP follows without further stipulation.

Note that this proposal differs from the usual notion of restricted quantification, which relies on the (smallest) set the GQ lives on, i.e. its common noun set, rather than a witness.

Kamp and Reyle’s stipulation in fact takes care of a problem discussed in Abusch (1994) and Reinhart (1995). The example comes from Heim (1982): *If a cat likes a friend of mine, I always give it to her*. On the intended interpretation, a *friend of mine* is to be construed as having wide scope. But if only existential closure is outside the conditional and the predicate *friend of mine* is in the antecedent, the sentence will be incorrectly verified by any model where there is someone who is not a friend of mine. Abusch (1994) proposes a specific syntactic mechanism to percolate the predicate up to the quantifier. Reinhart (1995) invokes choice functions in the interpretation of indefinites. My own proposal is highly compatible with Reinhart’s, given that the value of her choice function is exactly my witness set. Reinhart (1995) and Winter (1996) show how to obtain those choice functions compositionally; their procedure might be adopted by the present theory.

The behavior of DPs that occur in HRefP and Focus (the latter the functional counterpart of Beghelli and Stowell’s ShareP) is straightforwardly derivable from the properties Kamp and Reyle attribute to set denoter referents (singular or plural individuals, in present terms). What DRT gains from Beghelli and Stowell, in turn, is a characterization of distributivity that is empirically more precise and less stipulative. Recall from 2.2 that silent *each* is claimed to behave much like its overt counterpart, whose behavior is governed by well-studied principles of syntax.

Let us assume, then, in general that the DRS construction algorithm does not take the simple phrase structures used in Kamp and Reyle as input but, rather, its operation is directly determined by the kind of Logical Form Beghelli and Stowell’s analysis assigns to the sentence. This will have clear advantages in connection with the treatment of inverse scope. Kamp and Reyle comment on the fact that not all noun phrases can take inverse scope, but eventually they opt for the stipulation that a syntactically lower noun phrase may be processed before a syntactically higher one, which is equivalent to assuming an unconstrained QR. Beghelli and Stowell’s theory eliminates QR and replaces it with an articulated syntactic theory of where each type of noun phrase ends up at LF. Their LF now specifies the correct orders in which to process noun phrases.

But there are reasons for more substantial modifications of DRT. These have to do with the behavior of DPs in HDistP, see (35), in comparison with those in PredOp, see (36). I will argue that the inhabitants of HDistP, universals among them, are construed as targets of (obligatorily distributive) predication. This claim will be supported by showing that (i) they support only distributive readings and (ii) they introduce discourse referents, although not exactly the same kind as inhabitants of HRefP. Only the inhabitants of PredOp, which are all “counters,” operate on predicate denotations in the manner of generalized quantifiers.¹⁷

I believe that the picture that we are led to is a generalization of Ben-Shalom’s (1993) insight. Recall from 2.1 that, restricting her attention to the calculation of inverse scope, Ben-Shalom argued that there is a procedural difference in the evaluation of sentences involving names, definites, specific indefinites, and universals on the one hand and those involving modified numerals on the other. In the former case, she proposes to start out with a set determined by the quantifier and check its members for some property. In the latter case, she proposes to directly tackle the predicate’s denotation. In present terms, the difference is precisely that the former act as subjects of predication and the latter as predicate operators.

Pursuing the DRT analogy, these observations amount to adding a procedural flavor to DRT, in the following sense. DPs that introduce discourse referents do not only differ from others in how they support anaphora, which is largely a matter of logical syntax. They also differ at the interface between DRSs and the model theory, because the verification of the truth of sentences containing them is carried out using different procedures.

This procedural intuition may be reminiscent of Brentano and Marty’s distinction between categorical versusthetic judgments, revived in Kuroda (1972), Sasse (1987), and Ladusaw (1994). At present I am not in a position to judge how far a deeper parallelism might go, but this issue certainly merits further investigation, since it may tie together formal and informal lines of research. (One obvious difference is that the present proposal is concerned strictly with the contribution of particular DPs, not with whole sentences/judgments.) Likewise, the “subject of predication” and the “predicate operator” types of verification procedures may be relevant in connection with the construction of mental models, in a sense similar to Webber (1979) and Crain and Hamburger

¹⁷To avoid misunderstanding, notice that I am using the notion of a generalized quantifier in two different senses in this paper: in a denotational sense and in a representational/procedural sense. From a denotational perspective all noun phrases denote generalized quantifiers (sets of predicate denotations). This remains true whatever further considerations are invoked; hence I am free to appeal to notions like witness sets and monotonicity. From a representational/procedural perspective, only a subset of the noun phrases operate directly on predicate denotations: those that do not introduce a referent (logical subject of predication).

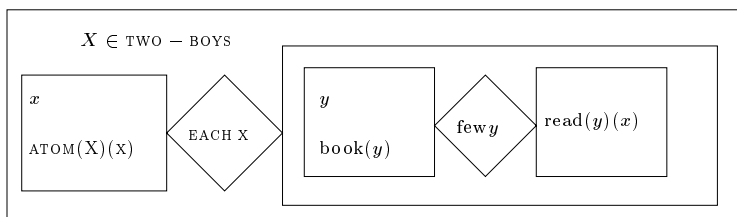
(1992). Finally, the two modes of operation recall the “look-up” versus “compute” distinction in Szabolcsi and Zwarts (1993). But developing a broader procedural theory that subsumes these goes beyond the scope of this paper.

In concrete terms, I will be arguing that the Beghelli and Stowell-style logical forms in (37) and (39) correspond to discourse representations as in (38) and (40), respectively.¹⁸

(38) is much like in Kamp and Reyle. The differences are (i) that X is now understood as a variable over plural individuals, not sets, and (ii) X is a restricted (sorted) variable. I will use the following notational convention: $X \in DP$ is a variable ranging over plural individuals whose atoms are the elements of some minimal witness set of $\llbracket DP \rrbracket$. I represent *few books* simply in terms of a duplex condition. Note that the cardinal and the proportional readings behave alike from the present perspective. EACH is Beghelli and Stowell’s silent *each*.

$$(37) \text{ [RefP Two boys}_1 \text{ [AgrSP } t_1 \text{ EACH read}_2 \text{ [AgrOP few books}_3 \text{ [VP } t_1 \text{ } t_2 \text{ } t_3 \text{]]]]}]$$

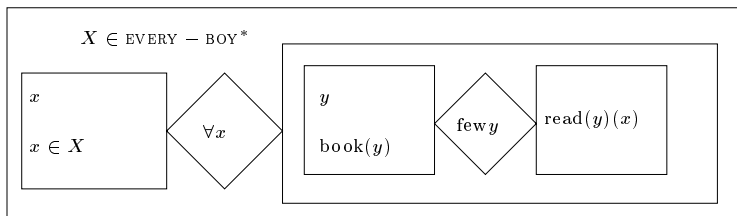
(38)



(40) involves *every boy* that, according to my proposal, introduces a set referent. Notation: $X \in DP^*$ is a variable ranging over witness sets of $\llbracket DP \rrbracket$, and \forall is the distributive operator Dist.

$$(39) \text{ [AgrSP } t_1 \text{ read}_2 \text{ [DistP every boy}_1 \text{ Dist [AgrOP few books}_3 \text{ [VP } t_1 \text{ } t_2 \text{ } t_3 \text{]]]]}]$$

(40)



¹⁸The explanation of why referents in HRefP are based on minimal witnesses while those in HDistP are plain witnesses is given in Section 8.3.

This replaces a “tripartite” structure in Kamp and Reyle.¹⁹

With these general considerations in mind, let us turn to the justification of (34) through (36), with reference to Hungarian.

6 DISTRIBUTIVE AND COLLECTIVE READINGS

6.1 Distributivity in HDistP

The reason why the Hungarian Quantifier position deserves the label HDistP is that all DPs occurring there are strictly distributive. (Although we get distributive readings elsewhere, too, as will be discussed below.)

Some DPs occur only in HDistP and not in the other three distinguished positions. Universals, *minden fiú* ‘every boy’ and *valamennyi fiú* ‘each boy’ are the paradigmatic cases. But all *is* ‘also, even’ phrases are like universals in that they are barred from HRefP, Focus and PredOp.²⁰ For their distributivity, consider:

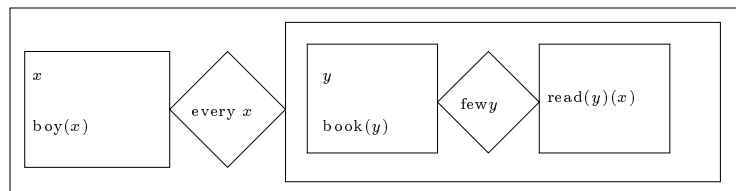
- (41) Kati *is* fel-emelte az asztalt.
 Kati also up-lifted the table-acc
 ‘Kati lifted up the table, too’

This sentence cannot mean that along with others, Kati was a member of a collective that lifted up the table. It can only mean that Kati lifted the table on her own, and someone else did too.

- (42) Hat fiú *is* fel-emelte az asztalt.
 six boy even up-lifted the table-acc
 ‘As many as six boys lifted up the table’

Here the contribution of *is* ‘even’ is essentially scalar: *hat ... is* means that six is considered many. Nevertheless, while the same sentence without *is* may well have a collective reading, (42) may only mean that there were as many as six individual table liftings.

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²⁰It may be interesting to mention that Hunyadi (1981) explains the identical surface distribution of *is* ‘also, even’ phrases and universals with reference to the fact that the morpheme *is* derives from the conjunction *és* and universals semantically reduce to conjunction. Similar relations have been in the focus of much recent work directed at Japanese and Korean.

But the most interesting new facts involve the observation that some noun phrases may occur in more than one position, and their interpretation varies accordingly.

Consider first telic predicates that can be either distributive or collective. (43) shows that names, definites and bare indefinites (the DPs that occur both in HRefP and in Focus) support either reading. DPs in HDistP do not support a collective reading at all. Finally, DPs in PredOp support an unmarked distributive reading of the sentence as well as a marked collective one, which has the flavor “It took as many/few as n boys to VP.”

In the examples below the first DP is one that occurs only in the given position and the second is one that occurs in different positions with varying interpretations.

- (43) a. Kati és Mari fel-emelte az asztalt. HRefP
 Két fiú
 ‘Kati and Mari lifted up the table’
 ‘Two boys
 OK *lifting: collective*
- b. Minden fiú fel-emelte az asztalt. HDistP
 Több, mint hat fiú
 ‘Every boy lifted up the table’
 ‘More than six boys
 * *lifting: collective*
- c. Kevesebb, mint hat fiú emelte fel az asztalt. PredOp
 Több, mint hat fiú
 ‘Less than six boys lifted up the table’
 ‘More than six boys
 OK *lifting: “it took n ”-collective*

Similar results are obtained with purely non-distributive telic predicates: “once only” predicates. Notice that here the distributive interpretation is out, no matter what the subject is: the same sand castle cannot be destroyed more than once (I mark this with #). See Szabolcsi and Zwarts (1993, Section 5) for some discussion.

- (44) a. Kati és Mari le-rombolta a homokvárat. HRefP
 ‘Kati and Mari tore down the sand castle’
 OK *destruction: collective*
 # *destruction: distributive*

- b. Minden fiú le-rombolta a homokvárat. HDistP
 Több, mint hat fiú
 ‘Every boy tore down the sand castle’
 ‘More than six boys
 * *destruction: collective*
 # *destruction: distributive*
- c. Kevesebb, mint hat fiú rombolta le a homokvárat. PredOp
 Több, mint hat fiú
 ‘Less than six boys tore down the sand castle’
 ‘More than six boys
 OK *destruction: “it took n”-collective*
 # *destruction: distributive*

On the other hand, there are other non-distributive predicates like *surround* where even the “it took *n*” flavor is absent, and modified numerals in PredOp support an unmarked collective interpretation of the sentence. I suspect that this difference, which otherwise plays no role in my analysis and will not be investigated further, is due to the stativity of the predicate. (As for the choice of the verb, note that *surround* differs from *gather*, for instance, in that (i) if a plurality of entities surround something (in one layer), then no subset of them surrounds it, but (ii) a single entity may surround something by forming a full circle on its own.)

- (45) a. Az X birtok és az Y birtok körül-öleli a kastélyt. HRefP
 ‘Estate X and estate Y surround the castle’
 OK *surrounding: collective*
 OK *surrounding: concentric circles*
- b. Minden birtok körül-öleli a kastélyt. HDistP
 Több, mint hat birtok
 Sok birtok
 ‘Every estate surround the castle’
 ‘More than six estates
 ‘Many estates
 * *surrounding: collective*
 OK *surrounding: concentric circles*

- c. Kevesebb, mint hat birtok
 Több, mint hat birtok öleli körül a kastélyt. PredOp
 Sok birtok
 ‘Less than six estates
 ‘More than six estates surround the castle’
 ‘Many estates
 OK *surrounding: collective*
 OK *surrounding: concentric circles*

The behavior of DPs in Quantifier position fully supports the idea that this position is analogous to [Spec, DistP]. Not only do the Hungarian counterparts of *every boy* and *each boy* occur in this position, but a variety of further DPs do, too. And while the latter can support collective readings elsewhere, in this position they only support distributive readings.²¹

However, the following question presents itself: Do the collective or distributive readings arise in the same manner in all three positions?

6.2 Two types of collective readings: HRefP and PredOp

In the foregoing discussion I was careful to use a wording according to which a DP “supports a collective/distributive reading of the sentence.” The reason is that I wished to remain entirely neutral as to what role this DP specifically plays in the formation of such a reading. I argue that in every one of the three positions that we are considering the DPs play a somewhat different role.

First consider the contrast between collective interpretations supported by DPs in HRefP versus DPs in PredOp:

- (46) a. Ez a hat fiú fel-emelte az asztalt. HRefP
 ‘These six boys lifted up the table (together)’
 b. Ez a hat birtok körül-öleli a kastélyt.
 ‘These six estates surround the castle (together)’
- (47) a. Több/kevesebb, mint hat fiú emelte fel az asztalt. PredOp
 ‘It took more/less than six boys to lift up the table (together)’
 b. Több/kevesebb, mint hat birtok öleli körül a kastélyt.
 ‘More/Less than six estates surround the castle (together)’

Following Kamp and Reyle (1993), I propose that in (46) the subject introduces a plural individual referent and ‘lifted up the table’ is predicated of it

²¹These data are clear counterexamples to Gil’s (1995, p. 326) Universal 1: “If a quantifier is distributive-key, it is also universal.”

collectively. More precisely, Kamp and Reyle treat bare indefinites as “set denoters,” although they note that these sets are in one-to-one correspondence to plural individuals and the plural individual view is intuitively preferable. I am switching to plural individuals on the technical level, too, reserving the option of having set referents for another kind of DP.

In Kamp and Reyle’s theory, collective predication is the only way to obtain a collective interpretation for the sentence, and in fact, they do not discuss convincing examples that would force one to think otherwise. But the examples in (47) are such. The subjects do not introduce a discourse referent either in a technical sense (see the anaphora facts below) or in an intuitive sense. The sentences in (47) are in no way “about” some boys or estates. Thus I claim that these sentences receive their collective interpretation in a different way. Namely, it is the predicate that denotes a group, as opposed to a set of individuals, and what the DP does is to count the atoms of this group. E.g.,

- (48) ‘The collective that surrounds the castle and consists of estates has more/less than six atoms’

Thus the sentences in (47) have a collective interpretation but their subject DPs are not interpreted collectively.²²

So, in line with Kamp and Reyle, I assume that DPs in HRefP/Focus denote plural individuals that can be subjects of collective or distributive predication, while DPs in PredOp are counters. In distinction to Kamp and Reyle, however, I assume that the latter can count either the elements of a set, or the atoms of a group, whichever the predicate they operate on denotes. This takes care of (46) versus (47).

7 TWO TYPES OF DISCOURSE REFERENTS

In this section I discuss various aspects of (35), i.e. the claim that DPs in HDistP introduce a set referent.

²²In English, some of the counting quantifiers have a variant that introduces a plural individual. This is claimed in Groenendijk and Stokhof (1984) and corroborated by S. Spellmire (p.c.). Thus, we have,

Some more/fewer than six men lifted the table [collectively].

The suspicion might arise that the English counterparts of the Hungarian examples only work with these variants (with the determiner *some* possibly “suppressed”). Notice, however, that *Few estates surround this castle* clearly differs in meaning from *A/*Some few estates surround this castle* and yet, is impeccable. Thus the phenomenon cannot be reduced to the subject introducing a plural referent. I should add that corresponding Hungarian DPs in PredOp do not allow for the plural construal at all.

- (51) Minden olyan titkárnőt vett fel, akivel előbb * elbeszélget-ett{3sg}
 Sok ügyvéd hired a secretary that * elbeszélget-tek{3pl}
 ‘Every lawyer he had interviewed
 many lawyers hired a secretary that * they had interviewed’
 If {3sg}, interview distributive;
 if {3pl}, example *
- (52) Hatnál kevesebb vett fel olyan titkárnőt, akivel * elbeszélget-ett{3sg}
 Sok ügyvéd hired a secretary that * elbeszélget-tek{3pl}
 ‘Less than six lawyers he had interviewed
 many lawyers hired a secretary that * they had interviewed’
 If {3sg}, interview distributive;
 if {3pl}, example *

We see that the demarcation line lies exactly where Kamp and Reyle place it in English on the basis of judging the available interpretations. Only in the case of DPs that occur in HRefP/Focus can the plural pronoun be linked to the DP itself, cf. (50). In (51)–(52), with DPs that occur in HDistP and PredOp, respectively, the plural pronoun may at best pick up DP’s smallest live-on set or be interpreted deictically.

7.2 Essential quantifiers and distributivity

The fact that DPs in HDistP are never linked to a plural pronoun in this context might suggest that they are interpreted in essentially the same way as those in PredOp, namely, as generalized quantifiers. The difference would consist in the first type having distributivity built into their definition.

This correlation is interesting, because Partee (1995, p. 564) conjectures (extending a claim in Gil 1989, 1995) that all essentially quantificational DPs are distributive. To make Partee’s point perhaps even stronger, let me reinterpret “essentially quantificational” as those DPs whose determiner is not purely intersective and which cannot be taken to denote (atomic or plural) individuals, either. *Every N* and proportionals are essentially quantificational. Furthermore, non-individual denoting DPs whose restrictor is presupposed not to be empty are essentially quantificational. The reason is that a presupposition that pertains to only one argument of the determiner prevents the determiner from being symmetrical (and hence intersective).

In fact, Hungarian offers further subtle confirmation of Partee’s hypothesis. Consider the PredOp data discussed in (47). If *több/kevesebb, mint hat N* is replaced by *az N-ek közül több/kevesebb, mint hat* ‘more/fewer than six among the Ns,’ the closest we can get to a partitive in Hungarian, the collective readings disappear.

- (53) a. Több/kevesebb, mint hat fiú emelte fel az asztalt.
 OK ‘It took more/less than six boys to lift up the table (together)’
- b. A fiúk közül több/kevesebb, mint hat emelte fel az asztalt.
 ‘More/fewer than six among the boys lifted up the table, individually’

Similarly, if we have *sok* ‘many’ or *kevés* ‘few’ in PredOp and they are interpreted proportionally, the collective readings disappear. We may say that both changes result in essentially quantificational DPs.

Now, it is possible to maintain that all DPs in HDistP are essentially quantificational in this slightly modified sense. Recall what we have here: *every N*, *many N*, *at least/more than n N*, and *also, even* phrases. Crucially, it is not counter-intuitive to say that when *több, mint hat fiú* ‘more than five boys’ occurs in HDistP, we presuppose that there are boys. Maybe we are even thinking of boys drawn from a known superset of individuals, that is, the phrase may be specific in Engç’s (1991) sense.

If all DPs in HDistP have semantic properties that make them essentially quantificational, then the fact that they are invariably distributive may simply follow from Partee’s generalization.

7.3 Set referents in HDistP

It seems now that both the anaphora facts and the distributivity facts concerning HDistP correlate with the inhabitant DPs being essentially quantificational. If essentially quantificational DPs are automatically to be analyzed as having a “tripartite” structure, then such an analysis seems very well motivated. I submit, however, that there are other facts that receive a natural explanation if we assume that these DPs introduce a discourse referent of some sort, and the same facts remain mysterious on the “tripartite” analysis.

The Hungarian data are critical in developing this argument. The reason is that the diagnostics of introducing a discourse referent have to do with non-maximal reference anaphora and referential variation. According to Beghelli and Stowell, in English only universals reside in DistP. But a universal has a unique witness that is identical to its restrictor (= smallest live-on) set. Therefore, maximal reference anaphora (computed by intersecting the restrictor and the predicate sets) and non-maximal anaphora to some witness set come out the same. Likewise, universals will not exhibit referential variation, however they may be entered in the DRS. Therefore, the behavior of universals is compatible with more than one analysis. To see what properties the syntactic position *per se* has, we would need to test non-maximal anaphora on a DP with witnesses distinct from the restrictor, and referential variation on a DP with more than one witness. In Hungarian, DPs like ‘many men’ and ‘more than five men’ oc-

cur in the same HDistP position as ‘every man,’ thus the relevant tests can be performed. Furthermore, since the same DPs occur in PredOp, too, minimal pairs can be formed to isolate the properties present only in HDistP.

It should be clear that my factual claims below concern the behavior of Hungarian DPs, and it is for students of English to decide whether *many men* and *more than five men* exhibit similar behavior. Now two questions arise. Is it possible at all for me not to predict that these English DPs behave analogously? It is, because I show in Section 9 that denotational semantics delimits, but does not determine, a DP’s actual mode(s) of operation. Hence the fact that a Hungarian DP is denotationally equivalent to some English DP does not entail that they operate identically. But what is the crosslinguistic significance of the Hungarian facts then? Since I have argued for a global analogy between HDistP and English DistP on the one hand and PredOp and English AgrP on the other, the Hungarian data may offer an insight into the way DPs in these positions operate, even if the items that occur in those positions are not exactly the same.

Consider first the following contrast in the behavior of *több, mint hat diákunk* ‘more than six students of ours’ in HDistP versus PredOp, with respect to a variant of the “others” test, cf. Problems (69)–(70) in Chapter 1. Imagine two teachers in the process of correcting the exams of a large class. When they are done with some of the exams, the exchange in (54a) is felicitous, while the one in (54b) is not.

- (54) a. Több, mint hat diákunk félreértette a kérdést.
 Lehet, hogy még másokat is találsz.
 ‘More than six of our students (**HDistP**) misunderstood the question.
 Maybe you will find others, too’
- b. Több, mint hat diákunk értette félre a kérdést .
 * Lehet, hogy még másokat is találsz.
 ‘More than six of our students (**PredOp**) misunderstood the question.
 * Maybe you will find others, too’

When ‘more than six of our students’ is in HDistP, as in (54a), the dialog is perfectly coherent. The first teacher’s remark is unambiguously about a particular set of more than six students. The second teacher’s remark means that there may be students outside this set who also misunderstood the question. In contrast, when ‘more than six of our students’ is in PredOp, the first teacher’s remark can only mean that the number of students who misunderstood the question is greater than six. This cannot be followed by a remark about the “others.” To begin with, this interpretation does not present a set of individuals in comparison with whom certain individuals may be “others.” Moreover,

however the exams yet to be corrected will turn out, they will not change the fact that the overall number of those who misunderstood the question is greater than six.

I conclude that the DP in **HDistP** introduces a set that is salient enough for anaphora to build on. This set is a witness of the generalized quantifier denoted by the DP. But a DP in **PredOp** crucially does not support this kind of anaphora, because it does not talk about individuals at all.

The details of the interpretations of the complement subjects below point to the same conclusion quite unambiguously:

- (55) a. Legalább két elemző úgy gondolja, hogy több, mint hat hazug igazat mond.
 ‘At least two analysts think that more than six liars (**HDistP**) are truthful’
- b. Legalább két elemző úgy gondolja, hogy több, mint hat hazug mond igazat.
 ‘At least two analysts think that more than six liars (**PredOp**) are truthful’

Farkas (1996) argues that the descriptive content (DC) of any noun phrase may be evaluated with respect to the worlds introduced by superordinate clauses; in the present case, this entails that whatever determiner the complement subject might have, the entities referred to may be liars in the speaker’s world, not in the analysts’ worlds. This in fact does not follow from the present proposal and thus, if correct, the mechanism Farkas proposes needs to be incorporated. On the other hand, there is a difference between the possible interpretations of (55a,b) that goes beyond what the evaluation of the DC explains.

Namely, (55a) can mean that there is a fixed set of more than six liars such that a fixed set of at least two analysts think that they are truthful. That is, on this reading the liars and the analysts are chosen independently. In contradistinction to this, in (55b) it may at best be a coincidence if the liars the analysts think to be truthful are identical; there is no reading that guarantees it. This difference between (55a) and (55b) follows straightforwardly if we assume that the DP in **HDistP** introduces a referent corresponding to a witness (a set of more than six liars), but the DP in **PredOp** merely counts how many liars each analyst thinks are truthful. The fact that the liars can be chosen independently of the analysts in (55a) follows from the assumptions concerning discourse referents: they may be introduced into either the current DRS box or into any superordinate box. And the fact that the analysts nevertheless do not become dependent follows from the fact that the distributive operator invariably gets stuck in its base position. (These square with other proposals that Farkas makes.) No mechanism with a comparable effect is available to DPs that do not introduce a referent, cf. (55b).

With these, I take it to be established that DPs in HDistP, in distinction to PredOp, introduce discourse referents.

We are now faced with the residual question of why, then, these DPs fail to support anaphora in (51). We may stipulate that coreference in the strict sense involves a relation between a pronoun and an expression denoting an individual, atomic or plural. Then one (natural) difference between bare indefinites like *hat fiú* ‘six boys’ and inhabitants of HDistP is that the referent that the former introduces is an individual but the referent that the latter introduces is a set. As was noted above, such a distinction can be accommodated in Kamp and Reyle’s framework with a minimal modification.

This stipulation may be beneficial in explaining why, according to Beghelli and Stowell, bare indefinites never move to [Spec, DistP] and thus need to receive their distributive interpretation in a different way. We may correlate the feature that is checked in DistP with introducing a set, not an individual, referent.

How should universals in DistP and HDistP be analyzed, then? Recall that because they denote principal filters, they conform happily to both the referent and the tripartite analyses. By default, we want to treat them in the same way as the other, more discriminating inhabitants of the same syntactic position, i.e., using discourse referents.

It turns out that this analysis is the only one compatible with Stowell and Beghelli’s independent claims. In general, they argue that distributivity is a separate factor even in the case of universals; what remains, then, is a set. More specifically, they discuss the following two types of data:

(56) John didn’t read every book.

(57) What did every boy read?

The notable property of (56) is that, on normal intonation, it only allows a reading where *not* takes scope over *every book*. The notable property of (57) is that it has a pair-list reading. Beghelli and Stowell (1996) and Beghelli (1996) analyze both cases by assuming that the universal acts as a variable bound by some operator (the negation or the question operator). Details aside, this would make no sense on the usual interpretation of universals, but it makes good sense if the universal introduces a set referent, since that is a bindable variable in DRT terms.²³

²³Incidentally, the result that universals may be bound is not unique to this analysis; dynamic semantics can produce the same, as observed by Groenendijk and Stokhof (1993).

8 THE SUBJECT OF PREDICATION MODE OF OPERATION

8.1 Grab a witness and predicate distributively

Let us now see what the proposed analysis really is.

There is a sharp intuitive difference between Hungarian sentences that have HDistP or PredOp filled, even when there is no truth conditional difference. DPs that occur in both positions are especially instructive in this regard.

- (58) Tegnep sok diákunk meg-betegedett. HDistP
 yesterday many student-1pl pfx-sickened
 ‘There is a set of many students of ours such that
 each fell ill yesterday’

- (59) Tegnep sok diákunk betegedett meg. PredOp
 yesterday many student-1pl sickened pfx
 ‘The students of ours who fell ill yesterday were many’

The examples are chosen in such a way that, due to the possessive construction, they are both “presuppositional” and the ‘many’ phrases are interpretable as proportional in both cases. If this is so, then there is no standardly known reason for the sentences in (58) and (59) to be perceived as not meaning the same. But that is the perception; no native speaker would be tempted to say otherwise, even though they might not be able to explicate the difference. This is something to account for.

My account is that in (58) we take a set of students and claim that each of them fell ill. In (59), we take those who fell ill, and count our students among them.

The semantic analysis of HDistP that I am advocating is a generalization of Ben-Shalom’s (1993) proposal for inverse scope and Chierchia’s (1993) proposal for pair-list readings, which is based on Groenendijk and Stokhof’s (1984). As was reviewed above, Ben-Shalom assumes that inverse scope is effected by a binary quantifier whose working can be illustrated as follows:

- (60) a. Three referees read every/two abstract(s)
 b. for every $x \in A$, three referees read x
 where A is a witness set of the quantifier *every/two abstract(s)*

Chierchia assumes that pair-list readings are effected by a binary quantifier whose working can for present purposes be simplified as follows:²⁴

²⁴In Szabolcsi (1996a) I argue against using (61) as the general representation of pair-list readings, because it does not fit the full range of quantifiers that support pair-list; but here I appeal to (61) for an insight to be applied to a crucially restricted set of examples. See specifically Sections 3.1 and 5 in Szabolcsi (1996a).

- (61) a. What did every/two boy(s) read?
 b. for every $x \in A$, what did x read
 where A is a witness set of the quantifier *every/two boy(s)*

That is, in both cases the quantifier that takes inverse scope or induces a pair-list reading is said to contribute a set to the interpretation of the sentence, associated with a separate distributive operation “every $x \in A$.” These authors assume that this behavior of the quantifier is “unusual:” it obtains specifically in the inverse scope or pair-list context. My proposal differs from theirs in that I am assuming that offering up a witness to distributive predication is how quantifiers in HDistP always operate.

To illustrate with an English example, I am assuming that *Every referee read three abstracts*, on its direct $S > O$ reading is also calculated in the manner of (62b), rather than (62c); whether (62b) is thought to involve a binary quantifier is immaterial:

- (62) a. Every referee read three abstracts
 b. for every $x \in A$, x read three abstracts
 where A is a (=the) witness set of the quantifier *every referee*
 c. every(referee)(read three abstracts)

It is worth emphasizing that the word “every” in (62b) stands for the distributive operator and in (62c) for the actual determiner. Thus the following Hungarian example makes the contrast more transparent, perhaps:

- (63) a. Több, mint hat fiú el-ment. HDistP
 more than six boy away-went
 b. for every $x \in A$, x left
 where A is a witness of ‘more than six boys’
 c. more-than-six(boy)(left)

8.2 The increasingness constraint

At this point it is crucial to go back to the data in (33) and observe a peculiar fact about the distribution of DPs:²⁵

- (64) Both HRefP and HDistP accommodate only increasing quantifiers. All decreasing and non-monotonic quantifiers are confined to PredOp.

²⁵HDistP accommodates *semelyik fiú* ‘none of the boys’ and *Péter sem* ‘Peter either,’ which seem to contradict the increasingness claim. But Szabolcsi (1981) argued that *semelyik fiú* is just the negative concord form of *minden fiú* ‘every boy;’ similar claims have been made about negative concord in Italian by Haegeman and Zanuttini (1990). Similarly, *Péter sem* is the negative concord form of *Péter is* ‘Peter also.’ So these are not counterexamples. All genuinely decreasing quantifiers, as well as the non-monotonic ones, occur in PredOp.

This fact calls for an explanation. What kind of an explanation shall it be? Recall the heuristic formulated in (9) and used in various chapters of this book:

- (65) What range of quantifiers actually participates in a given process is suggestive of exactly what that process consists in.

In the light of (65), (64) suggests that DPs in both HRefP and HDistP are interpreted in a way that is only available to increasing quantifiers. My analysis above has exactly this property. DPs in both HRefP and HDistP have been argued to put up a witness as a logical subject of predication, and this is possible only when the DP is increasing. Consider the following fact (see Section 2.1 as well as Chapter 1):²⁶

- (66) If Det is increasing, but not if it is decreasing or non-monotonic,
 $\text{DET}(N)(P) = \exists A, A \text{ a witness of } \text{DET}(N), \quad \forall x \in A, \quad Px$

The left hand side is the standard (generalized quantifier theoretic, or “tripartite”) specification of the truth conditions. The right hand side is the analysis I am proposing. (66) says that the proposed analysis yields the correct truth conditions if and only if the quantifier is increasing. In the spirit of (65), the analysis predicts the increasingness constraint.

On the other hand, the standard GQ theoretic or “tripartite” analysis of the inhabitants of HDistP would yield logically correct results for all quantifiers. Hence the assumption that DPs in HDistP operate in that manner would not be able to explain the constraint. It would predict that the inhabitants of HDistP are as heterogeneous as those of PredOp.²⁷

8.3 Witnesses and minimal witnesses

Recall from (38) and (40) that referents in (H)RefP are claimed to be based on minimal witnesses, but referents in (H)DistP on plain, not necessarily minimal, witnesses. This choice has to do with two factors: collective readings and anaphora.²⁸

Consider first (43a), ‘Two boys lifted up the table.’ A witness set of [*two boys*] is any set that contains two boys and no non-boys. It may therefore be a set that contains, say, four boys. But if the table was lifted up by a collective

²⁶Logically speaking, Det also needs to be conservative and have extension, but all natural language determiners are thought to have these properties, so they will not discriminate between potential empirical cases.

²⁷It may be possible to give a pragmatic account of the facts behind (64), as is suggested in Kadmon (1987). I believe, however, that such an account would involve developing a major theory that shifts the borderline between semantics and pragmatics in a fundamental way. As no one to my knowledge has laid out such a theory, for the time being its benefits cannot be taken for granted.

²⁸I thank Y. Winter for discussion on these matters.

of four boys, then (43a) is not true. Similarly, if the example contained a disjunction, ‘John or Bill lifted up the table,’ a witness set of $\llbracket \textit{John or Bill} \rrbracket$ would be $\{j, b\}$ —but the sentence would be false in a situation where the collective comprising both John and Bill did the lifting. Thus for collective readings we need plural individuals based on minimal witnesses: just two boys in the first case, just John or just Bill in the second.

When the same DPs participate in distributive readings, the choice between minimal and non-minimal witnesses does not make a truth-conditional difference, because the quantifiers in (H)RefP are all monotonically increasing: ‘there is a set of just two boys each of whom is tall’ allows for there being a larger set with four tall boys and is therefore the same as ‘there is a set of at least two boys each of whom is tall.’ But anaphora facts confirm that the referent introduced by *two boys* is one with just two boys.

(67) Two boys came in. They were tired.

While the first sentence is compatible with four boys coming in, the pronoun in the second appears to refer to just those two boys that we singled out. In sum, it is justified to assume that referents introduced in (H)RefP are plural individuals based on minimal witnesses of the quantifier, irrespective of whether they are subjects of distributive or collective predication.

The situation is different in HDistP. Here the anaphora facts alone are decisive. Quantifiers in HDistP are always subjects of distributive predication and they are all monotonically increasing. Hence it makes no truth-conditional difference whether we operate with minimal or non-minimal witnesses. But consider anaphora. The critical example is (54a).

(54)a. Több, mint hat diákunk félreértette a kérdést.
 Lehet, hogy még másokat is találasz.
 ‘More than six of our students (HDistP) misunderstood the question.
 Maybe you will find others, too’

Recall that here *mások* ‘others’ was claimed to refer to students who fall outside a particular set. Now, a minimal witness of $\llbracket \textit{more than six students} \rrbracket$ has exactly seven students. The question is, are we forced to construe the first sentence to be about exactly seven students? No. This discourse is just as fine if the actual number of the students talked about is eight or nine. But then the referent introduced in HDistP must be any witness, not a minimal witness, of the quantifier.

8.4 Essential quantification, again

In Section 7.2 I pointed out that the obligatorily distributive interpretation of DPs in HDistP falls under a slightly modified version of Partee’s (1995) generalization. Namely, all inhabitants of HDistP are essentially quantificational

in the sense that they do not denote (singular or plural) individuals and their determiners are non-intersective (universal, or proportional, or at least presuppositional). Partee conjectures that all essentially quantificational DPs are distributive.

On the present account, inhabitants of HDistP introduce a set referent and are associated with a distributive operator, the head of the functional projection. This account is weaker than one based on Partee's generalization might be, since distributivity is not linked to any other semantic property of the noun phrase. On the other hand, Partee's generalization is a descriptive, not a theoretical one; for the time being, it is not known why the entailment might hold. Note also that even if essential quantifiers are all distributive, not all distributive quantifiers are essentially quantificational. Not only do we have distributive readings for sentences with *hat fiú* 'six boys' that denotes a plural individual, but distributive readings with purely cardinal *sok fiú* 'many boys' and *hatnál több fiú* 'more than six boys' in PredOp are also impeccable. Furthermore, *a legtöbb fiú* 'most of the boys' is an inherently proportional and (in my judgment) invariably distributive quantifier in Hungarian, but it resides in HRefP and not in HDistP. That is to say, distributive readings plainly cut across the positions HRefP, HDistP, and PredOp. My conclusion is that the correlation between distributivity and certain semantic properties is an open question for the time being; it is to be hoped that its explanation will shed more light on the nature of (H)DistP as well.

What remains to be accounted for on my analysis is the observation, made in Section 7.2, that DPs in HRefP and HDistP are presuppositional in some sense. As Ben-Shalom (p.c.) points out, this may follow from the fact that if there is no non-empty witness to serve as the subject of predication, predication will not be just false but will not even take place.

In fact, this reasoning prompts us to modify the usual assumption concerning exactly what is presupposed in presuppositional DPs. The usual assumption is that the determiner's restrictor is presupposed to be non-empty. But while this assumption may be sufficient to explain the absence of presuppositional DPs from existential contexts, it does not seem sufficient to do justice to the felicity conditions of the pertinent sentences. Consider the following in the context "In the history of the Vatican, . . . ":

- | | |
|---|----------------|
| (68) Hat lengyel pápa | könyvet írt. |
| Több, mint öt lengyel pápa | |
| six Polish Popes (HRefP) | book-acc wrote |
| more than five Polish Popes (HDistP) | |

These examples do not seem more felicitous in 1995, when the restrictor (the set of Polish Popes) is non-empty than they would have been fifty years earlier.

When the above DPs operate in the subject of predication mode, they appear to presuppose that at least six Polish Popes have existed in history (who then may or may not have written books). That is, exactly as the present analysis predicts, it seems that the existence of a non-empty witness, and not that of a non-empty restrictor, is presupposed.²⁹

9 THE ROLE OF DENOTATIONAL SEMANTIC PROPERTIES: IMPORTANT BUT LIMITED

Both classical DRT and my modified version of it propose a non-uniform treatment of noun phrases: some are said to introduce discourse referents and others to operate on predicate denotations. An obvious question to ask is to what extent the denotational semantic properties of each noun phrase determine in what mode it will operate.

I argued above that there is at least one crucial respect in which denotational semantics plays a delimiting role: unless an explicit maximality condition is added, only monotonically increasing quantifiers allow for the paraphrase ‘There exists a set or plural individual such that...’ Thus only increasing quantifiers can have discourse referents corresponding to them. And indeed, it was observed that HRefP and HDistP accommodate only increasing quantifiers. Below, I will point out a somewhat similar constraint in connection with PredOp.

It would be very interesting, then, to be able to show that a DP’s mode of operation is fully determined by its denotational semantic properties. Unfortunately, this does not seem possible. In fact, even at the present stage of the research, the Hungarian data seem to indicate, quite unambiguously, that the enterprise is hopeless. In other words, parallel to the fact that the difference between the proposed modes of operation is not purely denotational, the

²⁹It may be observed that Diesing (1992) proposes to account for a somewhat similar intuition concerning the specific versus non-specific interpretations of bare and modified indefinites. Apart from the interpretation of presuppositionality, some of the crucial respects in which her proposal differs from the one developed here are as follows. (i) She assimilates specific (presuppositional) indefinites to restricted quantifiers and (ii) she assumes that non-specific indefinites always introduce variables captured by an existential closure operator.

Many of the observations motivating my analysis can be seen as reasons for rejecting Diesing’s. Ad (i), treating specific indefinites as quantificational prevents her theory from accounting for the data that motivate Kamp and Reyle to assume that these DPs introduce plural individual discourse referents. In fact, Diesing’s only empirical argument for the quantificational analysis comes from antecedent contained deletion. However, if any bit of Beghelli and Stowell’s theory of LF is correct, then the fact that we observe some LF movement does not in itself allow us to diagnose that movement as QR and the participating DP as a “quantifier.” Ad (ii), the assumption that all non-specific indefinites are variables captured by existential closure, irrespective of whether they are monotonic increasing, decreasing, or non-monotonic, gives logically incorrect results, as was argued above.

conditions for a DP to operate in a given mode are not purely denotational, either. This seems like an important, and in fact natural, conclusion.³⁰ Let us see some of the relevant data.

First of all, we have seen that the same noun phrase may occur in more than one distinguished position in Hungarian and, accordingly, operate in more than one way. For instance, DPs like *több, mint hat fiú* ‘more than six boys’ can occur either in HDistP or in PredOp. Or, *sok fiú* ‘many boys’ can occur in HRefP or HDistP or PredOp, with the same proportional interpretation. Thus, there can be no one-to-one correspondence between denotational semantic properties and modes of operation.

More strikingly, we can point to cases where two denotationally equivalent DPs behave differently. For instance, the determiner ‘more than six’ has two versions. The (a) version is analytic (syntactic comparison), the (b) version is synthetic (morphological comparison). Now, the former occurs either in HDistP or in PredOp, but the latter only in PredOp:

- (69) a. *Több, mint hat fiú ment el/el-ment.* PredOp/HDistP
 more than six boy went away/away-went
- b. *Hatnál több fiú ment el/??el-ment.* PredOp
 six-than more boy went away/away-went

I see no independent semantic difference between the two versions, which indicates that the lack of ambiguity in the synthetic version is idiosyncratic.

Similarly, *legalább hét fiú* ‘at least seven boys’ does not, according to my own judgment, occur in PredOp, although logically equivalent ‘more than six boys’ has a variant that does. This, again, seems like an accidental gap.

In sum, an increasing DP that is in principle capable of supporting a discourse referent may or may not actually do so, on one or any of its uses.

Note a cross-linguistic consequence. If two denotationally equivalent Hungarian DPs do not need to operate identically, then a Hungarian DP and its English “counterpart” do not necessarily do so, either: it is an empirical question whether they do.

Let us now turn to the question whether and how occurrence in PredOp is constrained. PredOp does not care about monotonicity: it hosts increasing, decreasing, and non-monotonic quantifiers. On the other hand, it is remarkable that *minden fiú* ‘every boy’ and *a legtöbb fiú* ‘most (of the) boys’ do not occur there; the former is confined to HDistP and the latter to HRefP. What excludes them? The fact that they have non-intersective determiners cannot be the reason, for instance. (53) already demonstrated that a quantifier in PredOp

³⁰At the present stage of research, the noun phrase’s choice among the denotationally speaking available options seems arbitrary. It is to be hoped that further research will identify the critical factors, whatever they might be.

may well be partitive or proportional. Likewise, decreasing *kevés fiú* ‘few boys’ is invariably in PredOp, whether proportional or intersective. Furthermore, we are faced with another idiosyncrasy here. According to the textbook analysis, *most of the boys* is equivalent to *more than 50% of the boys* (or pick whatever larger figure you prefer). But, as can be expected on the basis of the data reviewed earlier, *a fiúknak több, mint 50 százaléka* ‘more than 50% of the boys’ does occur in PredOp.

The descriptive generalization I offered in (36) was that DPs in PredOp perform a specific operation on predicate denotations: they count. The absence of ‘every boy’ is natural then: it surely is not a counter. The fact that ‘most of the boys,’ in distinction to ‘more than 50% of the boys’ is excluded indicates that being a “counter” is in part a representational/procedural notion, too.

Interestingly, Hungarian word order is not the only empirical domain that sets these two DPs apart. Consider binominal *each* and existential sentences with a coda in English; two well-studied constructions, whose accounts in the literature are standardly in denotational semantic terms:³¹

- (70) a. * The professors met most of the boys each.
 b. The professors met more than fifty per cent of the boys each.
- (71) a. * There will be most of the boys in the yard.
 b. There will be more than fifty per cent of the boys in the yard.

Sutton (1993), whose work is the source of the first datum concluded, somewhat desperately, that these contrasts eliminate the possibility for a denotational semantic characterization of what DPs work with binominal *each*. She proposed that what all the good examples have in common is that they are “counters;” a proposal reinforced by *The professors met one/*a boy each*. While the general theory in the present paper does not immediately explain why specifically counters need to be involved in (70), I hope to have substantiated that this type of non-denotational conclusion need not be that desperate.

10 APPENDIX ON HUNGARIAN

In this Appendix, I wish to address two issues pertaining to Hungarian that may be necessary for the reader to make good use of the data presented. One concerns the presentation of (29), the global structure of a Hungarian sentence, in current syntactic terms. The other, with which I start, is this:

³¹Comorovski (1995) argues that partitives with a strong determiner may occur in presentational *there*-contexts when they are not anaphoric. This finer qualification will still not distinguish between *most of the* and *more than n% of the*.

- (72) What positions do postverbal DPs occupy and what are their scope options?

All literature on Hungarian agrees that postverbal DPs scope under preverbal ones (for two exceptions, see fns. 9 and 34). What has never been seriously examined, to my knowledge, is what scopal options postverbal DPs have within their own domain. Given that the postverbal field is assumed to have a flat structure, É. Kiss's general proposal makes either of the following two predictions:

- (73) a. If operators in Hungarian c-command their scope at S-structure (in terms of first branching node c-command), then quantifiers in the postverbal field can be interpreted in either order.
 b. If operators in Hungarian precede and c-command their scope at S-structure, then quantifiers in the postverbal field are interpreted in left-to-right order.

The reason why these predictions have not been scrutinized, I believe, is that having more than one scopal expression in the postverbal field is not usual and the judgments are rather difficult. (Since Hungarian goes out of its way to provide means to disambiguate scope, the postverbal field is not the domain of choice for scope interaction.) But if we now look at the postverbal field with the moral of Stowell and Beghelli's work on English in mind, we can construct critical data that are quite straightforward to judge. Such examples involve plural definites, universals, and modified numerals, especially decreasing ones.

The choice of 'a Tuesday' for Focus allows us to control for the possibility that a postverbal quantifier scopes out of the postverbal field; if the Tuesdays do not vary, scope interaction is confined to the postverbal field, which is what we are interested in.

- (74) a. Egy keddi napon harapta meg hatnál több kutya
 a Tuesday day-on bit pfx six-than more dog
 Katit és Marit.
 Kati-acc and Mari-acc
 'It was on a Tuesday that more than six dogs bit Kati and Mari'
 OK (a Tuesday >) more than six dogs > Kati and Mari'
 OK (a Tuesday >) Kati and Mari > more than six dogs'
- b. Egy keddi napon harapott meg hatnál több kutya minden fiút.
 'It was on a Tuesday that more than six dogs bit every boy'
 OK (a Tuesday >) more than six dogs > every boy
 OK (a Tuesday >) every boy > more than six dogs
- c. Egy keddi napon harapott meg hatnál több kutya kevés fiút.
 'It was on a Tuesday that more than six dogs bit few boys'

- OK (a Tuesday >) more than six dogs > few boys
 ?? (a Tuesday >) few boys > more than six dogs
- d. Egy keddi napon harapott meg minden kutya kevés fiút.
 ‘It was on a Tuesday that every dog bit few boys’
 OK (a Tuesday >) every dog > few boys
 * (a Tuesday >) few boys > every dog

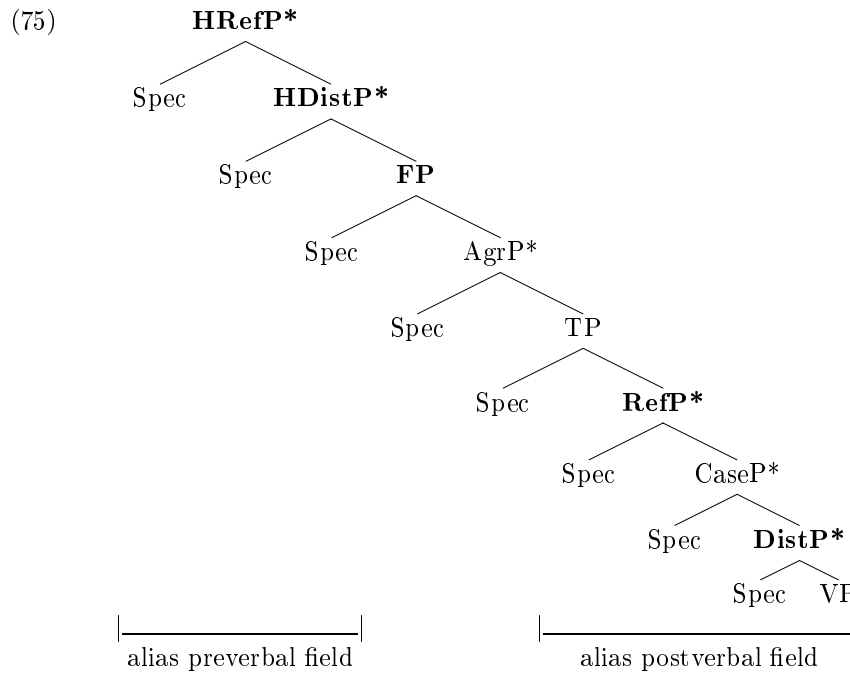
What we find is essentially the same pattern as in English. ‘Kati and Mari’ and ‘every boy’ easily take inverse scope over a modified numeral. With great difficulty, ‘few boys’ can take inverse scope over another modified numeral. But it is unthinkable for ‘few boys’ to take inverse scope over a universal.³²

These facts are inconsistent with both (73a) and (73b). What this means is that scopal order in Hungarian is not fully determined by S-structure. The inverse scopal orders must be due to LF movement, by and large in the same way as in English.

This observation eliminates an alleged idiosyncrasy of Hungarian. Since the preverbal positions are operator (A-bar) positions, it is quite natural for DPs that move there overtly to have their scope determined once for all. (The same holds for English DPs that undergo overt *wh* or negative fronting.) On the other hand, DPs in the postverbal field are thought to occupy argument (A) positions at S-structure, just like non-fronted DPs do in English. Thus postverbal Hungarian DPs can be expected to have their scope interpretation determined in essentially the same way as English DPs in A-position.

I am thus led to positing two “scopal fields” in Hungarian: the preverbal one, with landing sites for overt operator movement, and the postverbal one, with comparable landing sites for covert operator movement. The global structure that these are embedded in is as follows. NB the XPs generated under the Kleene star respect the binary branching constraint: they do not form flat substructures.

³²I chose a subject-object word order to make the judgments simpler. It seems to me that the judgments are contingent merely on linear order, however.



As was argued in the foregoing sections, the preverbal field contains HRefP, HDistP, Focus and PredOp. For the sake of simplicity, I take the latter two to be alternative specifiers of FP.³³ The postverbal field contains RefP and DistP, but no FP. I assume that each (H)Dist head has an event quantifier as its share, albeit I do not posit SharePs all over the place. The linearly $n + 1$ th event quantifier quantifies over subevents of the linearly n th; the ultimate event variable resides in the VP.

In (75), the two fields are separated by a series of functional projections. In line with Brody (1990), I assume that the surface position of the verb is derived by fronting, i.e. by movement into a functional head which is not separated from the specifier of FP by any overt material. The details of the movement of the verb and of the verbal prefix (whose surface position serves to diagnose whether a DP is in FP or HDistP) are immaterial to our present concerns; see Szabolcsi (1996b).

DPs move out of VP to check their nominative, accusative, etc. features in the appropriate CaseP (only *pro* moves up to AgrP). They may stay in CaseP and end up postverbally in surface structure, or they may move on to one of the

³³Or, there might be two distinct [+F] functional heads, one that hosts Focus and another that hosts PredOp; see also the discussion of (76). This possibility is explicitly allowed in the theory of Horvath (1995).

preverbal operator positions. At present, we are interested in the postverbal option.

CaseP's are generated in one cluster, in a random order. This accounts for the facts that the order of postverbal DPs is independent of grammatical function and that the linearly first can always take scope over the linearly second. In addition, CaseP's are flanked by RefP and DistP, LF movement into which follows the same mechanics that Beghelli and Stowell propose for English. Likewise, there is a possibility of reconstruction into VP. As in the discussion of Beghelli and Stowell at the outset, I assume that only semantically insignificant movement can be undone by reconstruction. Thus a DP that has moved to RefP or DistP cannot be reconstructed.³⁴

These assumptions derive the data in (74) as follows. In (74a), the inverse reading is due to the movement of 'Kati and Mari' into RefP. In (74b) and (74c), the inverse readings are due to the reconstruction of 'more than six dogs' into VP; in the latter case the marginality of this reading will need an independent account, as in English. In (74d), the inverse reading is unquestionably out, because 'every dog' cannot reconstruct into VP.

The last question to touch on concerns postverbal counting quantifiers. (33), the table summarizing the distribution of DPs in the distinguished positions notes a peculiarity:

- (76) A counter must occur in PredOp unless (i) there is already another counter in PredOp, or (ii) Focus is filled, or (iii) the verb is negated. Why?

Recall that PredOp is in complementary distribution with Focus before the finite verb stem. It differs from Focus in two ways. First, DPs in Focus receive an exhaustive interpretation, while DPs in PredOp do not receive any "extra" interpretation.³⁵ Second, DPs in Focus are negated directly, while DPs in PredOp are not:

- | | | |
|------|--|--|
| (77) | Mari ment el.
Mari went away
'It is Mary who left' | Nem Mari ment el.
not Mari went away
'It is not Mari who left' |
| (78) | Kevés fiú ment el.
few boy went away
'(There are) Few boys (who) left' | Nem ment el kevés fiú.
not went away few boys
'There aren't few boys who left' |

³⁴In addition, names, definites and "referential" indefinites that occur in Focus or in the postverbal RefP must reach the main DRS somehow; I remain agnostic on whether this is to have a syntactic reflex of some sort.

³⁵Drawing from Kenesei (1986) and van Leusen and Kálmán (1993), Szabolcsi (1994) proposes that this contrast follows from the fact that the appropriate notion of exhaustivity, which has come to be called exclusion-by-identification, is defined only for singular or plural individuals. The inhabitants of Focus denote individuals but those of PredOp do not.

Given these differences, it was justified in the main text to distinguish between Focus and PredOp. This paid off in view of the functional parallelism between Beghelli and Stowell's ShareP and Focus with bare indefinites on the one hand, and Beghelli and Stowell's AgrP/VP positions and PredOp on the other. In this section, I am making the simplifying assumption that Focus and PredOp are the alternative specifiers of the same functional head with a [+F] feature. Now, the question is why counters exhibit the peculiar distribution noted in (33). I adopt a suggestion by M. Brody (1990; p.c.), who observes that the behavior of counters resembles that of *wh*-phrases in, say, English: they must check their [+F] feature overtly unless another item has checked its [+F] feature overtly. Counters that remain postverbal are analogous to *wh*-in-situ.

- (79) a. $_{[+F]P}$ Hatnál több lány] hívott fel kevés fiút.
 six-than more girl called up few boy-acc
 'The girls who phoned few boys were more than six'
- b. * Felhívtam kevés fiút.
 up-called-I few boy-acc
 'I phoned few boys'
- (80) a. Where did you buy what?
 b. * You bought what?

Thus a syntactic condition analogous to the one governing the distribution of *wh*-phrases (the Wh-criterion) can be thought to account for the data.³⁶

Finally, we must ask why modified numerals are [+F]. A simple, perhaps also simplistic, answer might be this. The DPs that can introduce discourse referents and serve as targets of predication are topics in some generalized sense. The DPs that cannot introduce discourse referents are bound to be part of the comment. [+F] is perhaps nothing else than "is part of the comment."³⁷

³⁶We may note, however, at least two relevant differences between the two domains. First, *wh*-in-situ may be located in a different clause than the overtly moved *wh*-phrase, while in-situ counting quantifiers must be clausemates to the overt checker of [+F]. Second, the postverbal counter does not by any means take scope in PredOp; it takes scope in situ. This is confirmed by the fact that another quantifier may scope between them. In the sentence below, 'everyone' unambiguously scopes over 'few jokes':

Mari/Hatnál több fiú mesélt mindenkinek kevés viccet.
 'It was Mary / There were more than six boys who told everybody few jokes'

³⁷This view is consonant with the bipartite ⟨grounding, claim⟩ representations in Kálmán (1994). Kálmán argues that a [+F] constituent is part of the claim and the remnant of the grounding. I thank J. Horvath, L. Kálmán, and M. Brody for discussions on the feature [+F].

REFERENCES

- Abusch, Dorit. 1994. The scope of indefinites. *Natural Language Semantics* 2(2):83–135.
- Beghelli, Filippo. 1993. A minimalist approach to quantifier scope. In Amy J. Schafer (Ed.), *Proceedings of the North East Linguistic Society 23, Volume One*, 65–80, Amherst. GLSA Publications, University of Massachusetts.
- Beghelli, Filippo. 1995. *The Phrase Structure of Quantifier Scope*. PhD thesis, UCLA.
- Beghelli, Filippo. 1996. The syntax of distributivity and pair-list questions. In this volume.
- Beghelli, Filippo, Dorit Ben-Shalom, and Anna Szabolcsi. 1996. Variation, distributivity, and the illusion of branching. In this volume.
- Beghelli, Filippo, and Tim Stowell. 1994. The direction of quantifier movement. *GLOW Newsletter* 32:56–57.
- Beghelli, Filippo, and Tim Stowell. 1996. Distributivity and negation. In this volume.
- Ben-Shalom, Dorit. 1993. Object wide scope and semantic trees. In Lahiri (Ed.), *Proceedings of SALT III*.
- Brody, Michael. 1990. Remarks on the order of elements in the Hungarian focus field. In István Kenesei (Ed.), *Approaches to Hungarian, Volume 3*, 95–123. Szeged: JATE.
- Chierchia, Gennaro. 1993. Questions with quantifiers. *Natural Language Semantics* 1(2):181–234.
- Comorovski, Ileana. 1995. On quantifier strength. In Emmon Bach et al. (Eds.), *Quantification in Natural Languages*, 145–177. Dordrecht: Kluwer.
- Crain, Stephen, and Henry Hamburger. 1992. Semantics, knowledge, and np modification. In Robert D. Levine (Ed.), *Formal Grammar: Theory and Implementation*, 372–401. Oxford University Press.
- Diesing, Molly. 1992. *Indefinites*. Cambridge: MIT Press.
- Enç, Mürvet. 1991. The semantics of specificity. *Linguistic Inquiry* 22(1):1–25.
- Farkas, Donka. 1996. Evaluation indices and scope. In this volume.

- Gil, David. 1989. Scopal quantifiers: Some universals and effability. Unpublished manuscript.
- Gil, David. 1995. Universal quantifiers and distributivity. In Emmon Bach et al. (Eds.), *Quantification in Natural Languages, Volume 1*, 321–362. Dordrecht: Kluwer.
- Groenendijk, Jeroen, and Martin Stokhof. 1984. *Studies on the Semantics of Questions and the Pragmatics of Answers*. PhD thesis, University of Amsterdam.
- Groenendijk, Jeroen, and Martin Stokhof. 1993. Interrogatives and adverbs of quantification. In Katalin Bimbó and András Máté (Eds.), *Proceedings of the 4th Symposium on Logic and Language*, 1–29. Budapest: Akadémiai Kiadó.
- Haegeman, Liliane, and Raffaella Zanuttini. 1990. Negative concord in West Flemish. Unpublished manuscript.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. PhD thesis, University of Massachusetts, Amherst.
- Horvath, Julia. 1995. Structural focus, structural case, and the notion of feature-assignment. In Katalin É. Kiss (Ed.), *Discourse Configurational Languages*, 28–64. New York: Oxford University Press.
- Hunyadi, László. 1981. *A nyelvi polaritás kifejezése a magyarban [The Expression of Linguistic Polarity in Hungarian]*. PhD thesis, Hungarian Academy of Sciences.
- Kadmon, Nirit. 1987. *On Unique and non-Unique Reference and Asymmetric Quantification*. PhD thesis, University of Massachusetts, Amherst.
- Kálmán, László. 1994. Conditionals, quantification and bipartite meanings. In *Working Papers in the Theory of Grammar, Volume 1, Number 3*. Theoretical Linguistics Programme, Budapest University and Research Institute for Linguistics, Hungarian Academy of Sciences.
- Kamp, Hans, and Uwe Reyle. 1993. *From Discourse to Logic*. Dordrecht: Kluwer.
- Kenesei, István. 1986. On the logic of Hungarian word order. In Werner Abraham and Sjaak de Meij (Eds.), *Topic, Focus, Configurationality*, 143–159. Amsterdam: John Benjamins.
- É. Kiss, Katalin. 1987. *Configurationality in Hungarian*. Dordrecht: Kluwer.

- É. Kiss, Katalin. 1991. Logical structure in linguistic structure: The case of Hungarian. In James Huang and Robert May (Eds.), *Logical Structure and Linguistic Structure*, 387–426. Dordrecht: Kluwer.
- É. Kiss, Katalin. 1992. Wh-movement and specificity. *Natural Language and Linguistic Theory* 11(1):85–120.
- É. Kiss, Katalin. 1994. Sentence structure and word order. In Ferenc Kiefer and Katalin É. Kiss (Eds.), *Syntax and Semantics 27*, 1–90. San Diego: Academic Press.
- Kuroda, S.-Y. 1972. The categorial and the thematic judgment: Evidence from Japanese syntax. *Foundations of Language* 9(2):153–185.
- Ladusaw, William. 1994. Thematic and categorial, stage and individual, weak and strong. In Mandy Harvey and Lynn Santelmann (Eds.), *Proceedings from Semantics and Linguistic Theory IV*, 220–229, Ithaca. Cornell University Department of Modern Languages and Linguistics Publications.
- van Leusen, Noor, and László Kálmán. 1993. The semantics of free focus. University of Amsterdam.
- Liu, Feng-hsi. 1990. *Scope Dependency in English and Chinese*. PhD thesis, UCLA.
- Liu, Feng-hsi. 1992. Branching quantification and scope independence. In Jaap van der Does and Jan van Eijck (Eds.), *Generalized Quantifier Theory and Applications*, 297–331. Chicago: CSLI/University of Chicago Press.
- Partee, Barbara. 1995. Quantificational structures and compositionality. In Emmon Bach et al. (Eds.), *Quantification in Natural Languages*, 541–601. Dordrecht: Kluwer.
- Reinhart, Tanya. 1995. Interface strategies. Unpublished manuscript, Utrecht University.
- Sasse, Hans-Jürgen. 1987. The thematic/categorial distinction revisited. *Linguistics* 25(3):511–580.
- Stabler, Edward. 1996. Computing quantifier scope. In this volume.
- Sutton, Melody. 1993. Binomial each. Master's thesis, UCLA.
- Szabolcsi, Anna. 1980. Az aktuális mondattagolás szemantikájához [On the semantics of functional sentence perspective]. *Nyelvtudományi Közlemények* 59–82.

- Szabolcsi, Anna. 1981. The semantics of topic-focus articulation. In Jeroen Groenendijk et al. (Eds.), *Formal Methods in the Study of Language*, 513–540. Amsterdam: Mathematisch Centrum.
- Szabolcsi, Anna. 1992. Combinatory Grammar and projection from the lexicon. In Ivan Sag and Anna Szabolcsi (Eds.), *Lexical Matters*, 241–268. Stanford: CSLI.
- Szabolcsi, Anna. 1994. All quantifiers are not equal: the case of focus. In *Proceedings of the 5th Symposium on Logic and Language*, Vol. 42–43, 171–187. Acta Linguistica Hungarica.
- Szabolcsi, Anna. 1996a. Quantifiers in pair-list readings. In this volume.
- Szabolcsi, Anna. 1996b. Verb and prefix movement in Hungarian. Unpublished manuscript, UCLA.
- Szabolcsi, Anna, and Frans Zwarts. 1993. Weak islands and an algebraic semantics of scope taking. *Natural Language Semantics* 1(3):235–284. Reprinted in this volume.
- Webber, Bonnie Lynn. 1979. *A Formal Approach to Discourse Anaphora*. New York: Garland.
- Winter, Yoad. 1996. Choice functions and the scopal semantics of indefinites. Unpublished manuscript, OTS, Utrecht University.