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Differential Quantifier Scope: Q-Raising versus Q-Feature Checking*

Balázs Surányi

1. Introduction

Divergent scope-taking and scope interaction possibilities of noun phrases have been the focus of interest ever since it became clear that the omnivorous scope-shifting rule of Quantifier Raising (QR) (May 1977, 1985) plainly both under- and overgenerates. Liu (1990), Ben-Shalom (1993) and others point out that in interactions with other quantifier types certain quantifiers exhibit a smaller set of inverse scopal options than would be predicted if QR applied to them. In a series of influential studies seeking to account for the rather complex pattern of differential scope-taking options, Beghelli and Stowell (1994, 1995) and Szabolcsi (1997) propose to treat various quantifier classes as performing checking operations in quantifier-specialized functional projections in the clause.

The proliferation of functional projections as descriptive devices has been a primary concern in the past decade or so, and an object of much conceptual controversy. Here I take the methodological stance that introducing functional projections as new primitives in the theory requires substantial empirical motivation. What I will demonstrate here is that in this regard Beghelli and Stowell's/Szabolcsi's quantifier-projection-based (or A-bar feature checking-based) approach to Q-scope is insufficiently grounded: their quantifier projections lack the necessary empirically motivation. In fact, some aspects of the model also create conceptual complications. Worse still, on closer inspection, the approach both under- and overgenerates in the domain of Q-interaction.

In this paper I will work with a restricted set of functional projections in the clausal domain assumed in Chomsky (1993), and demonstrate that an alternative, more conservative model incorporating QR is able to provide not only a more restricted, but also an empirically superior account of differential Q-scope. In particular, I show that independently motivated scope-affecting mechanisms interact in complex ways to yield precisely the attested scopal possibilities for the various quantifier classes. These mechanisms are existential closure, reconstruction within A-chains, and QR.

A repercussion of the present study is that Quantifier Raising exists at the level of narrow syntax—an assumption that has recently been repeatedly challenged, perhaps most strongly in the specialized quantifier-projections approach (cf. also Hornstein's 1995 approach). I argue here that the QR-view is essentially correct, though the domain of its application is more restricted than commonly believed. If the analysis of Q-interaction presented here is correct, then A-reconstruction also must be available (alongside A-bar reconstruction), contra Chomsky (1995) and Lasnik (1999).

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The paper is structured as follows. Section 2 makes preliminary notes on existential indefinites and introduces the most immediately relevant data from differential scope-taking. In Section 3, we briefly review and illustrate the A-bar checking model. This is followed by a critical appraisal in Section 4, where this model is shown to be untenable both on conceptual and on empirical counts. Section 5 spells out the proposed alternative tying together independently motivated assumptions about existential closure, A-reconstruction, QR, and a focus interpretation of numerals. It is demonstrated that no quantifier scope specific machinery is necessary to treat scope-interaction of various Q-classes: the interaction patterns fall out without further stipulations.

2. Scope deviations

2.1. The scope of existential indefinites

The classical QR approach has turned out to undergenerate in a class of cases and overgenerate in another set of cases. The area where the QR approach strikingly undergenerates is the area of existential indefinites. These expressions are known to have a lot more freedom in scope-taking than would be predicted by a movement analysis (like QR). Crucially, the scope of existential weak NPs is unbounded: it is in fact insensitive to islands (like coordinations, *if*-clauses, or complex NPs, for instance).

An early attempt that sets out to explain the apparent unbounded scope of existentials originates with Fodor and Sag (1982), who argue that these indefinites are ambiguous between a quantificational (existential) reading and a referential/specific reading, the latter corresponding to wide scope interpretation (referential expressions, like proper names, can be interpreted in situ, without QR[1]). A prediction of this analysis is that so-called intermediate scope readings (with the indefinite having *inverse* (i.e. wider than surface) scope, but not *maximal* scope) should not exist. However, it has been demonstrated repeatedly (Farkas (1981), Ruys (1992) and Abusch (1994)) that such intermediate readings do in fact exist.

In dynamic models of semantics like Discourse Representation Theory (DRT) or Heim's approach (Kamp 1981, Kamp and Reyle 1993; Heim 1982) indefinites introduce discourse referents by restricted free variables (instead of being quantificational expressions, cf. Lewis 1975). In Heim's model, these variables can then be unselectively bound by some operator (hence their quantificational variability). Their existential force is due to binding by an existential operator, which can be text-level or appended to the nuclear scope of true quantifiers. Then, the unboundedness of their existential scope as well as the availability of the intermediate scopes are derived, and as desired, no movement is involved.

A potential problem for this approach is posed by the fact that it leaves the restriction in situ. This means that assignments not satisfying that restriction (i.e. not being members of the N-set of the indefinite NP) will also be considered, failing to capture the correct truth conditions. (1a) is a frequently cited illustration of this point. (Reinhart (1997) demonstrates that the problem is rather broad, involving not only overt implications, but also restrictive terms of universal quantifiers, the scope of negation, and it concerns not only regular indefinites, but also *wh*-in-situ and *wh*-expressions in sluicing as well).

[1] Some variants of this analysis involve unselective binding of the 'specific' indefinite by a remote, maximal scope existential operator.

(1) a. If we invite some philosopher, Max will be offended
b. $\exists x$ ((philosopher (x) & we invite (x)) $\rightarrow$ (Max will be offended))

(1b) involves unselective binding of an individual variable, which is locally restricted by the predicate philosopher internal to the NP, which is in situ. This representation, however, is incorrect, given that implications are true vacuously if their antecedent clause is false: here any non-philosopher value for *x* will make the antecedent clause true, hence the whole proposition true—contrary to fact. A QR representation of (1a), in contrast to (1b), would pull up the restriction, and thus only philosophers would be considered when assigning a truth value to the implication—a correct result. In fact, Heim (1982) proposes that in such examples QR of the indefinite is at work. However, then we run into a different complication, namely the Subjacency-problem: this instance of QR would not be Subjacency-respecting. As Reinhart (1997) points out, a further problem here is that if we QR an indefinite, we expect it to allow a distributive reading (plural indefinites in general do). However, indefinites scoping out of an island do not allow a distributive reading, as illustrated by the example in (2) (as observed by Ruys 1992):

(2) If three relatives of mine die, I will inherit a house

According to the wide scope interpretation of the plural indefinite in (2), there are three relatives of mine and if all of them die, then I'll inherit a house. On the distributive wide scope reading, however, I will inherit a house even if only one relative of mine (of the three) dies—a reading actually unavailable in (2). Then, a movement (QR) analysis of wide scope indefinites is problematic in view of these facts as well.

Reinhart (1997) proposes a variety of the unselective binding approach which resolves this complication, and which avoids the problem illustrated in (1) as well. Her proposal is that the existential quantification involved is in fact over choice functions (cf. Reinhart 1993, Winter 1995), which apply to the NP-set (i.e. the predicate) denoted by indefinites. Choice functions apply to any (non-empty) set and yield a member of that set. In her approach the existential operator is introduced much in the same way as in Heim's framework. (1a) will receive a representation like (3):

(3) $\exists f$ (CH (f) & (we invite f(philosopher) $\rightarrow$ Max will be offended))

(3) says that there is a choice function such that if we invite the philosopher that it selects, then Max will be offended. Note that in case of plural indefinites like *three relatives* the choice function will pick appropriate collectives from the denotation of the NP, i.e. a collective made up of three relatives in the case of f(three relatives). First, this treatment correctly predicts the lack of distributivity with island-external scope for existentials (cf. (2)), inasmuch as the indefinite NP itself is not present outside the island in order to be distributed over. Second, it straightforwardly resolves the problem of the interpretation of sentences like (1) inasmuch as a choice function by definition can only output a member of the set denoted by the restriction (i.e. the NP it applies to).[2]

[2] Reinhart also argues that applying existentially bound choice function variables to plural indefinites derives their collective reading, hence such readings do not require an independent semantic treatment. This appears to be in support of the choice function analysis.

In this picture, we have (i) unselective binding of choice function variables, which strategy is available only to existential indefinites, and which is the only strategy that is available to achieve island-*external* scope for these elements, and we have (ii) QR for generalized quantifiers.[3]

We will return to these results in Section 4 and 5. We move on now to another area where an omnivorous QR rule fails, namely the scope-taking differences that apparently exist between different classes of quantifiers. Such scope-taking differences should not exist if QR applies in the same way to all quantifiers, hence they pose a problem to a uniform QR analysis of quantifier scope.

2.2. Differential scope

Such scope-taking differences received a detailed discussion in Liu (1990), and are illustrated below. First consider (4a). Besides the branching reading of (4a) where there is a group of students and a group of classes and each is matched with each, there are two distributive readings (4a) has: one where each of the two students passed possibly different sets of four classes, and one where each of the classes was passed by a possibly different set of students. Now (4b) is crucially different in that the second one of these readings, where the subject co-varies with the object, i.e. the inverse scope distributive reading is absent.

(4) a. Two students passed four classes S > O / O > S[4]
b. Two students passed fewer than four classes S > O / *O > S

That this is a syntactic effect is shown by (5). In (5a), the *fewer than n*-expression occupies the subject position, and a bare numeral indefinite occupies the object position. In (5b), we have the same, but a universal quantifier as object. In (5c), the comparative numeral expression functions as indirect object, c-commanding the direct object. In these examples, the *fewer than n*-expression c-commands a bare numeral indefinite or a universal overtly, and can take distributive scope over it.

(5) a. Fewer than four students passed two classes S > O / O > S
(inverse scope: Beghelli 1993: 67, Liu 1997: 47)
b. Fewer than four students passed every class S > O / O > S[5]
c. She gave fewer than four articles to two students DO > IO / IO > DO

Fewer than n-type indefinites are not only unable to take inverse scope over a higher plural indefinite, they are also unable to take inverse distributive scope over a c-commanding universal quantifier, as in (6).

(6) Every student passed fewer than four classes S > O / *O > S

[3] A question that is still open is the treatment of existential indefinites inside an island boundary (or in lack of one), in a clause-bounded domain. Reinhart (1997) suggests that QR is available to them as well, due to her assumption that they also have a generalized quantifier (GQ) interpretation, alongside the choice-function interpretation (the GQ interpretation is due to a typically covert existential determiner). That is, she entertains an ambiguity treatment: indefinite scope is determined either via choice function application or via QR.

[4] Beghelli (1993: 66), Liu (1997: 41) (but only non-distributive wide scope is acknowledged to be available for the object QP in such examples by Beghelli and Stowell 1995).

[5] This type of examples forces Beghelli and Stowell to place DistP *below* AgrSP: 'fewer than four students' can reconstruct from AgrSP to VP for the inverse scope reading. If DistP were *above* AgrSP, then these examples would be predicted (wrongly) to invariably have the object universal scoping over the subject. The same applies if we replace the modified numeral subject with a bare numeral subject.

According to Beghelli (1993), the class of expressions that behave in this way, i.e. that are unable to take inverse distributive scope include other modified numeral expressions like *at most n* N, *exactly n* N, *only n* N, *at least n* N, and decreasing indefinites like *few* N and *no* N.

If we now try (7), which has a modified numeral both in the subject and in the object position, as Szabolcsi (1997) notes, (with some difficulty) we do get inverse distributive scope ((7) is Szabolcsi's example).

(7) More than three men read more than six books S > O / ?O > S
(Szabolcsi 1997: 116)

Another generalization relates to *bare* numeral indefinites, like *two books*. We have just seen in (4a) that an object bare numeral indefinite can take wide scope over a subject bare numeral expression, or over a subject modified numeral expression, as in (5a). However, as illustrated in (8), when they function as objects, they cannot scope inversely to distribute above a distributive universal. Of course, the bare numeral indefinite can be interpreted as referentially independent of the subject universal, but crucially, it cannot have distributive wide scope over it (the set of students cannot co-vary with the students).

(8) Every student adores two teachers S > O / *O > S

The interaction patterns appear to be rather complex, and clearly, wholly unexpected if QR applies to all the quantifier expressions involved.

Now Beghelli and Stowell / Szabolcsi put forward a model in which such differential scope-taking options are accounted for, and in which QR per se no longer plays any role.

3. The Q-feature checking approach

Beghelli and Stowell / Szabolcsi propose that apart from undergoing Case- an agreement-driven A-movements, quantifier NPs do move to scope positions, as in the QR-based model. However, these scope positions are not created by the movement itself, as with QR, but they are instances of substitution to specifiers of a series of specialized functional projections. This effectively eliminates QR as a non-feature-checking operation.[6]

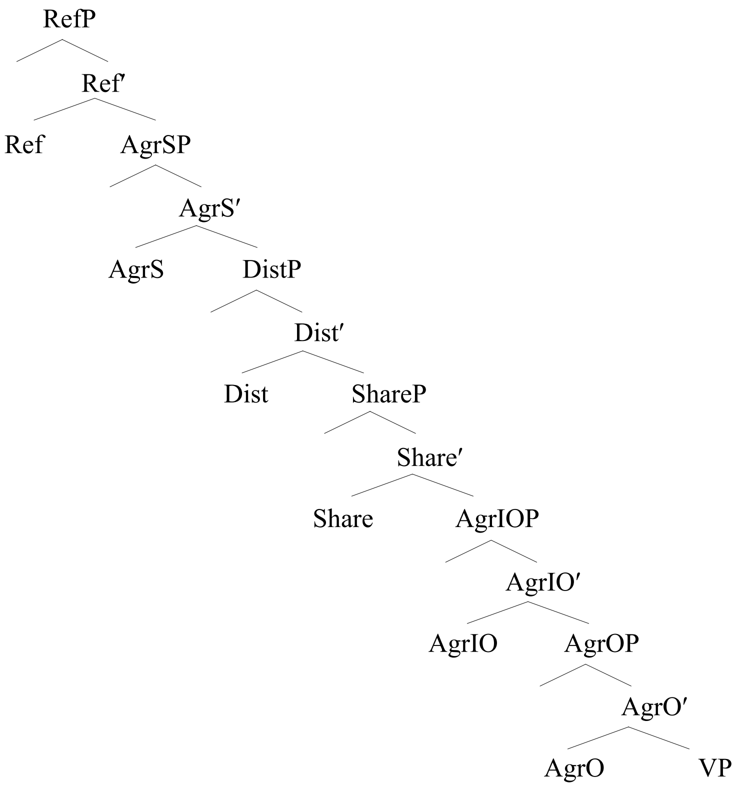
3.1. Beghelli and Stowell

Let us now have a look at how Beghelli and Stowell's model treats asymmetries in scope-taking reviewed in Section 2.2 above.

The core idea is to introduce a number of quantifier-specialized A-bar projections, where different lexical classes of quantifiers can check their characteristic quantifier feature. Certain ambiguities are incorporated in the system by allowing some quantifiers to bear a quantifier feature optionally. The functional hierarchy is given in (9).

[6] The model shares this property with Hornstein's (1995), only Hornstein's approach attempts to reduce Q-scope to independently existing A-movements. Among various other drawbacks, Hornstein's theory also suffers from an insensitivity to differential scopal options of different Q-classes, much like the pure QR approach.

(9)



RefP is a checking-site for definites and specific wide scope bare numeral indefinites. DistP houses distributive universals. ShareP hosts bare numeral indefinites that are specific in the sense of Enc (1991) (i.e. range over individuals whose existence is presupposed), but that are being distributed over. Non-specific bare numeral indefinites, as well as modified numeral indefinites move only as far at their appropriate Case-checking A-position (which are assumed to be AgrP projections, but the model would work the same way with A-positions in Spec,*v*P/TP). A difference that Beghelli and Stowell assume to hold between bare numeral indefinites and modified numeral indefinites is that only the latter can reconstruct to their VP-internal base positions, bare numeral indefinites cannot.

Let us briefly review how the account predicts the relative scope facts by way of re-examining some of the examples above. Consider (4b) again, repeated as (10a):

(10) a. Two students passed fewer than four classes S > O / *O > S
b. [$_{\text{AgrSP}}$ two students . . . [$_{\text{AgrOP}}$ fewer than 4 classes. . .]]

The inverse distributive scope here is impossible because the object modified numeral indefinite is in [Spec,AgrOP], while the subject bare numeral indefinite that is in subject position cannot reconstruct to VP by assumption. Consider now (5b), reproduced as (11a). The universal must be located in DistP. Because the modifier numeral expression can reconstruct to VP as an option, the scope ambiguity is derived.

(11) a. Fewer than four students passed every class S > O / O > S
b. [$_{\text{AgrSP}}$ fewer than 4 students [$_{\text{DistP}}$ every class …[$_{\text{VP}}$ fewer than 4 students…]]]

If the object is also a modified numeral indefinite, then the subject modified numeral expression is able to reconstruct below it, as in (7), repeated as (12a), with the LF structure in (12b):

(12) a. More than three men read more than six books S > O / ?O > S
b. [$_{\text{AgrSP}}$ (more than 3 men) [$_{\text{AgrOP}}$ more than 6 books… [$_{\text{VP}}$ more than 3 men…]]]

Given that distributive universals don't reconstruct, and given that an object modified numeral indefinite can raise only as high as AgrOP, only direct scope is generated for (6), repeated as (13a):

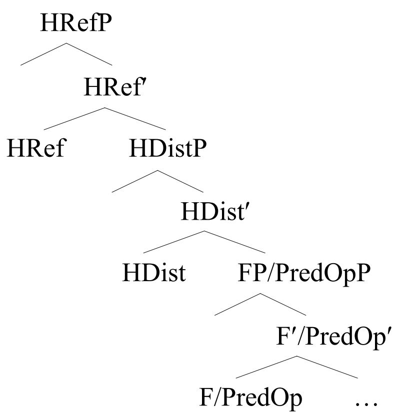
(13) a. Every student passed fewer than four classes S > O / *O > S
b. [$_{\text{DistP}}$ every student [$_{\text{AgrOP}}$ fewer than 4 classes… [$_{\text{VP}}$ (fewer than 4 classes)…]]]

In an analogous situation, as in (14a) repeated from (8), a bare numeral indefinite is able to escape the scope of the subject universal, but cannot distribute over it. This is derived by Beghelli and Stowell by means of moving the object bare numeral to highest position RefP. RefP is stipulated not to allow distributing the quantifier it houses, hence wide non-distributive scope is correctly generated:

(14) a. Every student admires two teachers S > O / *O > S
b. [$_{\text{RefP}}$ two teachers [$_{\text{DistP}}$ every student . . .]]

3.2. Szabolcsi

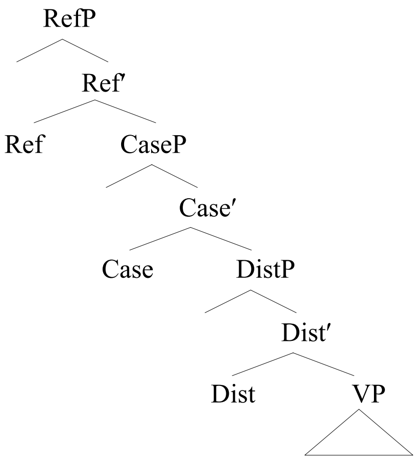
Szabolcsi (1997) argues that Hungarian, with its preverbal overt movements, provides strong evidence for Beghelli and Stowell's (1994/1995; 1997) theory of scope. She transposes Beghelli and Stowell's analysis to Hungarian by positing the following hierarchy of functional projections in the preverbal domain of this language:

(15)


HRefP is targeted again by referential expressions (definites and wide scope indefinites), HDistP by increasing distributive quantifiers, FP by focus operators (cf. Brody 1990), and PredOpP by the modified numeral class of QPs (as well as bare numeral indefinites with stress on the numeral), which are referred to as counting quantifiers (such as *kevés* N 'few N', (*pontosan*) *hat* N '(exactly) six N')—all in overt syntax. By stipulation, out of the latter two projections (FP and PredOpP), only one can appear in one clause. In the field marked by three dots we find the verb and AgrP projections.

Now, this picture in itself unfortunately does not account for the full set of even the most basic data. Therefore Szabolcsi proposes that the following hierarchy is present in the *postverbal* field of Hungarian, below the raised verb (that is (16) is a continuation of (15)):

(16)



In distinction to HRefP and HDistP, movement to these second instances of RefP and DistP is covert. Inhabitants of CaseP (a recursive Case-checking projection postulated by Szabolcsi where all arguments have a chain link by LF at the latest) can optionally A-reconstruct.

Here too quantifiers bearing the relevant features raise to the corresponding projections. Some Hungarian examples are provided in (17), along with their analysis in the style of Szabolcsi (left arrows indicate LF raising, right arrows signal LF-reconstruction, where the latter one is an optional operation).

(17) a. [$_{\text{HRefP}}$ Péter$_i$ [$_{\text{HDistP}}$ mindenkit$_k$ [$_{\text{FP}}$ a névnapján köszönt fel
P.-nom everyone-acc the nameday-his-on greets Pref
[$_{\text{CaseP}}$ t$_i$ [$_{\text{CaseP}}$ t$_k$ [$_{\text{VP}}$ t$_i$ ... t$_k$
'Peter congratulates everyone on his name day'

b. [$_{\text{PredOpP}}$ Kevés lányt$_i$ köszöntött fel [$_{\text{RefP}}$ [$_{\text{CaseP}}$ t$_i$ [$_{\text{VP}}$ az osztályfőnök t$_i$
few girl-acc greeted Pref the headmaster-nom
'The headmaster congratulated few girls'

c. [$_{\text{HDistP}}$ Mindkét fiú$_i$ [$_{\text{PredOpP}}$ két könyvet$_k$ hozott [$_{\text{CaseP}}$ t$_i$ [$_{\text{CaseP}}$ t$_k$
both boy-nom two book-acc brought
[$_{\text{DistP}}$ [$_{\text{VP}}$ ... t$_i$ ... t$_k$ ... minden órára ...
every class-to

'Both boys brought along two books to every class'

d. [$_{\text{FP}}$ Egy keddi napon harapott meg
a Tuesday day-on bit Pref
[$_{\text{CaseP}}$ hatnál több kutya [$_{\text{DistP}}$ [$_{\text{VP}}$ ...minden fiút... (ambiguous)
more than six dog-nom every boy-acc
'More than six dogs bit every boy on a Tuesday'

In (17a) the various quantifiers move to the respective quantifier projections overtly: the proper name to HRefP, the universal to HDistP, and the focus operator to FP. In (17b), PredOpP replaces FP, and that is where the counting quantifier raises to, while the postverbal definite NP moves to RefP of the postverbal domain covertly. (17c) contains a postverbal universal quantifier, which moves to DistP covertly. Finally, the ambiguity of (17d) is derived by assuming that on the one hand, the universal quantifier moves to DistP covertly, and on the other, the expression *hatnál több kutya* 'more than six dogs' optionally reconstructs from CaseP to its VP-internal position—this being responsible for the ambiguity. The postulation of CasePs is crucially instrumental for Szabolcsi to treat postverbal scopal optionalities.

Having reviewed the mechanisms of the Beghelli and Stowell/Szabolcsi, I will now show why this account is unworkable.

4. Bringing the Q-feature checking approach down

In this section I demonstrate that (i) Hungarian does not provide support for an A-bar checking approach to Q-scope, (ii) the postulation of projections RefP and DistP create serious problems, and (iii) the A-bar checking account is severely challenged by various instances of under- and overgeneration.

4.1. Hungarian does not support the Q-feature checking account

Although Szabolcsi underscores the similarity of the Hungarian and the English clause, and suggests that this similarity appears to support Beghelli and Stowell's theory, in actual fact this similarity is much more limited than what would make a convincing argument. The more different the set of functional projections of English and Hungarian clause structure, as well as the hierarchical order of these projections are, the more the potential justification derivable from such an alleged symmetry diminishes, and at the same time, the more the ideal of reducing cross-linguistic variation to a minimum in the theory is contravened. I will show next that the evidence that can be extracted from Hungarian for English-type quantifier projections targeted by covert movement is inconsequential.

4.1.1. Discrepancies between Q-projections in English and Hungarian

First, as acknowledged by Szabolcsi herself (Szabolcsi 1997: 122), FP does not parallel ShareP of the English clause, neither does PredOpP correspond to AgrP in English. FP is matched with focus interpretation, and it can host definite expressions as well—neither is true of ShareP (as Szabolcsi acknowledges). While AgrP is the locus of phi-feature checking and an A-position, FP/PredOpP is not. Further, reconstruction of bare numeral indefinites from CasePs needs to be optional for Hungarian, but needs to be banned for English.

4.1.2. A free hierarchy?

Second, I show that when we consider a wider range of data, the extensions of the functional hierarchy that are made necessary result in a radically *liberal* functional architecture. Inasmuch as a fixed (absolute or relative) position is an important motivation for postulating a functional projection, the basis of positing the functional projections involved here is considerably weakened.

Let us see what reason there is to believe that the quantifier projection hierarchy must be more liberal than Szabolcsi claims it to be. Hungarian has true multiple foci constructions in the sense of Krifka (1991), involving two independent identificational foci (as opposed to a language like Italian). As has been demonstrated (É.Kiss 1998, Surányi 2002), the second identificational foci moves to its own separate FocP projection, below the preverbal FocP (which on analyses following Brody (1990) houses the verb itself in its head). Postverbal focus operators may optionally scope inversely over other postverbal quantifiers such as universals, as will be illustrated shortly (in (18) and (20) below). Thus, movement of secondary identificational foci to their FocP projection is covert, and this FocP can be projected either below or above the LF position of the other postverbal quantifier (say, a universal) (Surányi 2002).

Consider the example in (18), with a postverbal focus and a postverbal distributive universal. The scope ambiguity between these two postverbal quantifiers is represented structurally in (b) and (b'). Namely, postverbal FocP can be projected either below or above postverbal DistP.

(18) a. Péter mondott el egy diáknak mindent csak kétszer egymás után
P.-nom told Pref a student-dat everything-acc only twice in turn
'It is Peter who told a student everything only twice in turn'
OK (Peter >) only twice > everything / OK (Peter >) everything > only twice
b. [FocP Peter . . . [FocP only twice [DistP everything [VP]]]]
b′. [FocP Peter . . . [DistP everything [FocP only twice [VP]]]]

In addition to the ambiguity arising from the relative scope of the postverbal distributive universal and the postverbal focus, there is a further ambiguity, which derives from the interpretation of the indefinite 'a student'. Indefinites that have relative *wide* scope with respect to some operator are placed in RefP in the system being considered. The point here is that the postverbal 'a student' in (18a) can be understood as either co-varying with the two occasions (i.e. the focus) or not, and further, as either co-varying with the things being told (i.e. the distributive universal) or not. That means that we need to revise the range of options in the *postverbal* field at least to (19):

(19) . . . [RefP [DistP [FocP [RefP [DistP [VP

In fact, it is possible to construct examples with yet richer structure, corresponding to rich postverbal scope relations, such as (20a). The representation of (20a) (on the surface scope interpretation of the universal and focus quantifiers) should be (20b), where RefP-s mark the possible LF positions of the indefinite 'a room'.

(20) a. Péter beszél meg minden vizsga elõtt csak kétszer
P.-nom discusses Pref every exam before only twice
minden diákkal csak három vizsgakérdést egy teremben
every student-with only three test questions-acc a room-in
'It is Peter who discusses only three test items with every student only twice before every exam in a room'
b. [FocP Peter . . . [RefP [DistP before every exam [RefP [FocP only twice . . .
. . . [RefP [DistP with every student [RefP [FocP only three test items [VP]]]]]]

The picture we have arrived at by simple logical extension of Szabolcsi's model for Hungarian appears rather unconstrained: in the postverbal field, RefP, DistP and FocP can be projected at any point freely, interspersing with each other.

Curiously, the same does not hold of the same projections in the preverbal field: there they can only be projected in the order RefP > DistP > FocP. We return to this, as well as further asymmetries between the preverbal and the postverbal quantifier-projections directly.

4.1.3. RefP is unlike HRefP

I will argue now that the presumed parallel between Hungarian overt HRefP and English covert RefP[7] does not hold: these two projections are essentially different in their properties. Further, in some crucial cases when we expect overt movement to Hungarian HRefP to happen if HRefP did parallel English RefP, these movements do *not* happen. I will also argue that HRefP is distinct not only from English RefP but also from Hungarian (postverbal) RefP.

Let us start with this last point, i.e. the difference between Hungarian preverbal HRefP and postverbal RefP. A syntactic asymmetry is that movement to HRefP is overt, and movement to postverbal RefP is covert. As for phonological and semantic interpretation, putative inhabitants of RefP have no special status, which is especially clear if we contrast them with inhabitants of HRefP. First, definites and indefinites do not bear obligatory stress (can be deaccented) when in HRefP, whereas when they are in RefP, deaccenting is not available (cf. É.Kiss 1994).

(21)	Az (')igazgató	bemutatta	minden lánynak	egyenként	a 'fiúkat
	the director-nom	Pref-introduced-3sg	every girl-acc	one-by-one	the boys-acc
	'The director introduced the boys to every girl one by one'				

Intonation can be rising on elements in HRefP, but not on elements in RefP. Also, an intonational boundary can be found after HRefP, but not after RefP.

From a discourse semantic perspective, it can be observed that inhabitants of HRefP need to be high accessibility entities in the sense of Ariel (1990, 1994), while inhabitants of RefP need not. This explains the acceptability contrast of the intended co-reference in (30), where judgments refer to a discourse-initial position (the pronoun in (30a) is supposedly in RefP, while it is in HRefP in (30b)).

(22)	a.	Mindig	veszekszem	vele$_i$,	Péter$_i$	mégsem	haragszik	meg
		always	quarrel-1sg	with-him	P.-nom	still_not	become_angry	Pref
		'I always quarrel with him, Peter nevertheless is not angry with me'						
	b.	?* Vele$_i$	mindig	veszekszem,	Péter$_i$	mégsem	haragszik	meg
		with-him	always	quarrel-1sg	P.-nom	still_not	become_angry	Pref

Further, it is a long-standing generalization that expressions that are in HRefP for Szabolcsi function as logical subjects of categorical judgments (cf. e.g. Kuroda 1972). Now the same does not hold true of postverbal referentials/specifics.

Observe further that the *English* RefP originally proposed by Beghelli and Stowell also systematically differs with respect to the properties we have just enumerated from Hungarian overt HRefP. The properties of the inhabitants of HRefP (high accessibility, logical subject interpretation, overtness of movement, special prosody) make them similar more to English topicalized constituents, while inhabitants of English RefP are an unmarked case. (Note that English topicalization falls outside the domain described by Beghelli and Stowell: it is a syntactically higher, CP-related phenomenon.)

Thus, we can conclude that the claim that Hungarian overt HRefP is parallel to English RefP and that therefore Hungarian provides overt support for a Beghelli and Stowell style analysis cannot be upheld.

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[7] Here and elsewhere 'overt HRefP' is shorthand for 'HRefP, movement to which is overt', while 'covert RefP' stands for 'RefP to which movement is covert'.

There is a crucial set of constructions where, if HRefP really paralleled English RefP, then we would expect *overt* movement to Hungarian HRefP to take place. This case is illustrated in (23), and we can see that the expected movements do *not* happen to derive the readings in (b) and (c).

(23) Mindkét fiú minden lánynak kölcsönadott két könyvet
both boy-nom every girl-dat Pref-lent-3sg two book-acc
'Both boys lent two books to every girl'
a. both boys > every girl > two books
b. both boys > **two books** > every girl
c. **two books** > both boys > every girl[8]

The same effect can be replicated with a preverbal focus instead of preverbal universals. Hungarian, once again, fails to supply the relevant *overt* evidence for movement to RefP. The proper generalization is not that if an indefinite takes scope over a preverbal QP than it has to overtly move to HRefP, but the reverse: if an indefinite has moved overtly to HRefP (i.e. has been topicalized, as I am arguing), then it takes scope from there.

4.2. The problematic nature of RefP

As a last blow to the status of RefP, while (overt) movement to the HRefP position has in fact been demostrated to respect Subjacency (e.g. Puskás 2000), existential indefinites are known to be scopally free (e.g. Abusch 1994, Reinhart 1995), i.e. to violate Subjacency. Given this fact, *the scope* of existential indefinites *itself* does not motivate a functional projection as a landing site, since the syntax/semantics mapping must minimally incorporate a NON-movement mechanism for the treatment of the scope of such NPs in any case. The same consideration applies to English RefP. Given that in Beghelli and Stowell's system, the scope of specific indefinites is the only remaining motivation for RefPs, this means that whatever mechanism we may choose to treat the unbounded scope of such indefinites, this mechanism (typically a variety of unselective binding) inevitably *subsumes* the coverage of movement to RefP—which then appears redundant.

In fact Beghelli and Stowell need a special stipulation related to RefPs, which is we don't need to formulate if we work with a combination of the unselective binding approaches and QR, i.e. the conservative approach. The stipulation is that nominals in RefPs cannot be interpreted distributively, as opposed to inhabitants of all other projections, for according to Beghelli and Stowell, projections like ShareP, AgrSP and AgrOP *do* get associated with a silent EACH distributive morpheme, but RefP does not. That on Beghelli and Stowell's approach inhabitants of RefP must not receive a distributive reading is shown by specific indefinites with *inverse* wide scope that requires them to be moved to their scope position.[9]

Now, considering the conservative model, QR-ed quantifiers are interpreted distributively by definition. On the other hand, existential closure mechanisms are not distributive operations. If inverse wide scope of existential indefinites is derived by existential binding under closure, such existentials can only have non-distributive wide scope. On such an approach we can relate non-distributivity of such expressions and their non-movement properties.

[8] On the first reading, the two books co-vary with the girls, on the second reading, the two books co-vary only with the boys but not with the girls, while on the third, the two books are referentially independent.
[9] Silent 'each' in fact weakens the motivation for the Dist head as a separate head, given that other heads also contain the same Dist (or EACH) morpheme (except for the exceptional Ref).

4.3. The problematic nature of DistP

Let me comment finally on what Hungarian has revealed about DistP. We have seen before that basically DistP can be projected between any two quantifier projections, hence its positional motivation seems to dissolve in Hungarian.

Similar considerations again extend to English. Consider a sentence with more than one universal quantifier and a reading where another quantifier takes scope in between them, such as illustrated in (24).

(24) Every teacher told (exactly) two students everything he knows
OK every teacher > (exactly) two > everything

(24) does have among its readings, not even very difficult to get, a reading where 'every teacher' outscopes 'two students' which phrase has the object universal in its scope. Now Beghelli and Stowell cannot generate such scope relations in sentences of this (or of an even more complex) sort—at least without introducing further DistP projections along the clausal hierarchy.

Another complication related to DistP is the following. In order to be able to generate distributive wide scope of a subject over a distributive universal object, as in (5b) repeated here as (25a), DistP is crucially posited BELOW the surface position of the subject (i.e. AgrSP), as in (25b).

(25) a. Fewer than four students passed every class S > O / O > S[10]
b. [AgrsP fewer than 4 [DistP every class …]]

However, this entails that when the subject itself happens to be a distributive universal, we have either improper movement from DistP (an A-bar position) to the subject position (an A position), or we have first A-movement to subject position followed by a lowering movement to DistP—both analyses are clearly problematic.

Finally in this series of conceptual counter-arguments, a serious drawback of treating the scope of universal quantifiers as A-bar checking is that we apparently lose all hope of accounting for the (rough) clause-boundedness of such quantifiers (in terms of scope economy, in terms of the status of non-checking movements in phase theory[11], or otherwise), given that the corresponding movement in Beghelli and Stowell's / Szabolcsi's system is a feature-checking driven A-bar movement: nothing rules out long movement of an *every*-QP to DistP of a superordinate finite clause.

4.4. Descriptive coverage: under- and overgeneration

So far we have seen that Hungarian does not provide overt evidence for the assumed hierarchy in that some crucial putative parallels do not hold, and even the English hierarchy needs to be

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[10] This type of examples force Beghelli and Stowell to place DistP crucially *below* AgrSP: 'fewer than four students' can reconstruct from AgrSP to VP for the inverse scope reading. If DistP were *above* AgrSP, then these examples would be predicted (wrongly) to invariably have the object universal scoping over the subject.

[11] Given that QR is non-feature checking movement on present assumptions (the QP does not bear an offending feature), it cannot even be moved by IFM (Indirect Feature-driven Movement) to edge of phases to escape upwards (cf. Chomsky 2000, 2001). Hence, a possible reasoning goes, QR cannot involve intermediate steps. Given that in a strong phase only the next lowest phase is accessible, that entails (finite) clause-boundedness. For relevant discussion on the clause boundedness issue, see Sauerland (1999).

loosened up to get the fact right, and finally we have seen some *conceptual* arguments against the RefP and the DistP analysis.

Let me now point out some specific cases where the Beghelli and Stowell account fails to be *descriptively* adequate. One case of undergeneration we have already seen illustrated in (24), with two distributive universals and an interfering other quantifier.

A second case in point is (26), which is essentially analogous to our earlier example (4a).

(26) Four students read three books[12] S > O / O > S

Given that Beghelli and Stowell assume that, first, an object bare numeral indefinite never moves above the subject position, and second, that bare numeral indefinites do not reconstruct to their base position, it follows that only direct scope is generated for such examples. However, as Beghelli (1993: 66), Liu (1997: 41) and Reinhart (1997: 369) note, inverse distributive scope is in fact available.

A third case is illustrated by (27).

(27) Less then four students read exactly three books S > O / *O > S
Liu (1997: 18)

In (27), inverse distributive scope is unavailable. Given that modified numeral indefinites are able to reconstruct back to VP, on Beghelli and Stowell's assumptions we expect such inverse scope to be available. We saw that it is indeed available in some cases, such as (7) above, repeated as (28). (27) then involves overgeneration.

(28) More than three men read more than six books S > O / ?O > S

A fourth case involves internal arguments. Consider (29a):

(29) a. Mike showed five films to every guest
b. [DistP every … [AgrOP five [VP …five…]]]]

Beghelli and Stowell's system predicts that the VP-internal QPs involved in such a sentence type can occur at LF as schematized in (29b). The direct object raises to DistP, while the indirect object, being a bare numeral indefinite, cannot raise higher than AgrOP. This predicts that only an *inverse* scope reading should exist between these two expressions—this is contrary to fact: a rather prominent reading of (29a) is one with direct scope. This reading fails to be generated for (29).

A last example involves overgeneration again. In (30a) we have a sentence with two modified numeral indefinites and a universal quantifier. One LF-representation generated by Beghelli and Stowell's model is (30b). This corresponds to the scope relations with DO scoping over IO in turn scoping over the Subj. Such scope relations, however, don't actually obtain for (30a) type examples.

[12] Beghelli (1993) provides the following context to make inverse scope less dispreferred. "Classes in this department are becoming incredibly tough; it has gotten to the point where maybe three students would pass. Last month has been the worst ever: two students passed four classes."

It appears considerably easier to get the distributive inverse scope reading too if we make the direct scope reading pragmatically implausible:

(i) In the gigantic polygamous wedding ceremony, two women married one hundred men

(30) a. Exactly two teachers showed less than five tree diagrams to every student
b. [AgrSP exactly 2 [DistP every [AgrOP less than five [VP …]]] S> IO > DO

In fact, similarly to (27), Beghelli and Stowell generate DO > S scope relations, erroneously. Even if we stipulate (on the basis of sentences like (27) and the present example) that in certain cases—including (27) and (30)—the modified numeral in subject position cannot reconstruct across the DO modified numeral for some reason, we would then *only* generate a S > IO > DO scope order, other scope orders would not be generated. This is because the IO *every*-quantifier must be located in DistP, its position being fixed. If the subject modified numeral expression cannot reconstruct, as we would be assuming, then the only scope order, once again, is: S > IO > DO. This means that in Beghelli and Stowell's system, stipulating that the subject cannot reconstruct in cases like (27) and (30) does not help: another prominent available scope order, namely IO > S > DO, would still be missed.

To sum up, we have seen that the Q-checking approach to Q-scope faces severe challenges. Not only Hungarian fails to provide any evidence in favour of such an approach, but also, positing RefP and DistP projections creates acute problems of both a conceptual and an empirical nature. In the last subsection I established that unfortunately, the descriptive coverage of the account itself also leaves much to be desired.

5. A QR-based approach

I will demonstrate now that a model incorporating Quantifier Raising, when augmented with independently motivated assumptions of existential closure over choice function variables (cf. Section 2.1 above) and A-reconstruction, is able to provide a more constrained, and at the same time empirically superior account of differential Q-scope.

In general terms, I believe that as a methodological ideal it would be appealing to connect the differential scope-taking options of quantifier classes to their lexical semantic characterization, in particular, to relate their semantic characterization to the different mechanisms of scope-taking that they can participate in. In a broad sense, this methodological stance is the same as the one taken in Beghelli and Stowell's / Szabolcsi's work.

In what follows, I will first lay out the assumptions I adopt. These assumptions have been independently argued for, and I will argue that, when combined, they yield precisely the complex interaction patterns reviewed above. The central one of these assumptions is that QR exists as a movement serving *purely* scope-shifting, and that it applies to GQ-NPs.

5.1. Bare numeral indefinites: closure and A-reconstruction

First, following a Heimian treatment, the class of bare numeral indefinites[13], being open expressions with an unbound restricted variable, can be bound under closure. For concreteness, I adopt Reinhart's choice function approach here, but the particular choice among the closure approaches will not play a role here.

Bare numerals are taken to be cardinality predicates, following Milsark's (1977) analysis of Definiteness Effect contexts. Bare numeral cardinality predicates are second order predicates

[13] The class of bare numerals may be understood to also contain the indefinite article *a(n)*, or alternatively, this article may be taken to be a semantic determiner creating generalized quantifiers. This choice does not matter for our purposes.

applying to sets, assigning to them their cardinality. Hence, bare numerals only restrict, but do not bind the given variable (Kamp and Reyle 1993).[14]

(31) *four classes* $\{X \mid \text{class}(X) \,\&\, |X|=4\}$

The 'binding of choice function variable under closure' approach to (plural) existential indefinites correctly predicts unbounded wide scope. The closure approach predicts that such expressions do not have inverse *distributive* scope, since distributivity is not introduced by existential closure higher up[15] (distributivity is a property of GQs only). That is, this is the prediction, provided that plural (bare numeral) existential indefinites are *only* interpretable as restricted indefinites with a free variable. We have seen, however, that such indefinites *are* in fact able to have distributive inverse scope, as in (4a), and (5). Some examples are repeated here in (32).

(32) a. Two students passed four classes S > O / O > S
b. Fewer than four students passed two classes S > O / O > S
c. I gave fewer than four articles to two students IO > DO / DO > IO

Now, inverse scope in these examples can be treated without adding anything to a standard model, given that in minimalism bare numeral indefinites as noun phrases participate in A-movement dependencies (Case- and/or agreement-related A-movements). Assuming, as is standard, that A-movement can occur covertly and that A-movement chains can reconstruct[16], there is a possibility for these quantifiers to exhibit inverse scope in interaction with certain other quantifiers merely by virtue of forming A-chains. Inverse scope effects will arise due to A-reconstruction either if the bare numeral indefinite in question undergoes A-reconstruction itself, or if another quantifier A-reconstructs *below* the bare numeral indefinite.

Up to this point we have left it an open issue whether bare numeral indefinites are in fact ambiguous between a variety of plural Heimian indefinite, and a GQ interpretation (involving an existential quantifier). Now, if bare numeral plural indefinites did have a GQ interpretation and QR applied to them, we would certainly make a number of false predictions.

Among them, we would predict that an object bare numeral indefinite take distributive scope over a subject universal quantifier—this is false (cf. (8)). If bare numeral indefinites did QR, another prediction that would be made is that inverse scope of an object bare numeral indefinite over a subject bare numeral indefinite can be achieved without A-reconstruction of the subject: the object needs to QR above the subject. But if A-reconstruction is not involved in such cases, then this makes an interesting prediction: namely, we do not expect any interference with respect to the binding options for the subject, given that the subject does not need to A-reconstruct. On the other hand, if QR is *not* available to bare numeral indefinites, then the subject *does* need to reconstruct for inverse scope, and we expect interference with binding of the subject.

To test this, consider (33):

(33) a. Bill believes two pictures of himself to have outraged three Hungarian critics
b. Bill believes that two pictures of himself have outraged three Hungarian critics

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14 A usual notation for an indefinite like *four classes* is $\{X \mid \text{classes}(X) \,\&\, |X|=4\}$. The numeral leaves the X variable unbound, hence it is available for existential closure, therefore (non-distributive) wide scope in general is possible for unmodified numeral indefinites.

15 A distributive operator is sometimes introduced at the point where the indefinite restriction is interpreted.

16 Reconstruction in A-chains has recently become debated, most notably by Lasnik (1999). Boeckx (2001), however, argues strongly that A-reconstruction is available.

If the reflexive embedded in the subject has to reconstruct to obtain inverse distributive scope, than the reflexive will at the same time get out of the local domain of its antecedent—hence, such inverse scope reading is expected to be unavailable in this case. In light of (33), this is indeed what happens: a scenario involving two different pictures matched to each of the three critics (i.e. a distributive inverse scope) is not among the interpretations of (33). Hence, (33) makes an argument again against QR-ing bare numeral indefinites. This contrasts with examples similar to (33), but with a universal quantifier in the object positon of the embedded clause: there inverse scope of object over subject is available precisely because universal quantifier can QR above the subject (e.g. *Bill believes two pictures of himself to have outraged every Hungarian critic*).[17, 18]

It seems then that bare numeral indefinites do not QR, and can take inverse distributive scope only if A-reconstruction occurs. However, for these cases, i.e. for the cases when their inverse scope is *distributive*, we need to provide a source for distributivity. Existential closure (over choice function variables) may apply in principle at any syntactic point (including intermediate readings (shown to be available a.o. by Farkas (1981), Ruys (1992) and Abusch (1994))), that is, including locally, immediately above the bare numeral indefinites. However, existential closure over choice function variables does not yield a distributive reading, as we have already pointed out.

Such distributive scope is available to bare numeral indefinites only *in situ*, in their A-position (e.g. when they are in subject position, or when another QP A-reconstructs below their Case-related A-position); more precisely, distributivity is available for them in their A-position if the verb is compatible with such an interpretation. We can then relate these distributive readings of bare numeral indefinites locally to the distributive component (often modeled in the form of a distributive operator) in the semantic representation of the relevant verb (or other predicate). This produces exactly the effect we have witnessed: distributive interpretations of bare numeral indefinites available only locally, in the A-positions.

Thus far, we have A-movement / A-reconstruction, as well as binding under closure in the picture.

5.2. Modified numeral indefinites: A-reconstruction and the role of focus

I take Liu's (1990) basic observations of the inability of modified numeral indefinites to take inverse distributive scope (in most of the cases) to be crucially important. In a model that incorporates QR, this should mean that these quantifiers do not participate in QR. They clearly participate in (agreement- and Case-related) A-movement dependencies. The null hypothesis is that, similarly to bare numeral indefinites, modified numeral indefinites can undergo A-reconstruction.[19]

Modified numeral indefinites and nouns modified by *few*, as opposed to bare numeral indefinites, do not have unbounded wide scope. This means that their numerals do not get interpreted as cardinality predicates, they don't have a free variable to come under closure, i.e. they are quantified independently of closure.[20] If QR exists as a scope-shifting operation, then it should

[17] Another piece of evidence against QR-ing bare numeral indefinites comes from Hungarian, where QR is (optionally) overt: bare numeral indefinites do not QR overtly in Hungarian (they only move to focus position) (cf. Surányi 2002).

[18] In a recent manuscript Fox and Nissembaum (2002) make use of analogous syntactic scenarios involving the interaction of A-bar reconstruction and binding Condition A (in order to show that A-bar reconstruction is narrow syntactic).

[19] The raising construction in (i) shows that this is the case. (i) has a reading according to which what is allowed is the absence of few students.

(i) Few students are allowed to be absent

[20] There is clear evidence that the numeral of non-increasing modified numeral indefinites is not interpreted as a cardinality predicate. If an example like 'There are fewer than six students in the room' is interpreted as $\exists$ X [|X|<6 & $\forall$ x of X [student(x) & in the room(x)]], then this would allow there to be *more* than six students as well: it only says

apply to modified numeral indefinites provided that their modified numeral is a determiner and they are simple GQs.

I have argued in independent work based on Hungarian (Surányi 2000, 2002, 2004) that decreasing and non-monotonic modified numeral indefinites are, and increasing ones can be, interpreted as focus and occupy a syntactic focus positon. Krifka (1999) proposes that modified numerals including the 'at least n N' or 'more than/less than n N' type are cases of focus, and they are not GQs (essentially 'at least'/'more than' etc. are similar to a focus particles). This means that the modified numerals are not simply determiners, but involve focus on the numeral in a domain of alternatives. Then we understand why modified numeral indefinites do not appear to undergo QR: this is because they are not GQs to begin with.

The basic assumptions have now been spelt out. We have A-movement and A-reconstruction for both *bare* numeral indefinites and *modified* numeral indefinites, where the former are bound under existential closure, and the latter are quantified by focus. QR applies only to the remaining GQs, like distributive universals, *most*, proportional *many*, etc.

5.3. A-reconstruction and focus

The focus treatment of modified numerals, in fact at the same time buys us something extra as well. It is argued in Boeckx (2001) that A-reconstruction is sensitive to quantificational interveners.[21] Now since focus is a quantificational intervener, this should mean that modified numeral indefinites are expected not to allow A-reconstruction to happen across them.

In fact this is what seems to happen. Consider the contrast from (4) again.

(4) *A-reconstruction of subject*

a. Two students passed four classes   S > O / O > S

b. Two students passed fewer than four classes   S > O / *O > S

In (b) the subject cannot reconstruct below the Case position of the object (SpecAgrOP or Spec*v*P), because the object is interpreted as focus, hence quantificational.

5.4. A-reconstruction and the Mapping Hypothesis

We have taken bare numeral indefinites to be able to A-reconstruct. However, this should not be as free as with modified numeral indefinites. In particular, under some version of Diesing's (1992) Mapping Hypothesis, *specific* existential indefinites cannot appear inside the predicate phrase, i.e. *v*P/VP, at LF. Modified numeral expressions like 'exactly five boys' or 'less than three books' can freely reconstruct to *v*P/VP, given that they do not introduce discourse referents, they don't have a specific interpretation. However, although bare numeral subjects may take narrower scope than a

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that there is a set of less than six students, but there could be more (Beghelli 1993: 74, citing Schein 1993 and Ben-Shalom 1993). Of course such examples only *indicate* that they are not interpreted as a cardinality predicate, but do not explain why.

[21] For instance, (i) and (ii) are not ambiguous, in the way indicated, due to the presence of the quantificational interveners *not* and *always*:

(i) Two students did not read this book
2 > Neg / *Neg > 2

(ii) Few students are always likely to be absent
few > always > likely / *always > likely > few

bare numeral object (as in (4a)), this clearly appears to be a dispreferred interpretation. It is in fact next to impossible if the subject bare numeral indefinite is a partitive, as in (34).

(34) Two of the men read three books S > O / *?O > S

As Szabolcsi points out, inverse distributive scope is extremely degraded here. Our explanation comes from the Mapping Hypothesis: 'two of the men', being partitive and specific (in the sense of Enc 1991), cannot reconstruct to *v*P/VP. To the extent that ordinary bare numeral indefinites in subject have a preference to be interpreted as specific (they are the default topic), their A-reconstruction is also dispreferred—though possible.[22]

5.5. The model at work

Let us see how the model I have drawn up derives the other scope-asymmetries above (we have just seen what explains (4a,b)). For ease of reference, I repeat illustrations as well as their numbers from the previous examples. The reason of why the inverse scope is possible (or why it is impossible) is indicated above each example.

Consider again sentences in (5). (5a) involves a modified numeral indefinite subject, which may undergo A-reconstruction in order to yield an inverse scope effect. (5b) is different from (5a) only in that it has a universal quantifier as the object. Now in addition to A-reconstruction of the subject, we also have QR of the object that can produce inverse scope relations in (5b). (5c) allows inverse scope relations between indirect and direct objects. This once again is due to A-reconstructability of the indirect object from its Case-checking A-position to below the Case-position of the direct object.

(5) *A-reconstruction of subject*
   a. Fewer than four students passed two classes S > O / O > S
   (inverse scope: Beghelli 1993: 67, Liu 1997: 47)

   QR of Obj (to v*P / to TP) / A-reconstruction of Subj*
   b. Fewer than four students passed every class S > O / O > S

   A-reconstruction of IO
   c. I gave fewer than four books to two students IO > DO / DO > IO

The inverse scope relations here are all derived.

Consider now (6). (6) does not admit inverse scope. This is because on the one hand, the subject *every*-QP undergoes QR to TP and does not A-reconstruct, and on the other hand, the object is a modified numeral indefinite, which is not a GQ, hence cannot QR above the subject.

[22] Universal quantifiers also appear not to be able to A-reconstruct, based on examples like (8). (Apparent inverse scope in examples like *Everybody didn't seem to be happy* can be derived by Neg-raising above the subject, as argued by Boeckx (2001).) If this is the case, then this can be derived in at least two ways. One course to take would be to place universal quantifiers into the category of specific NPs (again, in the sense of Enc 1991), which cannot appear inside the predicate phrase at LF. Another line is to argue that subject universals need to QR above the subject position, i.e. above their highest A-position, otherwise (say, if they QR-ed to adjoin to *v*P) an improper chain would be created. Then QR fixes their scope above the subject position.

(6) *Subject QR-s + Inability of Obj to QR*
Every student passed fewer than four classes S > O / *O > S

(I will put example (7) aside for a moment, and will return to it presently.) The same scenario obtains in (8).

(8) *Subject QR-s + Inability of Obj to QR*
Every student admires two teachers S > O / *O > S

The subject expression undergoes QR, but the object bare numeral indefinite cannot take distributive scope higher than its surface position (cf. also Footnote 21).

Let us see how we can derive the scope relations in sentences which proved problematic for Stowell and Beghelli above. Consider (24) again.

(24) *Subject QR-s + IO in [SpecAgrIOP]/[SpecvP] + DO (short-)QR-s*
Every teacher told (exactly) two students everything he knows
OK every teacher > (exactly) two > everything

Here the subject *every*-QP undergoes QR, the indirect object undergoes A-movement to its Case position ([SpecAgrIOP] or (outer)[Spec*v*P]), while the direct object undergoes short QR to adjoin to *v*P (or VP) a position below the Case position of the indirect object.[23]

(27) is a sentence with a modified numeral indefinite subject and a modified numeral indefinite object.

(27) *Subject cannot A-reconstruct across focus*
Less then four students read exactly three books S > O / *O > S
Liu (1997: 18)

What we have seen is that in such a sentence the inverse scope interpretation is unavailable. In the present terms this means that A-reconstruction of the subject cannot take place. Indeed it should be impossible, inasmuch as the object is a (non-monotonic) modified numeral expression, which we have claimed to be focused, and hence to be an intervener for A-scope-reconstruction.

Another example that posed a complication for the A-bar checking approach was (29a).

(29a) *Object QR*
Mike showed five films to every guest

The direct scope is straightforward to derive here: the indirect object needs to QR to a position below the Case position of the direct object. Example (30a) has proven even more notoriously difficult for the Beghelli and Stowell approach.

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[23] Bruening (2001) argues within a *v*P-based (vs. AgrP-based) approach that direct objects in such double object constructions undergo QR to an inner [Spec,*v*P]. This achieves exactly the same result. Bruening argues based on the IO > DO scope freezing effect in double object sentences for a 'tucking in' effect à la Richards. However, many researchers have argued that the IO > DO scope freezing effect is one of specificity, given that the IO in double object constructions functions as the logical subject of a posessive/existential predication (cf. Brandt 2003 and references therein). Nakanishi (2001a,b) shows that IO >DO holds even island-externally, i.e. when both scope out of an island, that is, in syntactic contexts where movement cannot apply.

(30a) *Subject cannot reconstruct across focus IO + Obj QR*
Exactly two teachers showed less than five tree diagrams to every student

Here the direct object can QR to *v*P. The subject and the direct object can only have direct scope relations. This is because the subject cannot A-reconstruct across a focused direct object, and hence the S > DO scope relations are invariable in this sentence. When the indirect object QR-s above the subject position AgrSP, we have IO > S > DO, i.e. the scope relations not captured by Beghelli and Stowell.[24]

Let us come finally to the example that we have put aside: (7). (7) involves two modified numeral indefinites, just as (27), but it contrasts with (27) in marginally allowing the inverse scope reading.

(7) More than three men read more than six books S > O / ?O > S
(Szabolcsi 1997: 116)

Now the first observation to be pointed out is that 'more than six N' is special among modified numeral indefinites in Hungarian as well: it can appear either in focus position, or can be fronted to the left of the focus position. This means that not only a focus interpretation is available to 'more than'-modified numerals. Second, as Liu (1997: 23) notes, there is a felt contrast between (35a) and (35b).

(35) a. Five teachers graded more than twenty students
b. Five teachers graded fewer than twenty students

In (35b) the scope-independent reading does not obtain: (35b) cannot mean that there is a set of teachers and a set of students and each graded each. However, (35a), with some difficulty, can have such a reading, introducing a referent set of students. In Liu's terms, although 'more than n' NP-s are basically non-G-specific, they can be marginally interpreted as G-specific, where 'more than n' is interpreted similarly to a *bare* numeral. Now inasmuch as an interpretation other than focus is marginally available to 'more than n' NP-s, which is similar to the interpretation of bare numerals, introducing a discourse referent, they are expected to be able to be crossed over by A-reconstruction. This is what happens in the examples in (7) and (35a).[25, 26]

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[24] To the extent that (i) is possible on an DO > S reading (i.e. each paper was introduced by different sets of fewer than three teachers), it indicates that indeed as it is expected, subject reconstruction below the (Case position of the) *bare* numeral DO is available.

(i) Fewer than three teachers introduced two of Chomsky's papers to a class of students

[25] As (i) shows, 'more than n N' can be topicalized, or can be postverbal non-focus position in Hungarian.

(i) (?Több mint száz diák)	tegnap	az egyetem előtt	tüntetett	(több mint száz diák)
more than hundred student	yesterday	the university outside	demonstrated	more than hundred student

'More than one hundred students made a demonstration outside the university'

'More than n N' corresponds to two nominal constructions in Hungarian: (ii) and (iii). (iii) differs from (ii) in that it can only stand in focus position.

(ii) több mint három diák
more than three student

(iii) háromnál több diák
three-suff more student

A final note concerns Weak Crossover (WCO). Consider (36) first. Here the indirect object *every teacher* cannot bind the pronoun inside the subject. In (37), in contrast, the object *two of the teachers* can. The present account captures this contrast in a straightforward manner. In (36), A-reconstruction of the subject is blocked due to the presence of the focussed object *few students*. Then the only possibility for the *every*-QP to bind the pronoun is to QR above it; but that results in a WCO violation. On the other hand, in (37) the subject is able to A-reconstruct and in this reconstructed *vP*-internal position the bare numeral object can bind the pronoun from AgrOP. No WCO violation is triggered.

(36) a. *Exactly two of his$_i$ colleagues introduced few students to every teacher$_i$
b. [every teacher$_i$ [AgrSP exactly 2 of his$_i$ colleagues … [AgrOP few [VP …]]]]

(37) a. Exactly four of their$_i$ students adore two of the teachers$_i$
b. [AgrSP … [AgrOP 2 of the teachers$_i$ [VP exactly 4 of their$_i$ colleagues …]]]

This account is made possible by the assumptions that I have put forward and in this sense it provides further support in their favour.

What I have tried to show is that the rather complex scope interaction patterns fall out in a model incorporating QR, where QR does not apply to bare numeral indefinites or modified numeral indefinites. Bare numeral indefinites can be existentially closed (non-distributive wide scope), and other NPs can A-reconstruct below them to create an inverse scope reading. Modified numerals are not cardinality predicates, but involve focus—they cannot be existentially closed, they can undergo A-reconstruction, but due to the focus status cannot be crossed over by scopal A-reconstruction themselves.

6. Concluding remarks

In this paper I hope to have substantiated the following two points. First, the A-bar checking approach to Q-scope, which involves directed movements to pre-fabricated functional positions, is both conceptually and empirically problematic (and Hungarian is far from supplying evidence in its favour). Second, when we combine the independently motivated covert scopal mechanisms of (i) QR, (ii) existential closure, and (ii) A-reconstruction, which is constrained by quantificational interveners like focus and by the Mapping Hypothesis, then the intricate pattern of Q-scope interactions is correctly predicted in an elegant manner.

Inasmuch as the present results prove to be on the right track, besides the effects of closure and A-chains, Q-scope continues to involve QR.

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[26] Most informants share the judgments reported here, mostly taken from the literature. However, it appears to me that there is some speaker-variation with respect to how inaccessible the bare numeral-like construal of modified numeral indefinites is. For some speakers, even 'exactly n N' and 'fewer than n N' can (rather marginally) be forced to be construed the same way (Gilliam Ramchard, p.c.).

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Balázs Surányi
Hungarian Academy of Sciences
suranyi@nytud.hu